CITY OF YORK COUNCIL

NORTH YORK MOORS NATIONAL PARK

North Yorkshire County Council

Minerals and Waste Joint Plan

Issues and Options

Sustainability Appraisal Update Report

Draft Revised Appraisals and Consideration of Further Policies Generated Through Issues and Options

November 2015

Sustainability Appraisal Update Report

Draft Revised Appraisals and Consideration of Further Policies Generated through Issues and Options Consultation

Full Appraisal Matrices

November 2015

Contents

Introduction

This document shows the revised appraisals following the early 2014 consultation on the Sustainability Appraisal at Issues and Options. It also shows how the Sustainability Appraisal has considered further policies generated through the Issues and Options consultation on the Plan.

Each option is considered against the Sustainability Appraisal objectives and sub objectives in the Sustainability Appraisal Framework (see Preferred Options Sustainability Appraisal for the latest version) and the impacts are then scored according to the timescale (short, medium or long term) during which the impacts are expected to occur. Impacts are defined as being permanent (P), temporary (T), direct (D) or indirect (I). For a full description of the methodology see our Sustainability Appraisal Scoping Report.

The SA objectives and scoring criteria are also listed below for reference.

1. Protect and enhance biodiversity and geo-diversity and improve habitat connectivity
2. Enhance or maintain water quality and supply and improve efficiency of water use
3. Reduce transport miles and associated emissions from transport and encourage the use of sustainable modes of transportation
4. Protect and improve air quality
5. Use soil and land efficiently and safeguard or enhance their quality
6. Reduce the causes of climate change
7. Respond and adapt to the effects of climate change
8. Minimise the use of resources and encourage their re-use or safeguarding
9. Minimise waste generation and prioritise management of waste as high up the waste hierarchy as practicable
10. Conserve and enhance the historic environment, heritage assets and their settings
11. Protect and enhance the quality and character of landscapes and townscapes
12. Achieve sustainable economic growth and create and support jobs
13. Maintain and enhance the viability and vitality of local communities
14. Provide opportunities to enable recreation, leisure and learning
15. Protect and improve the wellbeing, health and safety of local communities
16. Minimise flood risk and reduce the impact of flooding
17. Address the needs of a changing population in a sustainable and inclusive manner

The scoring is explained in the table below:

Score	Significance
++	The option is predicted to have major positive effects on the baseline and the achievement of the SA objective.
+	The option is predicted to have minor positive effects on the baseline and the achievement of the SA objective.
0	The option will have no effect on the baseline and the achievement of the SA objective.
-	The option is predicted to have minor negative effects on the baseline and the achievement of the SA objective.
--	The option is predicted to have major negative effects and the achievement of the SA objective.
?	The impact of the objective on the baseline / SA objective is uncertain.

Broad Geographical Approach to Supply of Aggregates (id01)

Assumptions – These options consider the strategic locational options for future aggregates extraction and it is therefore assumed that the same level of aggregates extraction would take place as current levels under each 'or' option and that the principle of aggregates extraction is not being questioned. It is also assumed that appropriate mitigation measures would be put in place. It is considered that the extraction process is temporary and that an appropriate reclamation scheme would be put in place in the longer term. These options relate to general aggregates extraction. Extraction for use on specific projects is considered in the Borrow Pits options.

Option 1
This approach could seek to ensure that requirements for new aggregates supply from the Joint Plan area would be met only from those parts of the area outside the North York Moors National Park, AONBs and the City of York area.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+ +	+ +	✓		✓	✓	Positive effects for the National Park and AONBs and the City of York. Particularly positive effects for the AONBs due to displacement of current extraction activity over time. There are likely to be negative effects across the NYCC planning authority area as extraction would take place within that area and potentially on sites that have some form of current biodiversity value. It is likely that these effects in the NYCC area would be greater than any current effects as additional extraction would be needed in this area to compensate for reduced extraction in the AONBs. Outside of the National Park and AONBs there may be positive effects for biodiversity associated with site reclamation.
	-	-	-					
2.	-	-	-	✓		✓	✓	Whilst effects will depend upon the location of any new quarries outside the National Park, AONBs and City of York, much of the remaining area is identified as Nitrate Vulnerable Zones and there is therefore potential for negative effects against this objective.
3.	+	+	+		✓	✓		Meeting the need for aggregates from outside of National Parks and AONBs is likely to have a minor positive effect on this objective as it will direct extraction closer to the main road networks and locations where they are likely to be used.

4.	+	+	+	✓		✓		This option will protect air quality in the National Park, which is a part of its Special Qualities. In the AONBs it would improve air quality where current quarries would be closed. Across the NYCC area there may be negative effects at the localised level but it is considered that overall protecting and improving air quality in protected areas would be positive.
5.	-	-	-	✓		✓		Generally, land outside of the National Park and AONBs is of higher agricultural quality and therefore this option could lead to more loss of high quality agricultural land, which would increase over time. There may be a further minor negative effect due to the creation of contaminated land.
6.	+	+	+	✓			✓	Meeting the need for aggregates from outside of National Parks and AONBs is likely to have a minor positive effect on this objective as it will direct extraction closer to the main road networks and locations where they are likely to be used, thus reducing greenhouse gas emissions from transport.
7.	+	+	+ +	✓			✓	In the longer term under this option there may be more opportunities for flood water storage in appropriate locations. However, there may be issues of the extraction site being at risk from flooding as the North Yorkshire area is generally lower lying than the National Park or the AONBs, although sand and gravel extraction is generally water compatible.
	-	-	-					
8.	0	0	0					There would be no effect as the option does not address the amount of or principle of aggregates extraction.
9.	0	0	0					Although extraction can result in waste being produced, this option is considering the strategic locations for extraction, not the principle or amount of extraction.
10.	-	-	-	✓		✓	✓	At the local level there may be impacts on the historic environment of the North Yorkshire planning authority area, although this would depend on the location of any new quarries. It would however result in positive effects for the City of York and the National Park, as there is currently no extraction in these locations, and a positive effect for the AONBs over the longer term.
	+	+	+					
11.	+	+ +	+ +	✓		✓		There would be a positive impact on the AONBs over the longer term should extraction decrease from this area. The option would also provide protection to the National Park by continuing the current position of no extraction. Under this option there is also scope to avoid impacts on the townscape of York. These effects are likely to increase over time as extraction moves away from AONBs.
12.	+	+	+		✓		✓	Overall, as this option does not relate to the principle or amount of extraction, it is likely that overall the impact on employment and the economy would be around the same as the current situation. There may be slight positive effects if extraction is located closer to main centres of population as there may be knock-on effects for these local economies, such as employment opportunities.
13.	+	+	+		✓		✓	Whilst there may be localised effects on tourism associated with assets in the NYCC area, it is considered that

								the protection afforded to the National Park and AONBs (where quarrying could be particularly intrusive on the visitor experience) would result in positive effects on this objective.
14.	+ + / -	+ + / -	+ + / -		✓	✓		This option would have positive effects on enjoyment and understanding of the National Park and on providing opportunities for recreation in AONBs, particularly if aggregates extraction decreased in the AONBs. There could however be negative effects on recreation opportunities in the North Yorkshire planning area bearing in mind the extensive Rights of Way network and areas of open access land, although there may be positive effects in the longer term should quarry reclamation provide new recreational opportunities.
15.	?	?	?		✓	✓		Whether or not there are any effects on the health, safety and wellbeing of communities will depend upon the location of any quarries. There may be long term benefits from restoration/reclamation but again the benefits would depend on the location and the details of the restoration scheme.
16.	-	-	+ +	✓	✓	✓	✓	In the short term there may be negative effects from potentially extracting in flood risk areas (albeit that these would be minor as aggregates extraction is generally water compatible) however in the longer term there may be positive effects arising from the creation of flood storage areas in old quarries.
17.	+	+	+		✓		✓	This option may result in shorter supply chains by directing extraction towards the NYCC area where there is a greater concentration of users of aggregates.

Option 2
In addition to aggregates supply from the NYCC area, this approach could seek to deliver an element of total sand and gravel supply requirements from the City of York area by encouraging working of sand and gravel (including building sand) in appropriate locations.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	?	?	?	✓		✓	✓	Effects on the City of York area are likely to be negative as there is likely to be some form of biodiversity value on any land used for extraction. However, there are likely to be positive effects across the rest of the Plan area as it is assumed extraction would decrease elsewhere. Whilst the City of York area has a fairly high

			+					concentration of Sites of Importance for Nature Conservation there are areas of sand and gravel resource which do not coincide with these. In the longer term there may be positive effects for biodiversity through site reclamation.
2.	?	?	?	✓		✓	✓	Whilst much of the City of York area is identified as Nitrate Vulnerable Zone, there are areas of sand and gravel resource which do not coincide with this. The potential for effects is considered to be the same as for not enabling sand and gravel extraction in the City of York area as much of the NYCC area is also Nitrate Vulnerable Zone.
3.	++	++	++		✓	✓		Although it is unknown where the market for any aggregate extracted in York would be located, it is reasonable to assume that a proportion would be for use within York, displacing aggregates which currently come from further afield, and therefore there would be positive effects in terms of reducing transport miles and emissions.
4.	+	+	+	✓			✓	Whilst there may be localised air quality issues, this could be the same under either of the options. The positive score relates to reducing transport miles, as discussed for objective 3 above.
5.	?	?	?	✓		✓		Much of the City of York area is either Grade 3 or Grade 2 agricultural land quality, similar to the NYCC area, and at the strategic level it is not possible to ascertain whether there would be any effects.
6.	+	+	+	✓			✓	The positive score relates to reducing transport miles, as discussed for objective 3 above, due to the potential to decrease greenhouse gas emissions.
7.	-	-	-	✓		✓	✓	In the longer term opportunities for flood water storage may be more limited as the City of York area is further downstream than most of the Plan area. However, there may be issues of the extraction sites being at risk from flooding the City of York is generally lower lying than other parts of the Plan area, although sand and gravel extraction is generally water compatible. In particular around York it may be difficult to find sites outside of the flood risk areas.
8.	0	0	0					There will be no effects against this objective as the option is not considering the principle or amount of aggregate extraction.
9.	0	0	0					Although extraction can result in waste being produced, this option is considering the strategic locations for extraction, not the principle or amount of extraction.
10.	-	-	- +	✓		✓	✓	In the short term there could be negative effects on the setting of the City of York although in the longer term positive effects may be secured through reclamation schemes.
11.	-	-	-	✓		✓	✓	Impacts on York and/or its setting may be negative although in the longer term could become positive under appropriate restoration/reclamation schemes. Minerals extraction is not considered to be 'inappropriate

	+	+	+					development' in the Green Belt and therefore any impacts on the York Green Belt are likely to be minimal. There may be positive effects elsewhere in the Plan area if pressure for extraction is directed away from protected landscapes.
12.	+	+	+	✓	✓	✓	✓	Whilst there is no assumed overall increase in jobs across the Joint Plan area, under this option there would be an opportunity to locate employment opportunities close to the largest centre of population in the Plan area. Knock-on effects on the local economy may be greater where jobs are located close to a wide range of facilities when compared to the provision of jobs close to smaller communities.
13.	+	+	+	✓		✓		There may be a positive impact on tourism overall if extraction took place close to the City of York as opposed to in more rural parts of the Plan area. The types of tourism activity which take place in York are likely to be less impacted on by the presence of a quarry than they would in the more remote, quieter parts of the Plan area.
14.	- +	- +	- +	✓		✓	✓	Whilst impacts on the City of York may be negative in the short term, there may be opportunities for additional recreation opportunities to be created in the longer term through reclamation. Directing extraction to York may have positive effects on recreation elsewhere, such as in the National Park and AONBs, where recreation can be particularly impacted upon by the presence of a quarry. There may be positive effects in the longer term should quarry reclamation provide new recreational opportunities.
15.	-	-	-	✓		✓	✓	Under this option, it is more likely that communities around York would be impacted by traffic, noise and dust, whereas within the more rural parts of the Plan area there would be more opportunities to locate the quarries away from centres of population.
16.	-	-	+	✓		✓	✓	In the short term there may be negative effects from potentially extracting in flood risk areas, especially within York which is particularly constrained by flood risk areas. However in the longer term there may be positive effects arising from the creation of flood storage areas in old quarries, although this may be of less benefit within the York area which is generally lower lying than other parts of the Plan area.
17.	+	++	++	✓		✓	✓	A supply of aggregates closer to the City of York would have a positive impact on this objective as it would create a shortened supply chain in relation to building materials required in York, which are currently provided for from outside of York.

Proposed alternative option 3: (And) Supply from the National Park and the AONBs would be supported in circumstances where demand could not be met from locations outside protected areas.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?	✓		✓	✓	Under this option, there is potential for impacts on biodiversity in the National Park and AONBs (which is part of the purposes of designation) particularly later in the Plan period should supply from elsewhere reduce, although this would depend upon whether it was not possible to make provision elsewhere in the Plan area. It is considered that effects elsewhere would be the same as under options 1 or 2 as the option would not be supporting extraction from the National Park and AONBs *in place* of extraction in other parts of the Plan area.
	0	0	0					
2.	?	?	?	✓		✓	✓	Under this option there is potential for impacts on water quality in the National Park and AONBs, particularly later in the Plan period should supply from elsewhere reduce. Effects in relation to Nitrate Vulnerable Zones and Source Protection Zones are not considered to be any different to effects under options 1 or 2 without this option as these are generally concentrated in the NYCC area. So overall in the Plan area this option may introduce effects in the National Parks and AONBs, in comparison to just progressing option 1 or option 2 on their own.
	0	0	0					
3.	0	0	+		✓	✓	✓	Allowing for provision from the National Park and the AONBs may have positive effects on transport in the longer term if it means that supply can be maintained from within the Plan area rather than sourcing aggregates from further afield.
4.	?	?	?	✓		✓	✓	Under this option there is potential for impacts on air quality in the National Park and AONBs, particularly later in the Plan period should supply from elsewhere reduce. Effects in relation to air quality elsewhere in the Plan area are not considered to be affected as this option would not be supporting extraction in the National Park and AONBs *in place* of extraction in other parts of the Plan area. So overall in the Plan area this option may introduce effects in the National Parks and AONBs, in comparison to just progressing option 1 or option 2 on their own.
	0	0	0					

5.	? 0	? 0	? 0	✓		✓	✓	Land in the National Park and AONBs is generally lower quality agricultural land, but nevertheless this option has the potential to result in the loss of some of this, depending on whether there becomes a need to source aggregates from within these areas. It is considered that effects elsewhere would be the same as under options 1 or 2 as the option would not be supporting extraction from the National Park and AONBs *in place* of extraction in other parts of the Plan area.
6.	0	0	+		✓	✓	✓	Allowing for provision from the National Park and the AONBs may have positive effects on climate change in the longer term if it means that supply can be maintained from within the Plan area rather than sourcing aggregates from further afield, which would have associated transport emissions.
7.	0	0	+	✓			✓	Allowing for provision from the National Park and the AONBs may have positive effects on adapting to climate change as this would provide opportunities for flood storage in upland areas in the longer term.
8.	-	-	-	✓			✓	The option may have the effect of reducing the use of secondary and alternative resources as it would allow for any shortfall to be made up by extraction from the National Park and AONBs.
9.	-	-	-	✓			✓	This option may have the effect of reducing the re-use of waste material as aggregate as it would allow for any shortfall to be made up by extraction from the National Park and AONBs.
10.	? 0	? 0	? 0	✓		✓	✓	Under this option, there is potential for impacts on the historic environment in the National Park and AONBs (which is part of the purposes of designation) particularly later in the Plan period should supply from elsewhere reduce, although this would depend upon whether it was not possible to make provision elsewhere in the Plan area. It is considered that effects elsewhere would be the same as under options 1 or 2 as the option would not be supporting extraction from the National Park and AONBs *in place* of extraction in other parts of the Plan area.
11.	? 0	? 0	? 0	✓		✓	✓	Under this option, there is potential for impacts on the landscape in the National Park and AONBs (which is part of the purposes of designation) particularly later in the Plan period should supply from elsewhere reduce, although this would depend upon whether it was not possible to make provision elsewhere in the Plan area. It is considered that effects elsewhere would be the same as under options 1 or 2 as the option would not be supporting extraction from the National Park and AONBs *in place* of extraction in other parts of the Plan area.
12.	+	+	+	✓	✓	✓	✓	Under this option, there is potential for positive effects on the economy should it enable a supply of aggregates to come forward to meet demand in the area, particularly later in the Plan period should supply from elsewhere reduce, although this would depend upon whether it was not possible to make provision elsewhere in the Plan area. There may also be local positive effects in the National Park and the AONBs related to job creation/retention through the opening/extending of quarries. It is considered that localised effects elsewhere would be the same as under options 1 or 2 as the option would not be supporting extraction from the National Park and AONBs *in place* of extraction in other parts of the Plan area.
13.	+	+	+		✓	✓	✓	Under this option, there is potential for effects on the viability and vitality of local communities should it lead to additional job creation in the National Park and AONBs, although this would depend upon whether it was not

								possible to make provision elsewhere in the Plan area. There may however be negative effects should a new quarry lead to negative effects on a communities vitality and viability, for example should it lead to a fall in the number of tourists, which support the local economy. It is considered that effects elsewhere would be the same as under options 1 or 2 as the option would not be supporting extraction from the National Park and AONBs *in place* of extraction in other parts of the Plan area.
14.	? 0	? 0	? 0		✓	✓	✓	Under this option, there is potential for impacts on the recreation opportunities in the National Park and AONBs (which is part of the purposes of designation) particularly later in the Plan period should supply from elsewhere reduce, although this would depend upon whether it was not possible to make provision elsewhere in the Plan area. It is considered that effects elsewhere would be the same as under options 1 or 2 as the option would not be supporting extraction from the National Park and AONBs *in place* of extraction in other parts of the Plan area.
15.	? 0	? 0	? 0	✓		✓	✓	Under this option, there is potential for impacts on the wellbeing, health and safety of communities in the National Park and AONBs, particularly later in the Plan period should supply from elsewhere reduce, although this would depend upon whether it was not possible to make provision elsewhere in the Plan area. It is considered that effects elsewhere would be the same as under options 1 or 2 as the option would not be supporting extraction from the National Park and AONBs *in place* of extraction in other parts of the Plan area.
16.	0	0	+		✓	✓	✓	Allowing for provision from the National Park and the AONBs may have positive effects on reducing flooding in the longer term if it means that supply can be maintained from within the Plan area rather than sourcing aggregates from further afield, which would have associated transport emissions.
17.	+	+	+ +	✓		✓		This option would provide greater scope for the need for aggregates to be met and would potentially shorten supply chains by providing scope for aggregates to be provided from within the Plan area if needed.

Proposed alternative option 4: (Or) In addition to supply from the NYCC area, this approach could seek to deliver an element of total sand and gravel supply requirements from the City of York area by encouraging working of sand and gravel (including building sand) in appropriate locations. Extraction within the City of York area would be supported where it is on a small scale and is for use only within the City of York area.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	? +	✓		✓	✓	Effects on the City of York area are likely to be negative as there is likely to be some form of biodiversity value on any land used for extraction. However, there are likely to be positive effects across the rest of the Plan area as it is assumed extraction would decrease elsewhere. Whilst the City of York area has a fairly high concentration of Sites of Importance for Nature Conservation there are areas of sand and gravel resource which do not coincide with these. In the longer term there may be positive effects for biodiversity through site reclamation. The effects would be of a lesser scale than under Option 2 as the option only allows for extraction on a small scale and for use within the City of York area.
2.	?	?	?	✓		✓	✓	Whilst much of the City of York area is identified as Nitrate Vulnerable Zone, there are areas of sand and gravel resource which do not coincide with this. The potential for effects is considered to be the same as for not enabling sand and gravel extraction in the City of York area as much of the NYCC area is also Nitrate Vulnerable Zone. The effects would be of a lesser scale than under Option 2 as the option only allows for extraction on a small scale and for use within the City of York area.
3.	+	+ +	+ +		✓		✓	This option would have significantly positive effects by supporting extraction close to demand in York, and also ensuring that any aggregates extracted in York are not transported further afield. It is likely that the positive effects would become greater over time as supply within York would replace supply from other parts of the Plan area and beyond.
4.	+	+	+		✓		✓	Whilst there may be localised air quality issues, this could be the same under either of the options. The positive score relates to reducing transport miles, as discussed for objective 3 above.
5.	?	?	?	✓		✓		Much of the City of York area is either Grade 3 or Grade 2 agricultural land quality, similar to the NYCC area, and at the strategic level it is not possible to ascertain whether there would be any effects. The effects would be of a lesser scale than under Option 2 as the option only allows for extraction on a small scale and for use within the City of York area.
6.	+	+ +	+ +	✓			✓	The positive score relates to reducing transport miles, as discussed for objective 3 above, due to the potential to decrease greenhouse gas emissions.
7.	-	-	-	✓		✓	✓	In the longer term opportunities for flood water storage may be more limited as the City of York area is further downstream than most of the Plan area. However, there may be issues of the extraction sites being at risk from flooding as the City of York is generally lower lying than other parts of the Plan area, although sand and gravel extraction is generally water compatible. In particular around York it may be difficult to find sites outside of the flood risk areas. The effects would be of a lesser scale than under Option 2 as the option only allows for

								extraction on a small scale and for use within the City of York area.
8.	0	0	0					There will be no effects against this objective as the option is not considering the principle or amount of aggregate extraction.
9.	0	0	0					Although extraction can result in waste being produced, this option is considering the strategic locations for extraction, not the principle or amount of extraction.
10.	-	-	- +	✓		✓	✓	In the short term there could be negative effects on the setting of the City of York although in the longer term positive effects may be secured through reclamation schemes. The effects would be of a lesser scale than under Option 2 as the option only allows for extraction on a small scale and for use within the City of York area.
11.	- +	- +	- +	✓		✓	✓	Impacts on York and/or its setting may be negative although in the longer term could become positive under appropriate restoration/reclamation schemes. Minerals extraction is not considered to be 'inappropriate development' in the Green Belt and therefore any impacts on the York Green Belt are likely to be minimal. There may be positive effects elsewhere in the Plan area if pressure for extraction is directed away from protected landscapes. The effects would be of a lesser scale than under Option 2 as the option only allows for extraction on a small scale and for use within the City of York area.
12.	+	+	+	✓	✓	✓	✓	Whilst there is no assumed overall increase in jobs across the Joint Plan area, under this option there would be an opportunity to locate employment opportunities close to the largest centre of population in the Plan area. Knock-on effects on the local economy may be greater where jobs are located close to a wide range of facilities when compared to the provision of jobs close to smaller communities.
13.	+	+	+	✓		✓		There may be a positive impact on tourism overall if extraction took place close to the City of York as opposed to in more rural parts of the Plan area. The types of tourism activity which take place in York are likely to be less impacted on by the presence of a quarry than they would in the more remote, quieter parts of the Plan area. This is particularly so as the option limits extraction to small scale.
14.	- +	- +	- +	✓		✓	✓	Whilst impacts on the City of York may be negative in the short term, there may be opportunities for additional recreation opportunities to be created in the longer term through reclamation. Directing extraction to York may have positive effects on recreation elsewhere, such as in the National Park and AONBs, where recreation can be particularly impacted upon by the presence of a quarry. There may be positive effects in the longer term should quarry reclamation provide new recreational opportunities. The effects would be of a lesser scale than under Option 2 as the option only allows for extraction on a small scale and for use within the City of York area.
15.	-	-	-	✓		✓	✓	Under this option, it is more likely that communities around York would be impacted by traffic, noise and dust, whereas within the more rural parts of the Plan area there would be more opportunities to locate the quarries away from centres of population. The effects would be of a lesser scale than under Option 2 as the option only

								allows for extraction on a small scale and for use within the City of York area.
16.	-	-	+	✓		✓	✓	In the short term there may be negative effects from potentially extracting in flood risk areas, especially within York which is particularly constrained by flood risk areas. However in the longer term there may be positive effects arising from the creation of flood storage areas in old quarries, although this may be of less benefit within the York area which is generally lower lying than other parts of the Plan area.
17.	+	+	+	✓		✓	✓	A supply of aggregates closer to the City of York would have a positive impact on this objective as it would create a shortened supply chain in relation to building materials required in York, which are currently provided for from outside of York. The requirement for sites to be 'small scale' may mean that not all of York's demand can be met from within York.

Proposed alternative option 5: (Or) This option would allow extraction of aggregates from any geographical location in the Joint Plan area.

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SA objective	**Impact / timescale**			**Type of effect**				**Analysis**
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	-	-	- +	✓		✓	✓	Whilst the degree of effects would be dependent upon the location of quarries and although there are areas of sand and gravel resource which exist outside ecological and geological designations, it is likely that there would be some degree of negative effects on biodiversity across the Plan area. In the longer term the option provides an opportunity for positive effects to be secured through restoration across the Plan area.
2.	?	?	?	✓		✓	✓	Whilst effects will depend upon the location of any new quarries much of the Joint Plan area is identified as Nitrate Vulnerable Zones, with large areas also Source Protection Zone and there is therefore potential for negative effects against this objective, although the option provides scope for developing away from locations where impacts would occur.
3.	-	-	-	✓		✓	✓	Under this option extraction could take place anywhere in the Plan area and would not necessarily be located close to markets and therefore it may have negative effects in relation to transport.

4.	-	-	-	✓		✓	✓	Whilst there may be localised air quality issues, this could be the same under either of the options. The negative score relates to reducing transport miles, as discussed for objective 3 above.
5.	?	?	?	✓		✓	✓	Whilst effects on land and soils will depend on the location of new quarries it is likely that some effects on land and soils will occur regardless of the location. This option does however provide scope for developing in locations which are of lower quality agricultural land.
6.	-	-	-	✓			✓	Under this option extraction could take place anywhere in the Plan area and would not necessarily be located close to markets and therefore it may have negative effects in relation to emissions from transport.
7.	+	+	+ +	✓		✓	✓	Whilst effects on climate change adaptation would depend on the location of development, this option provides scope for quarries to be located in locations where there are opportunities for water storage.
8.	0	0	0					There will be no effects against this objective as the option is not considering the principle or amount of aggregate extraction.
9.	0	0	0					Although extraction can result in waste being produced, this option is considering the strategic locations for extraction, not the principle or amount of extraction.
10.	?	?	? +	✓		✓	✓	Whilst the degree of effects would be dependent upon the location of quarries and although there are areas of sand and gravel resource which exist away from historic assets, it is possible that there would be some degree of negative effects on the historic environment across the Plan area. In the longer term the option provides an opportunity for positive effects to be secured through restoration across the Plan area.
11.	-	-	-	✓		✓	✓	Whilst the degree of effects would be dependent upon the location of quarries and although there are areas of sand and gravel resource which exist away from designated landscapes, it is possible that there would be some degree of negative effects on the landscape across the Plan area. In particular the option supports the development of aggregates quarries in the National Park and the AONBs and which would have significant negative effects against the objective. In the longer term the option provides an opportunity for positive effects to be secured through restoration across the Plan area.
12.	+ -	+ -	+ -		✓		✓	The option does not influence the overall amount of aggregates extraction but would have positive effects on the economy by not restricting minerals supply to particular locations. By supporting extraction in AONBs and the National Park, there may be localised negative effects on the tourism economy, which is a key sector of the economy in these areas.
13.	+ -	+ -	+ -		✓		✓	The option does not influence the overall amount of aggregates extraction but would have positive effects on the vitality and viability of communities by not restricting minerals supply to particular locations, and therefore supporting job creation and associated knock-on effects across the Plan area. There may however be negative effects should the option support the development of quarries close to communities which are highly dependent on tourism, which would relate to many settlements in the National Park and AONBs as well as settlements across the Joint Plan area.

14.	-	-	-		✓	✓		Whilst effects will depend upon the location of any new quarries there is potential for negative effects on rights of way and other recreational assets. In particular, the option would support extraction in the National Park and AONBs, which would have effects on the potential for recreation within these areas, particularly in relation to the enjoyment and understanding of the National Park.
15.	?	?	?		✓	✓		Whether or not there are any effects on the health, safety and wellbeing of communities will depend upon the location of any quarries. There may be long term benefits from restoration/reclamation but again the benefits would depend on the location and the details of the restoration scheme.
16.	+	+	+ +	✓		✓	✓	Whilst effects on climate change adaptation would depend on the location of development, this option provides scope for quarries to be located in locations where there are opportunities for water storage.
17.	+	+	+		✓		✓	Whilst the option has no bearing on the amount of aggregates development coming forward, by not restricting the geographical locations from which it can be supplied it will help to further support the supply of minerals which may lead to a slightly more positive effect.

Proposed alternative option 6: (And) This option would only permit future extraction in the geographical area between the North York Moors and Yorkshire Dales National Parks where sites were to be restored to their former use.

(It is assumed that the 'area between the North York Moors and Yorkshire Dales National Parks' extends as far south as the southern-most point and as far north as the northern most point of the eastern boundary of the Dales and western boundary of the Moors.)

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0	0	?	✓		✓	✓	Within the area between the two National Parks, there may be reduced scope to secure improvements for biodiversity in the longer term depending on the extent to which original habitats supported biodiversity.
2.	0	0	0					Whilst the reclamation or restoration scheme may have impacts on water quality and supply, it is unlikely that this option in itself would lead to any effects as this would be dependent upon the circumstances of any

								individual site.
3.	0	0	0					No clear link
4.	0	0	0					No clear link
5.	0	0	? +	✓		✓	✓	In the longer term the option would aim to ensure that within the area between the two National Parks the agricultural land would be restored, however in reality this may prove difficult to achieve.
6.	0	0	0					No clear link
7.	0	0	--	✓		✓	✓	Under this option there would be no opportunities for storage of water through reclamation in the area between the National Parks and the option would therefore have negative effects on this objective in the longer term. The option would also not support enhancements for biodiversity in terms of reducing vulnerability to climate change which would also result in negative effects against this objective.
8.	0	0	0					No clear link
9.	0	0	0					No clear link
10.	0	0	? +	✓		✓	✓	In the longer term the option may present a lost opportunity for enhancements to the historic environment within the area between the National Parks. It could also protect the setting of historic assets of historic assets as the landscape will be restored to former use.
11.	0	0	? +	✓		✓	✓	In the longer term the option may present a lost opportunity for enhancements to the landscape within the area between the National Parks. It could also protect the setting of landscape assets of historic assets as the landscape will be restored to former use.
12.	0	0	0					It is unlikely there would be any effect against this objective.
13.	0	0	0					It is unlikely there would be any effect against this objective.
14.	0	0	? -	✓		✓		In the longer term the option would not lead to opportunities for improved or new public access or recreation opportunities within the area between the two National Parks.
15.	0	0	? -			✓		In the longer term the option would not lead to opportunities for improvements relating to the health, safety and wellbeing of communities, such as improved recreation provision at the site.
16.	-	-	-		✓	✓	✓	Under this option there would be fewer opportunities for storage of water through reclamation in the area between the National Parks and the option would therefore have negative effects on this objective in the

								longer term.
17.	0	0	0		✓		✓	No clear link

Proposed alternative option 7: (And) Notwithstanding the restrictions identified in Options 1 and 2, this option would support aggregates extraction adjacent to former quarries in the National Park.

(It is assumed that the option relates to former aggregates quarries, which are at Spaunton and Spikers Hill)

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	-	✓	✓	✓	✓	Spikers Hill quarry is close to the Forge Valley National Nature Reserve and SSSI and therefore any renewal of activity may have an impact upon these habitats and the biodiversity they support. This aside, part of the statutory National Park purposes relates to conserving and enhancing wildlife.
2.	-	-	-	✓	✓		✓	Spaunton quarry is within Source Protection Zone 2 and Spikers Hill is within Source Protection Zone 1 and there is therefore potential for effects on drinking water quality from new extraction in these locations. Both locations are also within a Nitrate Vulnerable Zone and there is therefore potential for pollution of water bodies.
3.	- +	- +	- +		✓		✓	One of these locations is not particularly close to markets for aggregates and would therefore not help to reduce transport effects. On the other hand, Spikers Hill is quite close to Scarborough.
4.	0	0	0					The sites are located away from AQMAs and, whilst there may be localised effects from vehicles on communities nearby, it is considered that as the overall amount of extraction is assumed to be the same either with or without this option across the Plan area effects from air quality would be generally the same, although possibly slightly greater negative effects should vehicles have to travel longer distances although this is not

								considered sufficient to warrant anything other than a 'no effects' score.
5.	- +	- +	- +	✓		✓		Spaunton quarry is on Grade 3 agricultural land whilst Spikers Hill is on Grade 4. Development around Spaunton quarry may result in the loss of high quality agricultural land whilst development close to Spikers Hill may displace the loss of high quality agricultural land elsewhere.
6.	-	-	-		✓		✓	These two locations are not particularly close to markets for aggregates and would therefore not help to minimise emissions from transport.
7.	0	0	+		✓		✓	These are possibly relatively good locations for storage of rain water and prevention of flooding downstream, and therefore in the long term could have positive effects on reducing flooding in this respect.
8.	+	+	+	✓		✓		Under this option there may be opportunities to use infrastructure which still exists in relation to former quarries.
9.	+	+	+	✓		✓		Under this option the re-use of materials would be supported where infrastructure which exists in relation to former quarries still exists.
10.	-	-	-	✓		✓		There are Scheduled Monuments in the vicinity of both former quarries and therefore the option may have negative effects on these.
11.	-	-	-	✓	✓	✓		Whilst landscape effects could be mitigated to a degree, the location of the former quarries in the National Park is likely to have negative effects on the landscape.
12.	+ -	+ -	+ -		✓		✓	The option would be likely to create positive effects in terms of job creation in the areas around the quarries, however assuming that overall amount of minerals extraction is not affected this would displace potential job creation from other parts of the Plan area.
13.	+ -	+ -	+ -		✓		✓	The option may have positive effects on the viability and vitality of communities around the former quarries through job creation and associated knock-on effects, however this may be displaced from other parts of the Plan area where extraction would have otherwise taken place. There may also be negative effects on vitality and viability should the presence of a quarry result in a decrease in tourism numbers within a community which is highly dependent on this sector.
14.	-	-	-	✓	✓	✓	✓	Under this option there may be negative effects on opportunities for the enjoyment and understanding of the special qualities of the National Park as there are rights of way close to both former quarries. This could relate to either the loss of rights of way or harm to peoples' enjoyment of the Park through disturbance and activity.
15.	- +	- +	- +	✓	✓	✓	✓	Under this option there may be negative effects on the health, safety and wellbeing of communities within the Park however this may displace effects which would have occurred in relation to communities elsewhere in the Plan area so overall the effects on the Plan area are neutral.
16.	0	0	+		✓		✓	These are possibly relatively good locations for storage of rain water and prevention of flooding downstream, and therefore in the long term could have positive effects on reducing flooding in this respect.
17.	0	0	0	✓		✓		.

Proposed alternative option 8: (And) This option could work alongside Options 1 or 2 and, notwithstanding any restrictions applied through options 1 and 2, would support the use of excess crushed rock from building stone sites in the National Park and AONBs as aggregates in the local area.

Note: It is assumed that the use of excess crushed rock does not involve additional quarrying and is instead use of a waste product that would otherwise remain on-site. Effects relating to extracting the building stone are considered under the assessment of options under ID20 and ID21 and would be dependent upon which option is progressed.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					There would be no effect at the extraction sites on biodiversity additional to those arising from extraction of the building stone. However, there may be slight positive effects elsewhere should there be a need for less extraction at other locations, although this is likely to be minor as building stone quarries are relatively small and few and not significant enough to warrant a positive score.
2.	0	0	0					There would be no effect on water quality and supply at the extraction sites additional to those arising from the extraction of building stone. However, there may be slight positive effects elsewhere should there be a need for less extraction at other locations, although this is likely to be minor as building stone quarries are relatively small and few and not significant enough to warrant a positive effect.
3.	+	+	+	✓			✓	As the option specifies that the crushed rock would be used in the local area it is possible that the option would reduce transport miles as it is likely to replace crushed rock that would have alternatively been brought in to these areas from further afield.
4.	0	0	0					There would be no effect at the extraction sites on biodiversity additional to those arising from extraction of the building stone. However due to the need to transport the crushed rock it is possible that additional vehicle movements could lead to air quality issues in nearby communities, however this may be balanced by the need

								for fewer vehicles at other crushed rock extraction sites.
5.	+	+	+	✓			✓	By using rock which has already been extracted, this option reduces the amount of land needed for new quarrying activities, although the effect may be relatively minimal as the building stone quarries are relatively small and few.
6.	+	+	+	✓			✓	As the option specifies that the crushed rock would be used in the local area it is possible that the option would reduce transport miles and hence carbon emissions as it is likely to replace crushed rock that would have alternatively been brought in to these areas from further afield.
7.	0	0	0					No effects
8.	+	+	+	✓			✓	By using rock which has already been extracted (although not previously used) this option reduces the need to extract further minerals and will therefore have a positive effect on this objective.
9.	++	++	++	✓		✓		This option would have a strong positive effect on minimising waste by supporting the use of by-products of building stone extraction.
10.	+	+	+	✓		✓		There would be no effect on the historic environment at the extraction sites additional to those arising from extraction of the building stone. However, there may be slight positive effects elsewhere should there be a need for less extraction at other locations, although this is likely to be minor as building stone quarries are relatively small and few and not significant enough to warrant a positive score. There may however be indirect positive effects should the option support the viability of building stone quarries and thus enable supply of building stone to be continued / provided from within National Parks and AONBs.
11.	0	0	0					There would be no effect on the landscape at the extraction sites additional to those arising from extraction of the building stone. However, there may be slight positive effects elsewhere should there be a need for less extraction at other locations, although this is likely to be minor as building stone quarries are relatively small and few and not significant enough to warrant a positive score.
12.	+	+	+	✓			✓	The provision of crushed rock may help to support local economies through job creation / retention at building stone quarries.
13.	+	+	+	✓			✓	The provision of crushed rock may help to support the viability and vitality of communities through job creation / retention at building stone quarries.
14.	0	0	0					There would be no effect on recreational opportunities at the extraction sites additional to those arising from extraction of the building stone. However, there may be slight positive effects elsewhere should there be a need for less extraction at other locations, although this is likely to be minor as building stone quarries are relatively small and few and not significant enough to warrant a positive score.
15.	-	-	-	✓			✓	There may be effects on the health, safety and wellbeing of communities close to building stone quarries should the option result in additional vehicle movements, although due to the scale of building stone quarries

								this is not likely to be of a scale associated with typical commercial aggregates quarries.
16.	0	0	0					No effects
17.	+ +	+ +	+ +	✓		✓		The option will support the supply of aggregates and may also help to sustain commercially viable building stone quarries, thus supporting the provision of both minerals.

Summary of assessment

Option 1 would have clear benefits for the landscape and natural and historic environment whilst enabling supply of aggregates to be maintained. In particular significant positive effects would be evident in the AONBs which currently contain aggregates quarries. Option 3 would place greater uncertainty over the positive effects observed for the National Park and AONBs as a result of both Options 1 and 2, although would have positive effects in relation to supply of minerals and the economy, whilst Option 7 is likely to lead to negative effects on the National Park without necessarily benefitting the economy overall.

Options 2 and 4 would potentially have negative effects on the environment of the City of York (with effects under Option 2 being greater than effects under Option 4) but would potentially displace such effects from elsewhere in the Plan area and enable aggregates required within York to be sourced locally, thus having a positive effect in terms of transportation impacts. Under Option 5 there would potentially be negative effects on the environment across the Plan area although it scores positively in terms of the economy and ensuring supply of aggregates.

Acting alongside the overall strategy, Option 6 would have negative effects in the longer term as it would not support securing enhancements for the landscape, biodiversity or recreation. Option 8 would provide positive effects in relation to the supply of minerals and on minimising environmental effects.

Recommendations

It is recommended that a combination of options 1, 2 and 3 be progressed, whereby the policy is clear that extraction should take place outside of the National Park and the AONBs as a first priority but within the rest of the NYCC area and the City of York area. Option 8 should also be supported as a further means of enabling aggregates extraction with minimal environmental effects.

Locational Approach to New Sources of Supply of Aggregates (id02)

Assumptions – It is assumed that under all options development is unlikely to take place in National Parks or AONBs. These options relate to general aggregates extraction. Extraction for use on specific projects is considered in the Borrow Pits options.

Option 1
This option could seek to establish the principle that new sources of supply of aggregates are provided as close as practicable to the main external markets, including Tees Valley and County Durham areas, and West and South Yorkshire, as well as, for sites expected to serve mainly internal markets, the main population centres of York, Harrogate and Scarborough.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓		✓		This option generally steers aggregate activity away from the areas with the highest concentrations of internationally and nationally important protected sites and important habitats such as ancient woodland, though habitats without national designations have a broader distribution (so the option neither steers development towards or away from these sites). In the longer term the restoration potential of aggregates sites that are steered to particular areas could offer opportunities to create linked habitats, affecting the SA objective positively.
2.	?	?	?	✓		✓	✓	This option will have an uncertain effect on water. There is some potential for overlap with Nitrate Vulnerable Zones (so potential for a minor cumulative effect on water quality) though the most significant effects could be in relation to groundwater source protection zones, which tend to be more sporadically placed along the central part of the plan area (though there are significant areas elsewhere, e.g. National Parks). So it can't be said whether this option is more or less likely to direct aggregates supply to areas that are likely to have an adverse effect on water quality / quantity.
3.	+	+	+ +	✓		✓		The net effect of this option would be to help ensure that, in general, road journeys between the source of aggregates and markets would be of lower distance, though this positive effect may be moderated in specific locations if congested routes or populated areas are used by operators. The positive effect should get better

								over time as more and more sites are located closer to markets.
4.	+	+	+	✓		✓		Air quality, under this option, may improve on the whole over time as fewer miles would be covered by vehicles. However, some local effects (e.g. dust from vehicles impacting on buildings) may result, depending on routes chosen at a site specific level.
5.	-	-	-	✓		✓		This option displays minor negative effects as while there is potentially some opportunity to avoid some of the most agriculturally productive land, the areas that this option would steer aggregates extraction towards are still dominated by grade 3 land according to the Agricultural Land Classification. However at an individual site level there is the potential for local variations in soil quality to be encountered. As any policy emerging from this option would exhibit cumulative effects (as more and more sites are considered under the resultant policy) effects would get worse over time.
6.	+	+	+ +	✓			✓	As this option would reduce distance travelled and thus net pollution, it is likely to be beneficial in terms of reducing contributory factors to climate change; an effect which would get better over time as the policies resulting from the option are repeatedly used.
7.	0	0	+	✓			✓	While in the short to medium term there is likely to be little significant effect on adaptation to climate change, because this option appears to slightly favour areas higher up catchments there is likely to be greater opportunity for the creation of flood storage (e.g. at sand and gravel sites) through restoration.
8.	0	0	0					No clear link
9.	0	0	0					No clear link
10.	-	-	-	✓		✓	✓	Whilst this option would reduce the distances which aggregates have to travel, a strategy which seeks to establish new sources of supply as close as practicable to the markets could put pressure for the establishment of new quarries in some of the most historic environment-sensitive parts of the Joint Plan area. This approach could, potentially, pose a greater threat to the historic environment of the county than a strategy which enables the assessed needs for sand and gravel to be met from across the whole of the Plan area (excluding the National Parks and AONBs).
11.	0	-	-	✓		✓		There is some potential for views from high points in the National Parks / AONBs to be affected if a number of sites become visible across a landscape under this option. Therefore a cumulative longer term effect is noted.
12.	+	+	+ +	✓		✓		Generally this option is compatible with the economic development objective as it potentially lowers the carbon footprint of aggregates and it provides a supply of materials to allow for cost effective economic development. These positive effects are likely to grow stronger over time.
13.	+	+	+	✓			✓	While there will be positive impacts on the economy, as shown by the previous objective, there may also be some detrimental impacts on tourism (for instance, if a number of quarries are visible from the higher ground of national parks, this may alter that area's attractiveness to tourists).
	-	-	-					

14.	-	-	+ -		✓	✓		This option would have negative effects on the most used parts of the rights of way and green infrastructure networks (i.e. those areas closest to settlements). In the longer term new green infrastructure may be created as a result of site restoration
15.	-	-	+ -	✓		✓	✓	This option may lead to more traffic on the local road network closer to markets (and thus closer to settlements) with effects on wellbeing arising from noisy vehicles or traffic risk. In the longer term, if restored sites have some recreational or aesthetic value, there may also be some positive effects.
16.	0	0	+	✓		✓		While in the short to medium term there is likely to be little significant effect on flood risk (as much of this development is water compatible), because this option appears to slightly favour areas higher up catchments there is likely to be greater opportunity for the creation of flood storage (e.g. at sand and gravel sites) through restoration
17.	+	+	+ +	✓		✓		As this option shortens supply chains it performs well against this SA objective (as shortened supply chains is the only particularly relevant sub objective), particularly in the longer term.

Option 2

This option would seek to ensure that new sources of supply of aggregates are provided in proximity to the A1 to help provide flexibility in supply.

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SA objective	**Impact / timescale**			**Type of effect**				**Analysis**
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	+	+	+	✓		✓		This option generally steers minerals and waste activity away from the areas with the highest concentrations of internationally and nationally important protected sites and important habitats such as ancient woodland, through habitats without national designations have a broader distribution (so the option neither steers development towards or away from these sites).
2.	-	-	-	✓		✓	✓	As an, albeit sporadically distributed, concentration of ground water source protection zones exists in the central part of the plan area, roughly aligned with the A1 corridor, there is some potential that there may be negative effects associated with this option (e.g. through sites requiring dewatering). There are also principle aquifers close to the A1.

3.	+	+	+	✓		✓		Under this option there is likely to be greater potential for operators to use the A1, which would help to avoid some impacts on communities from transport.
4.	+	+	+	✓		✓		Under this option there is likely to be greater potential for operators to use the A1, which would help to avoid some impacts on communities, and may lessen journey length as the area is a net exporter of aggregates.
5.	-	-	-	✓		✓		Under this option there is a greater chance than under option 1 that aggregates sites would be directed towards Grade 2 agricultural land. Any policy emerging form this option would exhibit cumulative effects as more and more sites are considered under the policy, effects would get worse over time.
6.	+	+	+	✓			✓	Under this option there is likely to be greater potential for operators to use the A1, which may lessen journey length as the area is a net exporter of aggregates. This would result in lower greenhouse gas emissions.
7.	0	0	+	✓		✓		While in the short to medium term there is likely to be little significant effect on adaptation to climate change, because this option appears to slightly favour areas higher up catchments there is likely to be greater opportunity for the creation of flood storage through restoration.
8.	0	0	0					No clear link
9.	0	0	0					No clear link
10.	-	-	-	✓		✓	✓	This option would provide good access routes to the external markets for sand and gravel. However, there is a considerable concentration of designated and undesignated heritage assets along the route of the A1 as it follows the Southern Magnesian Limestone Ridge. Consequently there may be an increased likelihood of an impact from concentrating aggregate supply from this part of the Joint Plan area.
11.	0	0	0	✓		✓		No significant effect.
12.	+	+	+	✓		✓		This option is likely to make it quicker to access markets (with benefits to the competitiveness of quarry operators and the construction industry in markets), though there may be some longer journeys involved, thus lessening positive effects as fuel costs (versus time benefits) become more significant.
13.	+	+	+	✓		✓		Under this option ease of access to markets and ease of access to extraction sites via the A1 (and its proximity to key settlements) will bring some benefits in terms of accessible jobs
14.	-	-	+ -		✓	✓		Like option 1 this objective would have negative effects on the green infrastructure and rights of way network, though to a lesser degree than option 1 as in some cases the rights of way network will be less well used. In the longer term restoration may bring some benefits.

15.	+	+	+ +	✓		✓		This objective is likely to reduce the net level of minerals traffic routed through settlements and is broadly positive (although there remains some uncertainty in relation to routes taken to Scarborough from the A1)
16.	0	0	+	✓		✓		While in the short to medium term there is likely to be little significant effect on flood risk, because this option appears to slightly favour areas higher up catchments there is likely to be greater opportunity for the creation of flood storage through restoration.
17.	+	+	+	✓		✓		In many cases this option will result in shortened supply chains (and quicker delivery), though the effect is not as strong as option 1

Option 3
This option would not seek to direct new sources of supply to specific areas in proximity to markets but would consider the whole area of potential resources as being suitable in principle for the identification of new sites or areas, subject to testing against other relevant criteria and constraints.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?	✓		✓		Under this option, uncertainty is recorded as it is not known where sites, ultimately will be located, nor what criteria or constraints will be applied. While to a degree, high fuel costs may provide some incentive to locate closer to settlements, this is uncertain. It should also be noted that, as no locational steer is applied, there may be indirect effects (of unknown significance) on biodiversity through factors such as increased levels of noise disturbance or pollution, though the option may offer more choice of sites.
2.	?	?	?					Although this option could conceivably result in greater use of minerals well away from source protection zones or nitrate vulnerable zones, the distribution of minerals means that the range of potential locations is more limited. This makes it highly uncertain as to whether there may be a net positive or negative effect resulting from this option.
3.	-	-	-	✓		✓		Under this option, the effects on the transport SA objective are considered to have a net negative effect. This is because there is less restraint on location, which, accepting that aggregates can only be extracted where they are found, could mean that more remote locations are utilised. This will be moderated to a degree by other factors such as fuel costs.
4.	+ / -	+ / -	+ / -	✓		✓		This option is more likely to have negative effects on air quality as there is greater potential for more pollution to be generated by longer journeys, and there is the potential for those journeys to be routed close to receptors for air pollution, such as communities. However, there is also the potential for more diffuse aggregates development to occur under this option, which would mean that air pollution is less likely to have cumulative local effects with other adjacent minerals developments (though market forces may counter this positive effect to a degree, particularly where resources in a certain location enjoy some competitive advantage which several operators wish to benefit from).

5.	? -	? -	? -	✓		✓		This option would potentially lead to more dispersed aggregates extraction across an area that contains a large proportion of best and most versatile land. However, if 'testing against relevant criteria and constraints' placed some emphasis on conserving soils, there might be a greater degree of locational choice under this option, allowing for some higher grades of land to be avoided.
6.	-	-	-	✓			✓	This option is likely to lead to longer journeys from more dispersed locations, which equates to greater carbon dioxide emissions. It may also lead to some more remote extraction in areas that currently act as carbon sinks (e.g. woodland, heathland) though this effect is uncertain.
7.	?	?	?	✓		✓		Although this option could lead to more dispersed development, for sand and gravel sites at least, there may be some opportunity for flood storage in the longer term; though because of a potentially more isolated distribution of sites, competing land uses may be prioritised above flood storage.
8.	0	0	0					No clear link
9.	0	0	0					No clear link
10.	?	?	?	✓		✓	✓	Whilst this option would be likely to increase the distances which aggregates would have to travel, such a strategy would enable a choice of sites to be made which better safeguards the historic environment of the plan area. As the location of site is unknown at present, however, the impact on the SA objective is uncertain.
11.	?	?	?					It is uncertain whether effects on landscapes and townscapes will occur under this option as it is unknown what criteria and constraints will be considered, though the option may offer more choice of sites.
12.	+	+ +	+ +	✓		✓		Arguably this option allows the market to decide on the optimum position of sites when all factors (costs, benefits and the location of minerals) are considered, leading to positive effects. Although some sites may be located remotely if they remain viable, a fuller range of sites, some of which may be close to markets, will be available for consideration (subject to criteria and constraints).
13.	? +	? +	? +	✓		✓		Although this option gives the market more freedom to determine to decide on the location of sites, which should create more competitive extraction sites and thus more employment opportunities, much will depend on the meaning of 'criteria and constraints' which will determine the degree of positive effect.
14.	-	-	+ -		✓	✓		This option might allow some aggregates development close to protected landscapes (though it would increase choice of location), which would have negative effects on their recreational value. In the longer term restoration might increase recreational value, but there may be less opportunities for any future strategic approach to increasing recreational potential through restoration (e.g. across multiple sites in a green infrastructure corridor).
15.	?	?	?					Under this objective it is hard to predict whether more or less traffic would be routed through communities (with a detrimental effect on health and wellbeing), though the market may dictate that shorter journeys to market may be more desirable, depending on other cost / benefit factors.
16.	?	?	?					Although this option could lead to more dispersed development, for sand and gravel sites at least, there may

								be some opportunity for flood storage in the longer term; through because of a potentially more isolated distribution of sites, competing land uses may be prioritised above flood storage.
17.	?	?	?					Under this objective it is uncertain whether shortened supply chains might result, though market forces may bring sites closer to markets in many cases, or they may lead to a coalescence of some sites of the same type where there are benefits of clustering.

Proposed alternative option 4: (Or) This option would give priority to proposals which locate sites in close proximity to market and good transport networks and suitable restoration proposals. Extraction from more restricted areas would be allowed if there is suitable justification for it.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	+ ?	+ ?	+ ?	✓		✓		This option generally steers minerals and waste activity away from the areas with the highest concentrations of internationally and nationally important protected sites and important habitats such as ancient woodland, though habitats without national designations have a broader distribution (so the option neither steers development towards or away from these sites). Given that it would also promote suitable restoration proposals effects are likely to be positive in the short and medium term, and more positive in the longer term as sites are restored (some of which may be restored to biodiversity / geo-diversity). However, the idea that extraction from more remote areas be allowed if there is a suitable justification for it would potentially open up areas that are ecologically richer to extraction. However, the degree to which this occurs is subject to the actual location of the site and what precisely is meant by 'suitable justification'. This is currently unknown. So there is a high degree of uncertainty with this assessment.
2.	-	-	-	✓		✓	✓	There is some potential for overlap with Nitrate Vulnerable Zones (so potential for a minor cumulative effect on water quality) close to markets though the most significant effects could be in relation to groundwater source protection zones, which tend to be more sporadically placed along the central part of the plan area and are

	?	?	?					roughly aligned with the key A1 transport corridor, There are also principle aquifers close to the A1 and the east coast main line. However, more remote areas could also intersect with groundwater source protection zones as well as principal aquifers. Broadly the assessment scores the effects as being uncertain to negative.
3.	+ ?	+ ?	+ ?	✓		✓		This option would allow for development to be located in more sustainable locations (close to market / good transport) but would also open the door to more remote locations, which would be less sustainable. Much would depend on what is meant by 'suitable justification' so there is a high degree of uncertainty with this assessment.
4.	- + ?	- + ?	- + ?	✓		✓		This option would allow for development to be located in more sustainable locations (close to market / good transport) but would also open the door to more remote locations, which would be less sustainable and therefore potentially more polluting. That said, dust impacts, particularly on human receptors in remote locations could be lower, though impacts on habitats may still occur. Much would depend on the actual location of sites and what is meant by 'suitable justification' so there is a high degree of uncertainty with this assessment.
5.	- ?	- ?	- ?	✓		✓		This option displays minor negative effects as while there is potentially some opportunity to avoid some of the most agriculturally productive land, the areas that this option would steer aggregates extraction towards areas still dominated by grade 3 land according to the Agricultural Land Classification. However at an individual site level there is the potential for local variations in soil quality to be encountered. As any policy emerging from this option would exhibit cumulative effects (as more and more sites are considered under the resultant policy) effects would get worse over time. If sites are located in remote locations effects would be dependent on the actual location of sites and what is meant by 'suitable justification' so there is a high degree of uncertainty with this assessment.
6.	+ ?	+ ?	+ ?	✓			✓	Generally this option will reduce greenhouse gas emissions form transport. However, there is some uncertainty over remote locations and the suitable justification that will be applied, as remote locations could generate longer journeys and potentially degrade carbon sinks (e.g. in moorland locations).
7.	+	+	+	✓			✓	While in the short to medium term there is likely to be little significant effect on adaptation to climate change, because this option appears to slightly favour areas higher up catchments (close to markets and possibly remote areas) there is likely to be greater opportunity for the creation of flood storage through restoration.
8.	0	0	0					No clear link as this option is about locational principles rather than support for or quanta of extraction.

9.	0	0	0					No clear link as this option is about locational principles.
10.	- ?	- ?	- ?	✓		✓	✓	Whilst this option would reduce the distances which aggregates have to travel, a strategy which seeks to establish new sources of supply as close as practicable to the markets and good transport networks could put pressure for the establishment of new quarries in some of the most historic environment-sensitive parts of the Joint Plan area. It is unknown if more remote locations will be better or worse for the historic environment.
11.	-	- --	- --	✓		✓		There is some potential for views from high points in the National Parks / AONBs to be affected if a number of sites become visible across a landscape under this option. Therefore a cumulative longer term effect is noted. While allowing extraction in remote areas has effects dependent on location, remote locations tend to co-incide with some of the higher quality landscapes, or at least the least visually disturbed landscapes in the plan area. This would potentially add to the negative effects.
12.	+	+	+ + +	✓		✓		Generally this option is compatible with the economic development objective as it potentially lowers the carbon footprint of aggregates and it provides a supply of materials to allow for cost effective economic development. These positive effects are likely to grow stronger over time. While remote locations are allowed, subject to suitable justification, which may run counter to these benefits, having the option to allow remote locations allows a degree of flexibility which may be economically advantageous.
13.	+ -	+ -	+ -	✓			✓	While there will be positive impacts on the economy, as shown by the previous objective, there may also be some detrimental impacts on tourism (for instance, if a number of quarries are visible from the higher ground of national parks, or if development in remote locations conflicts with the tourist use of those locations).
14.	-	-	+ -	✓	✓	✓		This option would have negative effects on the most used parts of the rights of way and green infrastructure networks (i.e. those areas closest to settlements). In the longer term new green infrastructure may be created as a result of site restoration. However, development in in remote locations, while interfering less with recreation during it operational life, would have lesser benefits during restoration.
15.	-	-	+ -		✓	✓		This option may lead to more traffic on the local road network closer to markets (and thus closer to settlements) with effects on wellbeing arising from noisy vehicles or traffic risk. In the longer term, if restored sites have some recreational or aesthetic value, there may also be some positive effects. In remote areas the effects on wellbeing will be limited.
16.	0	0	+					While in the short to medium term there is likely to be little significant effect on flood risk (as much of this development is water compatible), because this option appears to slightly favour areas higher up catchments there is likely to be greater opportunity for the creation of flood storage (e.g. at sand and gravel sites) through restoration.
17.	+	+	+	✓		✓	✓	As this option shortens supply chains it performs well against this SA objective (as shortened supply chains is

	-	-	+ -					the only particularly relevant sub objective), particularly in the longer term. However, if remote locations are chosen this would lengthen supply chains for building materials.

Proposed alternative option 5: (And) **Under this approach the key locational guiding principle would be to minimise impacts on climate change and food supply by aggregate sites**

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+ -	+ -	+ -	✓		✓	✓	In addition to other options, using climate change and food supply as a guiding principle would further reinforce proximity to markets and likely result in sites that avoid damaging the key climate regulating functions of habitats, such as the capacity for some habitats such as peat and woodland to sequester carbon. It would also seek to avoid productive land which is important for food production. This might favour sites in, for example, poor soils (such as calcareous grasslands), both of which can be valuable for biodiversity. The net effect is likely to display a range of positive and negative effects. These direct effects sit alongside an indirect effect, which is that greenhouse gas emissions would be reduced, which in the long run will have a beneficial effect on the wildlife that is vulnerable to climate change.
2.	?	?	?	✓		✓	✓	At face value this option would make little difference to water, although it would re-inforce option 1's approach of adopting proximity to market which could have effects on Nitrate Vulnerable Zones, depending on location and the types of operations employed. It is unclear, however whether 'impacts on climate change' is broad enough to encompass the factors that exacerbate the effects of climate change, such as minerals sites that may contribute to water stress. Overall: uncertain.
3.	+	+	+	✓		✓		This would support location close to markets in particular, so would reinforce lower transport impacts when considered alongside other options.
4.	+	+	+	✓			✓	As this option in effect supports shorter or sustainable journeys to markets, it is likely to make a positive contribution to the air quality objective.
5.	++	++	++	✓		✓		Minimising impacts on food supply is likely to avoid best and most versatile / productive land.
6.	++	++	++	✓		✓		Minimising impacts on climate change is likely to strongly support this objective.

7.	?	?	?					It is unclear whether 'minimising impacts on climate change' is likely to encompass issues of adapting to climate change and avoiding factors that exacerbate the effects of climate change. If the option were to 'minimise the impact of climate change' rather than 'on climate change' this option would score very positively under this objective.
8.	0	0	0					No clear link
9.	0	0	0					No clear link
10.	0	0	0					No clear link
11.	+ -	+ -	+ -	✓		✓	✓	This option is likely to protect some important components of the landscape, such as productive farmland, and certain habitats important for carbon storage. It may however, intensify development in some other areas, particularly close to settlements and in areas that are neither productive farmland or have important carbon storage potential.
12.	-	-	-	✓		✓		This option may limit the range of sites that could be developed, which will negatively impact upon the economy of sites as some viable sites may no longer be accessible.
13.	-	-	-	✓			✓	As this option has potentially negative economic consequences it would potentially result in less jobs for communities.
14.	0 +	0 +	0 +	✓			✓	There may be no effect from this option, or if it successfully protects accessible woodlands and uplands then there will be an indirect benefit.
15.	- +	- +	- +	✓			✓	If, because this option limits the potential sites that can be used, there may be some concentration of sites which would have a deleterious effect on wellbeing as a variety of amenity impacts my occur locally. However, the option also protects some of our wildest natural assets, such as woodlands and peatlands, which if visible / accessible can have some wellbeing benefits.
16.	+	+	+	✓			✓	Protecting certain habitats that contribute to climate change, such as woodlands and peatlands, will help hold water as it flows down a catchment.
17.	+	+	+	✓		✓		This option supports aggregates development closer to markets, which will help shorten supply chains.

Proposed alternative option 6: (Or) Under this option Areas of Search would be used to help identify future sites for minerals development and strategic restoration proposals would be considered as part of the assessment.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓		✓		Areas of search coupled with strategic restoration proposals are likely to benefit biodiversity and geo-diversity. This is because a more detailed examination of local constraints and opportunities can be undertaken when identifying areas of search, which would allow future Environmental Impact Assessments to focus on relevant biodiversity and geo-diversity issues (though identification of sites would allow a more detailed consideration). This option will also allow a strategic overview of the opportunities for restoration to be taken, so from a biodiversity / geo-diversity perspective this could allow for local ecological networks / stepping stones and key local habitats or geological features (or gaps in such features) to be identified.
2.	+	+	+	✓		✓		Areas of search coupled with strategic restoration proposals are likely to benefit water assets. This is because a more detailed examination of local constraints and opportunities can be undertaken when identifying areas of search, which would allow future Environmental Impact Assessments to focus on relevant water quality and quantity issues (though identification of sites would allow a more detailed consideration).
3.	0	0	0					No clear link
4.	+	+	+	✓		✓		Areas of search coupled with strategic restoration proposals are likely to benefit air quality issues. This is because a more detailed examination of local receptors can be undertaken when identifying areas of search, which would allow future Environmental Impact Assessments to focus on relevant air quality issues (though identification of sites would allow a more detailed consideration).
5.	+	+	+	✓		✓		Areas of search coupled with strategic restoration proposals are likely to benefit soils. This is because a more detailed examination of local constraints and opportunities can be undertaken when identifying areas of search, which would allow future Environmental Impact Assessments to focus on relevant soil / land issues (though identification of sites would allow a more detailed consideration). This option will also allow a strategic overview of the opportunities for restoration to be taken, so from a soils perspective this could allow for an appropriate steer to restore to best and most versatile land to be applied.
6.	0	0	0					No clear link

7.	+	+	+	✓		✓		Areas of search coupled with strategic restoration proposals are likely to benefit climate adaptation. This is because a more detailed examination of local climate change issues can be undertaken when identifying areas of search, which would allow future Environmental Impact Assessments to focus on relevant priorities for climate adaptation (though identification of sites would allow a more detailed consideration). This option will also allow a strategic overview of the opportunities for restoration to be taken, so from a climate adaptation perspective this could allow for local ecological networks / stepping stones, water storage or green infrastructure opportunities to be identified.
8.	0	0	0					No clear link
9.	0	0	0					No clear link
10.	+	+	+	✓		✓		Areas of search coupled with strategic restoration proposals are likely to benefit the historic environment. This is because a more detailed examination of local constraints and opportunities can be undertaken when identifying areas of search, which would allow future Environmental Impact Assessments to focus on relevant historic environment issues (though identification of sites would allow a more detailed consideration). This option will also allow a strategic overview of the opportunities for restoration to be taken, so from a historic environment perspective this could allow for traditional landscapes to be re-instated or viewpoints to be preserved.
11.	+	+	+	✓		✓		Areas of search coupled with strategic restoration proposals are likely to benefit the landscape. This is because a more detailed examination of local constraints and opportunities can be undertaken when identifying areas of search, which would allow future Environmental Impact Assessments to focus on relevant landscape issues (though identification of sites would allow a more detailed consideration). This option will also allow a strategic overview of the opportunities for restoration to be taken, so from a landscape perspective this could allow for landscapes aligned with the landscape character assessment to be re-instated or viewpoints to be preserved.
12.	-	-	-		✓		✓	This would provide less certainty to developers.
13.	+	+	+	✓		✓		Areas of search coupled with strategic restoration proposals are likely to benefit the tourism and community vitality. This is because a more detailed examination of local constraints can be undertaken when identifying areas of search, which would allow future Environmental Impact Assessments to focus on relevant issues (though identification of sites would allow a more detailed consideration). This option will also allow a strategic overview of the opportunities for restoration to be taken, so from a community benefit and tourism perspective this could allow for the local communities needs and the need to bring in tourist revenue to local communities to be taken into account.
14.	+	+	+	✓		✓		Areas of search coupled with strategic restoration proposals are likely to benefit the recreation, leisure and learning. This is because a more detailed examination of local constraints and opportunities can be

								undertaken when identifying areas of search, which would allow future Environmental Impact Assessments to focus on relevant recreation etc. issues (though identification of sites would allow a more detailed consideration). This option will also allow a strategic overview of the opportunities for restoration to be taken, so from a recreation perspective this could allow for greater access or on site education where relevant.
15.	+	+	+	✓		✓		Areas of search coupled with strategic restoration proposals are likely to benefit health and wellbeing. This is because a more detailed examination of local constraints and opportunities for health and wellbeing can be undertaken when identifying areas of search, which would allow future Environmental Impact Assessments to focus on relevant health and wellbeing etc. issues (though identification of sites would allow a more detailed consideration). This option will also allow a strategic overview of the opportunities for restoration to be taken, so from a health and wellbeing perspective this could allow for greater opportunities for walking or cycling or experiencing the outdoors, or areas to deal with risks such as flooding where relevant.
16.	+	+	+	✓		✓		Areas of search coupled with strategic restoration proposals are likely to benefit flood risk. This is because a more detailed examination of local issues for flooding can be undertaken when identifying areas of search, which would allow future Environmental Impact Assessments to focus on relevant flooding issues (though identification of sites would allow a more detailed consideration). This option will also allow a strategic overview of the opportunities for restoration to be taken, so from a floods perspective this could allow for greater opportunities for the creation of flood storage or natural flood management.
17.	0	0	0					No clear link

Proposed alternative option 7: (Or) **This option would give priority to extending existing quarries instead of permitting new quarries**								
SA objective	**Impact / timescale**			**Type of effect**				**Analysis**
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	+ ?	+ ?	+ ?	✓	✓		✓	This option would reduce the need to develop new supporting infrastructure to sites which would have small scale benefits for biodiversity as it would reduce land take. To a certain degree wildlife will be 'habitualised' (or will already have gone) from existing sites. However, there is significant uncertainty here as the biodiversity and geo-diversity effects will vary significantly between sites and there is the potential for extending an

								existing site to be worse than a new site if the existing site is surrounded by scarce habitats.
2.	0	0	0					The effects of this option on the water quality and supply are likely to be broadly neutral.
3.	- +	- +	- +	✓	✓	✓		This option is likely to make it more difficult to choose sustainable locations for aggregates extraction as extended quarries will help maintain the status quo in terms of traffic. That said, many existing sites are quite close to markets so effects are likely to be of a lower order. A benefit, however, is that some construction traffic impacts for supporting infrastructure will be avoided,
4.	+ -	+ -	+ -	✓	✓		✓	This option is likely to make it more difficult to choose sustainable locations for aggregates extraction as extended quarries will help maintain the status quo in terms of traffic which may sustain the generation of air pollution at a local scale. That said, many existing sites are quite close to markets so effects are likely to be of a lower order. A benefit, however, is that some construction traffic impacts for supporting infrastructure will be avoided, which will avoid some impacts associated with the construction phase such as dust.
5.	+ -	+ -	+ -	✓		✓		This option would consume less land as existing sites benefit from existing supporting infrastructure. However, some of that land is likely to be best and most versatile land.
6.	0	0	0					No clear link
7.	0	0	0 -		✓		✓	On the face of it this option would have no clear link, though this option could delay some implementation of restoration to flood prevention.
8.	+	+	+	✓		✓		Resources would be minimised as extended existing sites would need little in the way of new supporting infrastructure.
9.	0	0	0					No significant effects
10.	+ ?	+ ?	+ ?	✓		✓		In theory this option would have a lesser land take than other options as it would avoid the need for too much new supporting infrastructure for sites. This might benefit historic sites which could be harmed by land take. In practice much is unknown, and would depend on the historic assets around existing compared to new sites.
11.	+ + ?	+ + ?	+ + ?	✓		✓		Extensions to existing quarries are likely to create less visual disturbance than new sites on balance, though much depends on the local context.
12.	0	0	0	✓		✓		Supporting exiting sites would help sustain existing jobs. Developing new sites would generate new jobs. It is felt that the jobs and revenue associated with extended sites will be broadly similar to new sites. So the effect is neutral.

13.	0	0	0	✓		✓		Supporting exiting sites would help sustain existing jobs. Developing new sites would generate new jobs. It is felt that the jobs associated with extended sites will be broadly similar to new sites. So the effect is neutral.
14.	+ -	+ -	+ -	✓		✓	✓	While less new sites could benefit recreation etc. as less land and rights of way will be disturbed, extending existing sites could also delay restoration at those existing sites, leading delays in realising new recreational opportunities.
15.	- +	- +	- +	✓		✓	✓	This option will extend the life of exiting quarries which will have a range of controlled negative effects on existing communities, including noise and vibration and loss of access, all of which can affect wellbeing. However, elsewhere it will help to avoid the bringing into existence of some new quarries, which would also have negative effects.
16.	0	0	0 -		✓	✓		On the face of it this option would have no clear link, though this option could delay some implementation of restoration to flood prevention.
17.	0	0	0					No clear link

Proposed Alternative Option 8: (And) Under this option new sources of supply of aggregates would be directed to locations where strategic restoration objectives could be realised.								
SA objective	**Impact / timescale**			**Type of effect**				**Analysis**
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	-	-	+ +	✓	✓	✓		In the short and medium term this option could promote more development in areas that are important for wildlife, such as floodplains. However, as sites are restored major gains for biodiversity could be realised if strategic restoration objectives include a wildlife component.
2.	0	0	0		✓	✓	✓	No clear effect.
3.	-	-	-		✓		✓	While a number of aggregates sites are in areas close to markets, this option allows restoration to be the primary locational factor. Depending on the chosen restoration objectives, restoration could take place in areas that are not particularly close to markets or away from sustainable transit.
4.	-	-	-	✓	✓		✓	While a number of aggregates sites are in areas close to markets, this option allows restoration to be the primary locational factor. Depending on the chosen restoration objectives, restoration could take place in areas that are not particularly close to markets or away from sustainable transit. This could cause air pollution.
5.	0	0	0					While restoration is often to agriculture this tends to be in existing agricultural areas. Therefore it seems unlikely that agricultural land would be deliberately chosen for minerals extraction only to restore it to agricultural land. So no effects are predicted.
6.	?	?	+ ?	✓		✓	✓	If restoration objectives focussed on reducing greenhouse gases they could, for example restore sites to carbon rich woodland or use them for growing biomass to supply the energy market. However, the benefit here would be in the long term. Prior to that the situation is uncertain, as questions remain over whether the sites would be close to or far away from markets, or constructed on land that was already acting as a carbon sink.
7.	0	0	+ +	✓		✓	✓	Restoration of quarries, even when not specifically for climate adaptation, can often have major benefits for climate adaptation. For instance, there is great potential with strategic restoration to create a more permeable landscape for animals and plants to move between stepping stone or connected sites. There is also the potential to store flood waters on sites. These effects would be realised in the longer term.
8.	0	0	0					No clear link

9.	0	0	0					No clear link
10.	?	?	+ ?	✓		✓	✓	In the short to medium term it is unknown the extent to which sites allocated under this option would affect the historic environment. If the historic environment is a strategic priority then in the long term there could be benefits such as the restoration of historic views.
11.	-- ?	-- ?	+ + ?	✓	✓	✓	✓	The landscape impacts of aggregates sites tend to be significant and can be of major significance depending on factors such as landscape sensitivity. Effects may also be cumulative especially if locations are determined by their strategic restoration potential. However, if restored consistently with landscape character this should provide major benefits.
12.	-	-	-		✓		✓	Strategic reclamation as a prime consideration may have an adverse impact on economic viability/benefit?
13.	-	-	+	✓			✓	This option could have deleterious effects on tourism as sites may cluster around strategic priorities. However, communities may benefit as sites are restored, and tourist spend comes to nearby communities etc.
14.	- ?	- ?	+ + ?	✓	✓	✓	✓	Rights of way and viewpoints could be affected by minerals sites, which may cluster due to the targeted nature of this objective. This would act against this objective, though is dependent on location. In the longer term restoration, particularly if to green infrastructure, but also to biodiversity or landscape, would have strong positive benefits.
15.	-- ?	-- ?	+	✓	✓	✓	✓	Aggregates sites can have a deleterious impact on health and wellbeing due to impacts such as dust, noise, vibration and severance. These impacts can be of major significance, particularly if sites lie close together (as may occur under this option). The severity of impacts is uncertain though as much depends on the proximity of human receptors to sites, which is unknown. In the long term strategic restoration may bring benefits, such as opportunities for partaking in health and fitness activity.
16.	- ?	- ?	+ +	✓	✓	✓		There is the potential to store significant amounts of flood water in restored minerals sites, particularly if restoration is planned strategically. However, prior to restoration sites may employ dewatering which could add to flood risk, depending on location.
17.	+ ?	+ ?	+ ?		✓	✓		Planning site locations on the basis of their potential to deliver strategic restoration objectives could allow some potential for greater input from local communities. However, it is unclear at this point how restoration objectives will be defined.

Summary of assessment

While all options display a mixture of positive, negative and uncertain effects, Options 1 and 2 exhibit more positive effects than Option 3. Negative effects are associated with land and soils and recreation to some degree under options 1, 2, 3 and 7 and 8. In broad terms, while Option 1 and 2 are considered to reduce journey lengths, there remains a risk that those journeys will run close to communities under Option 1. Similarly options 4 and 5 broadly reduce journey lengths, though there is some uncertainty over whether the more remote locations allowed by option 4 with a 'suitable justification' would work against this to a degree. Another key issue is how options may restrict the distribution of sites – with Options 1 and 4 in particular more likely to attract sites to areas that may be visible from protected landscapes, and Option 2, and to a lesser extent options 4 and 5drawing sites closer to the best quality agricultural land.

Some options carry some degree of economic benefit, however options 1 and 4 may have some negative effects on tourism (due to visibility of quarries from national parks) and quality of life (due to more traffic on the local road network), while some options show some degree of disbenefit for opportunities for recreation and leisure (impacting in varying degrees on recreational assets such as enjoyment of national parks or the public access network).

The assessment of Option 3 is generally more uncertain than other options as it is not known what the resultant overall spatial distribution of aggregate sites will be, though it could offer increased locational choice which may bring some benefits. There are also a number of negative effects that are particularly associated with option 8 as under that option site locations are determined to a large degree by their restoration potential rather than the impacts that they may have during their operational lifetime, and may end up clustering together displaying cumulative effects.

Recommendations

A key conclusion of this assessment is that there is merit in adopting an approach that includes aspects of both options 1 and the links to the A1 explored in 2. This would potentially balance the negative aspects of each option with the positive aspects of the other. So such an option would include the principle of proximity to markets, but would also favour proximity to the A1 (or other access to the rail / canal / strategic road network where possible). The principle of areas of search outlined in option 6 also performs well (but is unlikely to perform as well as identifying specific sites); while giving priority to extending existing quarries (option 7) could have some significant benefits if used in conjunction with a combination of option 1 and 2.

Calculating Sand and Gravel Provision (id03)

Assumptions- It is assumed that by allocating up to the tonnage indicated in each option, development will take place to fulfil the quantity of extraction allowed for.

Option 1. This option would involve projecting forward 10 year annual average sales over the period to 2030 to provide an indication of the overall scale of provision required, after allowing for the level of reserves already with planning permission. Based on the position at the end of 2011 this would result in a need for an additional 27.5mt of sand and gravel over the Plan period.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?	✓		✓		This option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual. The impact of this on biodiversity is uncertain as no indication is given of where this provision would be, so it is not known the extent to which biodiversity and geodiversity would be affected though as sites are restored impacts would be offset to a degree.
2.	?	?	?	✓		✓		This option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual. The impact of this on water is uncertain as no indication is given of where this provision would be, so it is not known the extent to which water resources would be affected.
3.	?	?	?	✓		✓		This option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual. The impact of this on transport is uncertain as no indication is given of where this provision would be, so it is not known the extent to which transport would be affected.

4.	?	?	?	✓		✓		This option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual. The impact of this on air quality is uncertain as no indication is given of where this provision would be, so it is not known the extent to which air quality would be affected.
5.	?	?	?	✓		✓		This option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual. The impact of this on soil and land is uncertain as no indication is given of where this provision would be, so it is not known the extent to which soil and land would be affected.
6.	-	-	-	✓		✓		A further 27.5 mt of sand and gravel extraction would require an increased amount of energy to extract and transport the resource, and further release of carbon from soil loss. As carbon in the atmosphere is cumulative this option works against the objective to reduce the causes of climate change.
7.	?	?	?	✓			✓	The impact of this on climate adaptation is uncertain as no indication is given of where this provision would be, so it is not known the extent to which climate adaptation would be affected.
8.	-	-	-	✓		✓		This option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual. This would work against minimising the use of resources as effectively this would allow for a further 27.5 mt of primary resources to be consumed at a steady rate similar to that of the last 10 years.
9.	-	-	-	✓			✓	This option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual. This would work against minimising waste generation as effectively it would allow for a further 27.5 mt of further primary resources to be consumed at a steady rate similar to that of the last 10 years.
10.	?	?	?	✓		✓		This option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual. The impact of this on the historic environment is uncertain as no indication is given of where this provision would be, so the extent to which the historic environment would be affected is not known.
11.	?	?	?	✓		✓		This option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual. The impact of this on landscape is uncertain as no indication is given of where this provision would be, so it is not known the extent to which landscape would be affected.
12.	+	+	+	✓		✓		This option is likely to have positive effects on economic growth as supply of minerals, at least on the basis of

		?	?					current trends, is likely to match demand. However, there may be shortfalls if demand is higher or if growth is more sustained across the plan period.
13.	?	?	?	✓		✓		This option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual. The impact of this on the vitality of local communities is uncertain as no indication is given of where this provision would be, so it is not known the extent to which communities would be affected.
14.	0	0	+					In the long term opportunities for creation of leisure and recreation opportunities in the plan area may occur through site reclamation.
15.	?	?	?	✓			✓	This option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual. The impact of this on the health and wellbeing of local communities is uncertain as no indication is given of where this provision would be, so it is not known the extent to which the health and wellbeing of communities would be affected.
16.	+	+	+	✓			✓	Continued provision of sand and gravel resources is likely to continue to open up opportunities for future flood storage as sand and gravel often occurs in the floodplain and is often restored to flood storage.
17.	+	+	+	✓			✓	The development needs of local communities are likely to continue to be supported by this objective if demand for resources follows the trends of the last 10 years.

Option 2 This option would calculate provision of sand and gravel by basing future requirements on an assumed annual average requirement higher than that generated by taking an annual average of 10 years sales at the time of plan preparation. This option would include an assumption of an additional 7mt over the plan period (calculated based on the mid-point between the sub-regional apportionment figures contained in the former RSS of 2.63mtpa and provision based on pre-recession levels of 2.7mtpa). Based on the position at the end of 2011 this would result in a need for an additional 34.5mt of sand and gravel over the plan period.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?	✓		✓		This option would encompass an uplift on the sales position of the last ten years. The impact of this on biodiversity is uncertain as no indication is given of where this provision would be, so it is not known the extent to which biodiversity and geodiversity would be affected. However, there is some increased likelihood (albeit at an unknown extent) that biodiversity would come under increased pressure under this option in comparison to option 1 through increased land take, though as sites are restored impacts would be offset to a degree.
	-	-	-					
2.	?	?	?	✓		✓		This option would encompass an uplift on the sales position of the last ten years. The impact of this on water is uncertain as no indication is given of where this provision would be, so it is not known the extent to which water would be affected. However, there is some increased likelihood (albeit at an unknown extent) that water would come under increased pressure under this option in comparison to option 1, as more sites may be needed.
	-	-	-					
3.	?	?	?	✓		✓		This option would encompass an uplift on the sales position of the last ten years. The impact of this on transport is uncertain as no indication is given of where this provision would be, so it is not known the extent to which transport would be affected. However, more sand and gravel would need to be moved (meaning more tonne – kilometres of minerals of transport unless sites are closer to markets).
	-	-	-					
4.	?	?	?	✓		✓		This option would encompass an uplift on the sales position of the last ten years. The impact of this on the air pollution objective is uncertain as no indication is given of where this provision would be, so it is not known the extent to which transport of sand and gravel, and the air emissions from it, would be affected. However, more sand and gravel would need to be moved (meaning more tonne – kilometres of minerals of transport and thus greater net inputs of pollution to air unless sites are closer to markets).
	-	-	-					
5.	?	?	?	✓		✓		This option would encompass an uplift on the sales position of the last ten years. The impact of this on soils and land is uncertain as no indication is given of where this provision would be, so it is not known the extent to

	-	-	-					which soils and land would be affected. However, there is some increased likelihood (albeit at an unknown extent) that soils and land would come under increased pressure under this option in comparison to option 1 through increased land take.
6.	-	-	--	✓		✓		A further 34.5 mt of sand and gravel extraction would require an increased amount of energy to extract and transport the resource, and further release of carbon from soil loss. As carbon in the atmosphere is cumulative this option works against the objective to reduce the causes of climate change.
7.	?	?	?	✓			✓	The impact of this on climate adaptation is uncertain as no indication is given of where this provision would be, so it is not known the extent to which climate adaptation would be affected.
8.	--	--	--	✓		✓		This option would encompass an uplift on the sales position of the last ten years. This would work against minimising the use of resources as effectively this would allow for a further 34.5 mt of primary resources to be consumed at a steady rate.
9.	--	--	--	✓			✓	This option would encompass an uplift on the sales position of the last ten years This would work against minimising waste generation as effectively it would allow for a further 34.5 mt of further primary resources to be consumed at a steady rate.
10.	?	?	?	✓		✓		This option would encompass an uplift on the sales position of the last ten years. The impact of this on the historic environment is uncertain as no indication is given of where this provision would be, so the extent to which the historic environment would be affected is not known. However, there is some increased likelihood (albeit at an unknown extent) that the historic environment would come under increased pressure under this option in comparison to option 1, as more sites may be needed (unless marine resources are utilised).
	-	-	-					
11.	?	?	?	✓		✓		This option would encompass an uplift on the sales position of the last ten years. The impact of this on landscape is uncertain as no indication is given of where this provision would be, so it is not known the extent to which the landscape would be affected. However, there is some increased likelihood (albeit at an unknown extent) that the landscape would come under increased pressure under this option in comparison to option 1, as more sites may be needed.
	-	-	-					
12.	+	+	+ +	✓		✓		This option is likely to have positive effects on economic growth as supply of minerals is more certain to be met into the long term than option 1.
13.	?	?	?	✓		✓		This option would encompass an uplift on the sales position of the last ten years. The impact of this on the vitality of communities is uncertain as no indication is given of where this provision would be, so it is not known the extent to which communities would be affected. However, there is some increased likelihood (albeit

	-	-	-					at an unknown extent) that communities would come under increased pressure (e.g. from traffic or noise) under this option in comparison to option 1, as more sites may be needed.
14.	0	0	+					In the long term opportunities for creation of leisure and recreation opportunities in the plan area may occur through site reclamation.
15.	?	?	?	✓		✓		This option would encompass an uplift on the sales position of the last ten years. The impact of this on the health and wellbeing of communities is uncertain as no indication is given of where this provision would be, so it is not known the extent to which the health and wellbeing of communities would be affected. However, there is some increased likelihood (albeit at an unknown extent) that communities would be exposed to more health and wellbeing issues under this option in comparison to option 1, as more sites may be needed.
	-	-	-					
16.	+	+	+ +	✓			✓	Continued provision of sand and gravel resources is likely to continue to open up opportunities for future flood storage as sand and gravel often occurs in the floodplain and is often restored to flood storage.
17.	+	+	+	✓			✓	The development needs of local communities are likely to continue to be supported by this objective if demand for sand and gravel resources needed by community scale development is met.

Option 3 This option would calculate future provision by projecting forward 10 year annual sales and incorporating an additional contingency of 10% over the full plan period. Based on the position at the end of 2011 this would result in a need for an additional 31.9mt of sand and gravel over the plan period

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SA objective	**Impact / timescale**			**Type of effect**				**Analysis**
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	?	?	?	✓		✓		This option would encompass an uplift on the sales position of the last ten years albeit at a slightly lesser rate than option 2. The impact of this on biodiversity is uncertain as no indication is given of where this provision

								would be, so it is not known the extent to which biodiversity and geodiversity would be affected. However, there is some increased likelihood (albeit at an unknown extent) that biodiversity would come under increased pressure under this option in comparison to option 1, through increased land take, though as sites are restored impacts would be offset to a degree.
	-	-	-					
2.	?	?	?	✓		✓		This option would encompass an uplift on the sales position of the last ten years albeit at a slightly lesser rate than option 2. The impact of this on water is uncertain as no indication is given of where this provision would be, so it is not known the extent to which water would be affected. However, there is some increased likelihood (albeit at an unknown extent) that water would come under increased pressure under this option in comparison to option 1, as more sites may be needed.
	-	-	-					
3.	?	?	?	✓		✓		This option would encompass an uplift on the sales position of the last ten years albeit at a slightly lesser rate than option 2. The impact of this on transport is uncertain as no indication is given of where this provision would be, so it is not known the extent to which transport would be affected. However, more sand and gravel would need to be moved (meaning more tonne – kilometres of minerals of transport unless sites are closer to markets).
	-	-	-					
4.	?	?	?	✓		✓		This option would encompass an uplift on the sales position of the last ten years albeit at a slightly lesser rate than option 2. The impact of this on the air pollution objective is uncertain as no indication is given of where this provision would be, so it is not known the extent to which transport of sand and gravel, and the air emissions from it, would be affected. However, more sand and gravel would need to be moved (meaning more tonne – kilometres of minerals of transport and thus greater net inputs of pollution to air unless sites are closer to markets).
	-	-	-					
5.	?	?	?	✓		✓		This option would encompass an uplift on the sales position of the last ten years albeit at a slightly lesser rate than option 2. The impact of this on soils and land is uncertain as no indication is given of where this provision would be, so it is not known the extent to which soils and land would be affected. However, there is some

	-	-	-					increased likelihood (albeit at an unknown extent) that soils and land would come under increased pressure under this option in comparison to option 1 through increased land take.
6.	-	-	--	✓		✓		A further 31.9 mt of sand and gravel extraction would require an increased amount of energy to extract and transport the resource, and further release of carbon from soil loss. As carbon in the atmosphere is cumulative this option works against the objective to reduce the causes of climate change.
7.	?	?	?	✓			✓	The impact of this on climate adaptation is uncertain as no indication is given of where this provision would be, so it is not known the extent to which climate adaptation would be affected.
8.	-	--	--	✓		✓		This option would encompass an uplift on the sales position of the last ten years albeit at a slightly lesser rate than option 2. This would work against minimising the use of resources as effectively this would allow for a further 31.9 mt of primary resources to be consumed at a steady rate.
9.	-	--	--	✓			✓	This option would encompass an uplift on the sales position of the last ten years albeit at a slightly lesser rate than option 2. This would work against minimising waste generation as effectively it would allow for a further 31.9 mt of further primary resources to be consumed at a steady rate.
10.	?	?	?	✓		✓		This option would encompass an uplift on the sales position of the last ten years albeit at a slightly lesser rate than option 2. The impact of this on the historic environment is uncertain as no indication is given of where this provision would be, so the extent to which the historic environment would be affected is not known. However, there is some increased likelihood (albeit at an unknown extent) that the historic environment would come under increased pressure under this option in comparison to option 1, as more sites may be needed (unless marine resources are utilised).
	-	-	-					
11.	?	?	?	✓		✓		This option would encompass an uplift on the sales position of the last ten years, albeit at a slightly lesser rate than option 2. The impact of this on landscape is uncertain as no indication is given of where this provision would be, so it is not known the extent to which the landscape would be affected. However, there is some increased likelihood (albeit at an unknown extent) that the landscape would come under increased pressure under this option in comparison to option 1, as more sites may be needed (unless marine resources are utilised).
	-	-	-					
12.	+	+	+ +	✓		✓		This option is likely to have positive effects on economic growth as supply of minerals is more certain to be met into the long term than option 1, but is less certain than option 2.

13.	? -	? -	? -	✓		✓		This option would encompass an uplift on the sales position of the last ten years albeit at a slightly lesser rate than option 2. The impact of this on the vitality of communities is uncertain as no indication is given of where this provision would be, so it is not known the extent to which communities would be affected. However, there is some increased likelihood (albeit at an unknown extent) that communities would come under increased pressure (e.g. from traffic or noise) under this option in comparison to option 1, as more sites may be needed.
14.	0	0	+					In the long term opportunities for creation of leisure and recreation opportunities in the plan area may occur through site reclamation.
15.	? -	? -	? -	✓		✓		This option would encompass an uplift on the sales position of the last ten years albeit at a slightly lesser rate than option 2. The impact of this on the health and wellbeing of communities is uncertain as no indication is given of where this provision would be, so it is not known the extent to which the health and wellbeing of communities would be affected. However, there is some increased likelihood (albeit at an unknown extent) that communities would be exposed to more health and wellbeing issues under this option in comparison to option 1, as more sites may be needed.
16.	+	+	+ +	✓			✓	Continued provision of sand and gravel resources is likely to continue to open up opportunities for future flood storage as sand and gravel often occurs in the floodplain and is often restored to flood storage.
17.	+	+	+	✓			✓	The development needs of local communities are likely to continue to be supported by this objective if demand for sand and gravel resources needed by community scale development is met.

Option 4 This option would calculate future provision by projecting forward 10 year average sales with the addition of a review of sand and gravel sales at the end of 2019. In the event that sales of sand and gravel recover to a level such that short term average sales (as measured over a three year averaging period for the years 2017, 2018 and 2019) exceed the 10 year average sales figure used to define provision at the time of plan preparation by an amount exceeding 10%, then additional provision can be made in line with that referred to in sub-option 3 above, i.e. provision of an additional 10% leading to a total provision of 31.9mt over the plan period.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?	✓		✓		In the short term effects would be uncertain for the same reasons as objective 1. In the medium to long term effects would continue to be as option 1 or would be as option 3.
		-	-					
2.	?	?	?	✓		✓		In the short term effects would be uncertain for the same reasons as objective 1. In the medium to long term effects would continue to be as option 1 or would be as option 3.
		-	-					
3.	?	?	?	✓		✓		In the short term effects would be uncertain for the same reasons as objective 1. In the medium to long term effects would continue to be as option 1 or would be as option 3.
		-	-					
4.	?	?	?	✓		✓		In the short term effects would be uncertain for the same reasons as objective 1. In the medium to long term effects would continue to be as option 1 or would be as option 3.
		-	-					
5.	?	?	?	✓		✓		In the short term effects would be uncertain for the same reasons as objective 1. In the medium to long term effects would continue to be as option 1 or would be as option 3.

		-	-					
6.	-	-	-	✓		✓		In the short term effects would be negative for the same reasons as objective 1. In the medium to long term effects would continue to be as option 1 or would be as option 3.
			--					
7.	?	?	?	✓			✓	In the short term effects would be uncertain for the same reasons as objective 1. In the medium to long term effects would continue to be as option 1 or would be as option 3.
8.	-	-	-	✓		✓		In the short term effects would be negative for the same reasons as objective 1. In the medium to long term effects would continue to be as option 1 or would be as option 3.
	--	--	--					
9.	-	-	-	✓			✓	In the short term effects would be negative for the same reasons as objective 1. In the medium to long term effects would continue to be as option 1 or would be as option 3.
		--	--					
10.	?	?	?	✓		✓		In the short term effects would be uncertain for the same reasons as objective 1. In the medium to long term effects would continue to be as option 1 or would be as option 3.
		-	-					
11.	?	?	?	✓		✓		In the short term effects would be uncertain for the same reasons as objective 1. In the medium to long term effects would continue to be as option 1 or would be as option 3.
		-	-					
12.	+	?	?	✓		✓		In the short term effects would be positive for the same reasons as objective 1. In the medium to long term effects would continue to be as option 1 or would be as option 3. However, this option brings with it greater flexibility to adapt to changing circumstances which could reduce the potential for over or undersupply in the long term, which will help maintain the viability of quarry operators.
		+	+ +					
13.	?	?	?	✓		✓		In the short term effects would be uncertain for the same reasons as objective 1. In the medium to long term effects would continue to be as option 1 or would be as option 3.
		-	-					

14.	0	0	+					In the long term opportunities for creation of leisure and recreation opportunities in the plan area may occur through site reclamation.
15.	?	?	?	✓		✓		In the short term effects would be uncertain for the same reasons as objective 1. In the medium to long term effects would continue to be as option 1 or would be as option 3.
		-	-					
16.	+	+	+	✓			✓	In the short term effects would be positive for the same reasons as objective 1. In the medium to long term effects would continue to be as option 1 or would be as option 3.
		+ +	+ +					
17.	+	+	+	✓			✓	In the short term effects would be positive for the same reasons as objective 1. In the medium to long term effects would continue to be as option 1 or would be as option 3.

Option 5 This option would involve projecting forward 10 years annual sales but factoring in an assumed reduction of 1mt in land-won supply, which would be offset by increased imports of marine aggregate. Based on the position at the end of 2011 this would result in a need for an additional 26.5mt of sand and gravel over the plan period.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	?	?	?	✓		✓		This option would, as with option 1, cause uncertain impacts on biodiversity and geodiversity as there is no indication given of where provision would be made for sand and gravel extraction. While there is a lesser quantum of development than that which would be expected from option 1 (which would, subject to location,

			-					potentially improve the baseline for biodiversity / geodiversity on land) the option relies on an additional quantity of marine aggregate to achieve this. This could lead to negative effects on marine biodiversity (e.g. smothering of benthic fauna) that are also location specific. Net effects in the long term are therefore stated as uncertain in terms of terrestrial biodiversity, but with the possibility of negative effects on marine biodiversity. As with other options, as terrestrial sites are restored negative impacts would be offset to a degree.
2.	?	?	? +	✓		✓		This option would, as with option 1, cause uncertain impacts on water quality as there is no indication given of where provision would be made for sand and gravel extraction. However, there is a lesser quantum of development than that which would be expected from option 1 (which would, subject to location, potentially improve the baseline for water quality). Therefore, although there is still significant uncertainty, there is some likelihood that effects will be positive in the longer term (as a sufficient number of sites will have been completed by that time to observe an effect).
3.	?	?	? -	✓		✓		This option would, as with option 1, cause uncertain impacts on transport as there is no indication given of where provision would be made for sand and gravel extraction. However, there is a lesser quantum of development than that which would be expected from option 1 (which would, subject to location, potentially improve the baseline for transport from terrestrial sites). However, this is likely to be offset by increased utilisation of marine aggregate from outside the plan area which would be likely to involve longer ship and possibly road journeys. Therefore, although there is still significant uncertainty, there is some likelihood that effects will be negative in the longer term (as a sufficient number of sites will have been completed by that time to observe an effect).
4.	?	?	? -	✓		✓		Under SA objective 3, there would be uncertain effects on traffic in the short to medium term, and uncertain – negative effects in the long term, therefore the air pollution generated by that traffic would be uncertain initially, but edge towards negative (with some uncertainty) in the long term.
5.	?	?	?					This option would, as with option 1, cause uncertain impacts on soil and land as there is no indication given of where provision would be made for sand and gravel extraction. However, there is a lesser quantum of development than that which would be expected from option 1 (which would, subject to location, potentially

			+					improve the baseline for soil and land). Therefore, although there is still significant uncertainty, there is some likelihood that effects will be positive in the longer term (as a sufficient number of sites will have been completed by that time to observe an effect).
6.	-	-	-	✓		✓		A further 26.5 mt of sand and gravel extraction would require an increased amount of energy to extract and transport the resource, and further release of carbon from soil loss. As carbon in the atmosphere is cumulative this option works against the objective to reduce the causes of climate change.
7.	?	?	?	✓			✓	The impact of this on climate adaptation is uncertain as no indication is given of where this provision would be, so it is not known the extent to which climate adaptation would be affected. It is considered that due to regulatory processes it is unlikely that the increase in marine dredged material would lead to any significant effect on coastal processes that might help protect the coast from the effects of climate change.
8.	-	-	-	✓		✓	✓	While this option would cause 26.5 mt of terrestrial primary resources to be consumed from the plan area, which is better in terms of minimising resources than objective 1, the shortfall on a 10 year average is assumed to be made up from marine aggregates. So in all, this option is likely to result in a broadly similar net amount of aggregate extraction as option 1. This would be seen to work against this objective to minimise the use of resources.
9.	-	-	-	✓			✓	As more minerals are consumed more waste will be generated (though this is at a slightly lower rate than some other options)
10.	?	?	? +	✓		✓		This option would, as with option 1, cause uncertain impacts on the historic environment as there is no indication given of where provision would be made for sand and gravel extraction. However, there is a lesser quantum of terrestrial development than that which would be expected from option 1 (which would, subject to location, potentially improve the baseline for the historic environment). Therefore, although there is still significant uncertainty, there is some likelihood that effects will be positive in the longer term (as a sufficient number of sites will have been completed by that time to observe an effect).
11.	?	?	? +	✓		✓		This option would, as with option 1, cause uncertain impacts on the landscape as there is no indication given of where provision would be made for sand and gravel extraction. However, there is a lesser quantum of terrestrial development than that which would be expected from option 1 (which would, subject to location, potentially improve the baseline for the landscape if sand and gravel extraction is to continue at a rate below current trends). Therefore, although there is still significant uncertainty, there is some likelihood that effects will be positive in the longer term (as a sufficient number of sites will have been completed by that time to observe an effect).

12.	+	+ ?	+ ?	✓		✓		As with option 1, this option is likely to have positive effects on economic growth as supply of minerals, at least on the basis of current trends, is likely to match demand. However, there may be shortfalls if demand is higher should growth be more sustained across the plan period (or the inverse may result in oversupply).
13.	?	?	?	✓		✓		As with option 1, this option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual (albeit that some supply is coming from marine sources). The impact of this on the vitality of local communities is uncertain as no indication is given of where this provision would be, however there is assumed to be some element of positive effect in the longer term as terrestrial sand and gravel extraction would be lower due to offsetting by marine sources (and by that time sufficient numbers of sites will have been completed for an effect to be observed).
14.	0	0	+					In the long term opportunities for creation of leisure and recreation opportunities in the plan area may occur through site reclamation.
15.	?	?	? +	✓			✓	As with option 1, this option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual (albeit that some supply is coming from marine sources). The impact of this on the health and wellbeing of local communities is uncertain as no indication is given of where this provision would be, however there is assumed to be some element of positive effect in the longer term as terrestrial sand and gravel extraction would be lower due to some offsetting by marine sources (and by that time sufficient numbers of sites will have been completed for an effect to be observed). This will cause less local health and wellbeing impacts (such as traffic accidents, stress) on communities that may otherwise have been affected.
16.	+	+	+	✓			✓	Continued provision of sand and gravel resources is likely to continue to open up opportunities for future flood storage as sand and gravel often occurs in the floodplain and is often restored to flood storage. This will be at a slightly lesser rate than option 1 as 1 mt of sand and gravel will come from marine sources.
17.	+	+	+	✓			✓	The development needs of local communities are likely to continue to be supported by this objective if demand for resources follows the trends of the last 10 years.

Option 6 This option would involve projecting forward 10 year annual sales but factoring in a larger assumed reduction in the overall requirement to take account of the potential for other alternative sources of supply to also serve markets currently met by exports from North Yorkshire. An assumed reduction in overall provision of 250,000tpa over the period 2020-2030 could be applied, resulting in a reduction of 2.5mt in overall provision. Based on the position at the end of 2011 this would result in a need for an additional 25mt of sand and gravel over the plan period.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓		✓		The impact of this option on biodiversity is uncertain as no indication is given of where this provision would be, so it is not known the extent to which biodiversity and geodiversity would be affected. However, a reduction of 250,000 tonnes per annum would, despite this uncertainty, reduce overall land take and thus impacts on biodiversity and geodiversity. Thus the net effect (at least in terms of the plan area) is positive. Beyond the plan area effects are uncertain. As with other options, as terrestrial sites are restored some negative impacts would be also offset to a degree.
2.	+	+	+	✓		✓		The impact of this option on water is uncertain as no indication is given of where this provision would be, so it is not known the extent to which water resources would be affected. However, a reduction of 250,000 tonnes per annum would, despite this uncertainty, reduce the overall amount of sand and gravel extraction and thus impacts on water resources. Thus the net effect (at least in terms of the plan area) is positive.
3.	+	+	+	✓		✓		The impact of this option on transport is uncertain as no indication is given of where this provision would be, so it is not known the extent to which transport would be affected. However, a reduction of 250,000 tonnes per annum would, despite this uncertainty, reduce the overall amount of sand and gravel that would need moving and thus reduce the amount of traffic generated. Thus the net effect (at least in terms of the plan area) is positive.
4.	+	+	+	✓		✓		Under SA objective 3, there would be net positive effects on traffic, therefore the air pollution generated by that traffic would be less, so a positive effect on this objective is recorded (at least in terms of the plan area).

5.	+	+	+	✓		✓		The impact of this on soils and land is uncertain as no indication is given of where this provision would be, so it is not known the extent to which soils and land would be affected. However, a reduction of 250,000 tonnes per annum would, despite this uncertainty, reduce overall land take and thus impacts on soils and land. Thus the net effect (at least in terms of the plan area) is positive.
6.	-	-	-	✓		✓		A further 25 mt of sand and gravel extraction would require an increased amount of energy to extract and transport the resource, and further release of carbon from soil loss. As carbon in the atmosphere is cumulative this option works against the objective to reduce the causes of climate change. However, the effect is of a smaller magnitude than for other options as the amount of sand and gravel extracted is 2.5 mt less than option 1.
7.	?	?	?	✓			✓	The impact of this on climate adaptation is uncertain as no indication is given of where this provision would be, so it is not known the extent to which climate adaptation would be affected.
8.	+	+	+	✓		✓		As this option allows for 2.5 mt of alternative sources of supply to offset land won sand and gravel this may allow for the possibility for secondary and recycled aggregated to be utilised instead of primary materials (though it would also allow for the utilisation of primary marine aggregates). Uncertainty over the availability of alternative resources (see objective 12 below), and that alternative sources are more likely to come from indigenous supply for areas currently exported to, means that the effects of this option are considered to be minor positive, but with some uncertainty.
	?	?	?					
9.	+	+	+	✓		✓		This option may help increase demand for recycled / secondary sources of aggregate and encourage the re-use and recycling of waste. However it would also allow for the utilisation of primary marine aggregates. Uncertainty over the availability of alternative resources (see objective 12 below), and that alternative sources are more likely to come from indigenous supply for areas currently exported to, means that the effects of this option are considered to be minor positive, but with some uncertainty.
	?	?	?					
10.	+	+	+	✓		✓		The impact of this option on historic environment is uncertain as no indication is given of where this provision would be located, so it is not known the extent to which soils and land would be affected. However, a reduction of 250,000 tonnes per annum would, despite this uncertainty, reduce overall land take and thus impacts on the historic environment. Thus the net effect (at least in terms of the plan area) is positive.
11.	+	+	+	✓		✓		The impact of this option on the character of landscape and townscape is uncertain as no indication is given of where this provision would be, so it is not known the extent to which landscape and townscape would be affected. However, a reduction of 250,000 tonnes per annum would, despite this uncertainty, reduce overall land take and therefore impacts on the landscape. Thus the net effect (at least in terms of the plan area) is positive.

12.	? -	? -	? -	✓		✓		Whilst this option assumes that demand can be met, it relies on 2.5 mt of alternative sources becoming available. In 2011 only 100,000 tonnes of marine dredged sand and gravel were landed at Hull, and 400,000 tonnes in the North East, however there is some potential for increased indigenous supply for markets outside the plan area. The local aggregate assessment highlights the potential for a limited contribution from recycled and secondary sources, which may also contribute to supply, but notes that this could be influenced by changes in availability (e.g. the closure of a major source of secondary aggregates). This means there is some uncertainty as to whether, under this option, shortfalls of material might occur, which might have a negative effect on the economy.
13.	+	+	+	✓		✓		The impact of this on the vitality of local communities is uncertain as no indication is given of where this provision would be, so it is not known the extent to which local communities would be affected. However, a reduction of 250,000 tonnes per annum would, despite this uncertainty, reduce sand and gravel extraction and thus impacts on the communities that lie close to them (at least in the plan area). While this reduction would be replaced by 'alternative sources', some of these are considered to have a lesser effect on communities (e.g. marine aggregates) than sand and gravel extraction. Thus the net effect is positive.
14.	0	0	+					In the long term opportunities for creation of leisure and recreation opportunities in the plan area may occur through site reclamation.

15.	+	+	+	✓		✓		The impact of this on the health and wellbeing of local communities is uncertain as no indication is given of where this provision would be, so it is not known the extent to which local communities would be affected. However, a reduction of 250,000 tonnes per annum would, despite this uncertainty, reduce sand and gravel extraction and thus impacts on the potential health and wellbeing of the communities that lie close to them. While this reduction would be replaced by 'alternative sources', some of these are considered to have a lesser effect on communities' health and wellbeing (e.g. marine aggregates) than sand and gravel extraction. Thus the net effect is positive (at least in terms of the plan area).
16.	+	+	+	✓			✓	Continued provision of sand and gravel resources is likely to continue to open up opportunities for future flood storage as sand and gravel often occurs in the floodplain and is often restored to flood storage. This will be at a lesser rate than option 1, 5 and 8 as 2.5 mt of sand and gravel will come from alternative sources.
17.	+	+	+	✓			✓	If supply of sand and gravel plus alternative sources can meet the development needs of local communities

	?	?	?					the development needs are likely to continue to be supported by this objective. However, if this results in a shortfall in supply, community development may suffer as prices of construction materials rise.

Proposed alternative option 7: (Or) Under this option consideration would be given to possibilities to increase imports into the Plan area which would be factored into a reduced requirement to be provided from within the Plan area itself.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓		✓	✓	This option would result in a reduced requirement for sand and gravel extraction within the plan area meaning there is less potential for impact upon protected sites and species. This however also introduces an element of uncertainty as the sand and gravel extraction would be displaced to locations outside of the plan area where impacts are uncertain as it would depend upon the location and its sensitivity to development. An increase in imports from outside of the plan area would also lead to less opportunity for enhancements to biodiversity through site reclamation in the plan area in the long term.
	?	?	?					
			-					
2.	+	+	+	✓		✓	✓	This option would result in a reduced requirement for sand and gravel extraction within the plan area meaning there would be less potential for impact upon water quality and supply in the plan area. This however also introduces an element of uncertainty as the sand and gravel extraction would be displaced to locations outside of the plan area where impacts are uncertain as it would depend upon the location and its sensitivity to development. An increase in imports from outside of the plan area would also lead to less opportunity for enhancements to water quality and biodiversity through site reclamation in the plan area in the long term (for e.g. reclamation of sand and gravel sites could include the creation of habitats such as reed beds which can have beneficial impacts upon water quality and meeting WFD targets).
	?	?	?					
			-					
3.	--	--	--	✓		✓		A greater reliance on imports from outside of the plan area could lead to an increase in transport miles as

								extraction may not take place close to the markets within the plan area. Depending on the mode of transport used, this could have negative impacts including noise and disturbance due to increased lorry traffic, congestion and increased vehicle and carbon emissions.
4.	--	--	--	✓		✓		Depending on the mode of transport used, more imports of sand and gravel into the Plan area could have negative impacts on air quality arising from vehicle emissions.
5.	+	+	+	✓		✓	✓	This option would result in a reduced requirement for sand and gravel extraction within the plan area meaning there would be less land take and potential for impacts on soil quality in the plan area. This however also introduces an element of uncertainty as the sand and gravel extraction would be displaced to locations outside of the plan area where impacts are uncertain as it would depend upon the location and its sensitivity to development. An increase in imports from outside of the plan area would also lead to less opportunity for enhancements to land use through site reclamation in the plan area in the long term.
	?	?	?					
			-					
6.	--	--	--	✓			✓	A greater reliance on imports from outside of the plan area would be likely to lead to an increase in transport miles and therefore greenhouse gas emissions as extraction would not take place close to the markets within the plan area. This would lead to negative impacts varying from minor to major depending upon the sustainability of the mode of transport used (i.e. impacts would be more significant if all transport was via road rather than rail).
7.	-	-	-	✓			✓	A greater reliance on imports from outside of the plan area may lead to a minor negative impact in the long term as there would be a reduction in the number of sand and gravel quarries in the plan area, which can often act as effective flood storage once quarrying has ceased.
8.	-	-	-	✓		✓		This option does not specifically encourage reusing or recycling of resources to meet requirements although it is not clear where the imported sand and gravel will be sourced from.
9.	-	-	-	✓		✓		This option does not specifically encourage reusing or recycling aggregates so therefore could result in the production of more waste and have a negative impact on the part of the objective that seeks to minimise waste generation. It is not however clear where the imported sand and gravel will be sourced from.
10.	+	+	+	✓		✓		This option would result in a reduced requirement for sand and gravel extraction within the plan area meaning there would be less potential for impacts on the historic environment, heritage assets and their settings. This however also introduces an element of uncertainty as the sand and gravel extraction would be displaced to locations outside of the plan area where impacts are uncertain as it would depend upon the location and its sensitivity to development.
	?	?	?					
11.	+	+	+	✓		✓	✓	This option would result in a reduced requirement for sand and gravel extraction within the plan area meaning there is less potential for impact upon landscapes and townscapes within the plan area. This however also introduces an element of uncertainty as the sand and gravel extraction would be displaced to locations outside

	?	?	? -					of the plan area where impacts are uncertain as it would depend upon the location and its sensitivity to development. An increase in imports from outside of the plan area would also lead to less opportunity for enhancements to the landscape through site reclamation in the plan area in the long term.
12.	- + ?	- + ?	- + ?	✓		✓	✓	A reduced requirement for sand and gravel extraction within the plan area could have a negative impact upon this objective as it would support fewer jobs within the plan area. However it may be that these jobs are displaced to areas outside of the plan area leading to benefits elsewhere. In reality it is not clear where imported sand and gravel will be sourced from and therefore uncertainty exists as to whether shortfalls or price increases due to scarcity may occur, leading to a negative effect on the economy. A reduction in the amount of quarrying taking place within the plan area may have benefits for certain areas of the economy which are reliant upon natural beauty, tranquillity etc. such as tourism.
13.	- +	- +	- +	✓		✓		A reduced requirement for sand and gravel extraction within the plan area may lead to negative impacts upon this objective as less jobs would be supported within the plan area. Benefits may also result for community viability and vitality as fewer communities within the plan area will be affected by quarrying activity, a factor that may be particularly important for communities that are dependent upon the tourism economy.
14.	+	+	+ -	✓		✓	✓	A reduced requirement for the extraction of sand and gravel from within the Plan area could have positive effects on this objective because with fewer sites worked there is less chance of impact on the public rights of way network both in terms of direct impact and adverse effects on the enjoyment of users of the network. An increase in imports from outside of the plan area would also lead to less opportunity for creation of leisure and recreation opportunities through site reclamation in the plan area in the long term.
15.	+ - ?	+ - ?	+ - ?	✓		✓	✓	A reduced requirement for the extraction of sand and gravel from within the Plan area could have positive effects on this objective because with fewer sites worked there is less chance of health and safety and wellbeing impacts on local communities such as noise, dust, site traffic etc. However, as extraction would be displaced outside of the plan area, communities in other locations may be affected but as locations are not yet known, the effects would be uncertain. Negative effects may also result within the plan area as transportation of sand and gravel into the Plan area could give rise to greater vehicle movements with associated emissions, noise and disturbance and road safety implications.
16.	- ?	- ?	- ?	✓			✓	A reduced requirement for the extraction of sand and gravel within the plan area may lead to negative impacts as sand and gravel often occurs in the floodplain and is often restored to flood storage. This option would lead to a reduction in opportunities for flood storage within the plan area however the extraction would be displaced to areas outside of the plan area which may experience a benefit.
17.	--	--	--	✓		✓	✓	Potential negative impacts as importing sand and gravel from outside the Plan area is likely to be less sustainable than working sites within the area. There is also a risk that the minerals needed to support the economy are not provided or are more difficult to obtain. Currently the plan area is a net exporter of sand and

								gravel partly as a consequence of a relative shortage of suitable resources elsewhere, particularly West and South Yorkshire and the Tees Valley areas.

Proposed alternative option 8: (Or) This option would calculate future provision by projecting forward 10 year average sales and considering any likely changes to building rates over the plan period compared to building rates over the past 10 years. Based on the position at the end of 2011 this would result in a need for an additional 31.6mt of sand and gravel over the Plan period.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?	✓		✓		This option would encompass an uplift on the sales position of the last ten years albeit at a slightly lesser rate than options 2 and 3. The impact of this on biodiversity is uncertain as no indication is given of where this provision would be, so it is not known the extent to which biodiversity and geodiversity would be affected. However, there is some increased likelihood (albeit at an unknown extent) that biodiversity would come under increased pressure under this option in comparison to options 1, 5, 6 and 9, through increased land take, though as sites are restored impacts would be offset to a degree.
	-	-	-					
2.	?	?	?	✓		✓		This option would encompass an uplift on the sales position of the last ten years albeit at a slightly lesser rate than options 2 and 3. The impact of this on water is uncertain as no indication is given of where this provision would be, so it is not known the extent to which water would be affected. However, there is some increased likelihood (albeit at an unknown extent) that water would come under increased pressure under this option in comparison to options 1, 5, 6 and 9, as more sites may be needed.
	-	-	-					
3.	?	?	?	✓		✓		This option would encompass an uplift on the sales position of the last ten years albeit at a slightly lesser rate than options 2 and 3. The impact of this on transport is uncertain as no indication is given of where this

								provision would be, so it is not known the extent to which transport would be affected. However, more sand and gravel would need to be moved (meaning more tonne – kilometres of minerals of transport unless sites are closer to markets).
	-	-	-					
4.	?	?	?	✓		✓		This option would encompass an uplift on the sales position of the last ten years albeit at a slightly lesser rate than options 2 and 3. The impact of this on the air pollution objective is uncertain as no indication is given of where this provision would be, so it is not known the extent to which transport of sand and gravel, and the air emissions from it, would be affected. However, more sand and gravel would need to be moved (meaning more tonne – kilometres of minerals of transport and thus greater net inputs of pollution to air unless sites are closer to markets).
	-	-	-					
5.	?	?	?	✓		✓		This option would encompass an uplift on the sales position of the last ten years albeit at a slightly lesser rate than options 2 and 3. The impact of this on soils and land is uncertain as no indication is given of where this provision would be, so it is not known the extent to which soils and land would be affected. However, there is some increased likelihood (albeit at an unknown extent) that soils and land would come under increased pressure under this option in comparison to options 1, 5, 6 and 9 through increased land take.
	-	-	-					
6.	-	-	--	✓		✓		A further 31.6 mt of sand and gravel extraction would require an increased amount of energy to extract and transport the resource, and further release of carbon from soil loss. As carbon in the atmosphere is cumulative this option works against the objective to reduce the causes of climate change.
7.	?	?	?	✓			✓	The impact of this on climate adaptation is uncertain as no indication is given of where this provision would be, so it is not known the extent to which climate adaptation would be affected.
8.	-	--	--	✓		✓		This option would encompass an uplift on the sales position of the last ten years albeit at a slightly lesser rate than options 2 and 3. This would work against minimising the use of resources as effectively this would allow for a further 31.6 mt of primary resources to be consumed at a steady rate.
9.	-	--	--	✓			✓	This option would encompass an uplift on the sales position of the last ten years albeit at a slightly lesser rate than options 2 and 3. This would work against minimising waste generation as effectively it would allow for a further 31.6 mt of further primary resources to be consumed at a steady rate, effectively lessening the

								potential demand for secondary and recycled aggregates if demand rates match the provision rate.
10.	? -	? -	? -	✓		✓		This option would encompass an uplift on the sales position of the last ten years albeit at a slightly lesser rate than options 2 and 3. The impact of this on the historic environment is uncertain as no indication is given of where this provision would be, so the extent to which the historic environment would be affected is not known. However, there is some increased likelihood (albeit at an unknown extent) that the historic environment would come under increased pressure under this option in comparison to options 1, 5, 6 and 9, as more sites may be needed (unless marine resources are utilised).
11.	? -	? -	? -	✓		✓		This option would encompass an uplift on the sales position of the last ten years albeit at a slightly lesser rate than options 2 and 3. The impact of this on landscape is uncertain as no indication is given of where this provision would be, so it is not known the extent to which the landscape would be affected. However, there is some increased likelihood (albeit at an unknown extent) that the landscape would come under increased pressure under this option in comparison to options 1, 5,6 and 9, as more sites may be needed (unless marine resources are utilised).
12.	+	+	+ +	✓		✓		This option is likely to have positive effects on economic growth as supply of minerals is more certain to be met into the long term than options 1, 5, 6 and 9, but is less certain than option 2. This option allows for an increase in building rates over the plan period facilitating this element of predicted future growth.
13.	? -	? -	? -	✓		✓		This option would encompass an uplift on the sales position of the last ten years albeit at a slightly lesser rate than options 2 and 3. The impact of this on the vitality of communities is uncertain as no indication is given of where this provision would be, so it is not known the extent to which communities would be affected. However, there is some increased likelihood (albeit at an unknown extent) that communities would come under increased pressure (e.g. from traffic or noise) under this option in comparison to option 1, 5, 6 and 9, as more sites may be needed.
14.	0	0	+					This option would encompass an uplift on the sales position of the last ten years albeit at a slightly lesser rate than options 2 and 3. In the long term opportunities for creation of leisure and recreation opportunities in the plan area may occur through site reclamation.
15.	?	?	?	✓		✓		This option would encompass an uplift on the sales position of the last ten years albeit at a slightly lesser rate than options 2 and 3. The impact of this on the health and wellbeing of communities is uncertain as no indication is given of where this provision would be, so it is not known the extent to which the health and

	-	-	-					wellbeing of communities would be affected. However, there is some increased likelihood (albeit at an unknown extent) that communities would be exposed to more health and wellbeing issues under this option in comparison to options 1, 5, 6 and 9, as more sites may be needed.
16.	+	+	+ +	✓			✓	Continued provision of sand and gravel resources is likely to continue to open up opportunities for future flood storage as sand and gravel often occurs in the floodplain and is often restored to flood storage.
17.	+	+	+	✓			✓	The development needs of local communities are likely to continue to be supported by this objective if demand for sand and gravel resources needed by community scale development is met.

Proposed alternative option 9: (Or) This option would involve projecting forward 10 year annual average sales over the period to 2030 to provide an indication of the overall scale of provision required, after allowing for a level of reserves already with planning permission. Based on the position at the end of 2011 this would result in a need for an additional 27.5mt of sand and gravel over the plan period. Monitoring should take place on a regular basis.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	?	?	?	✓		✓		This option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual. The impact of this on biodiversity is uncertain as no indication is given of where this provision would be, so it is not known the extent to which biodiversity and geodiversity would be affected though as sites are restored impacts would be offset to a degree. In the medium to long term, estimations regarding the scale of provision required throughout the plan period may be amended upwards or downwards depending upon the outcomes of the monitoring programme, leading to further uncertainty regarding potential effects.

2.	?	?	?	✓		✓		This option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual. The impact of this on water is uncertain as no indication is given of where this provision would be, so it is not known the extent to which water resources would be affected. In the medium to long term, estimations regarding the scale of provision required throughout the plan period may be amended upwards or downwards depending upon the outcomes of the monitoring programme, leading to further uncertainty regarding potential effects.
3.	?	?	?	✓		✓		This option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual. The impact of this on transport is uncertain as no indication is given of where this provision would be, so it is not known the extent to which transport would be affected. In the medium to long term, estimations regarding the scale of provision required throughout the plan period may be amended upwards or downwards depending upon the outcomes of the monitoring programme, leading to further uncertainty regarding potential effects.
4.	?	?	?	✓		✓		This option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual. The impact of this on air quality is uncertain as no indication is given of where this provision would be, so it is not known the extent to which air quality would be affected. In the medium to long term, estimations regarding the scale of provision required throughout the plan period may be amended upwards or downwards depending upon the outcomes of the monitoring programme, leading to further uncertainty regarding potential effects.
5.	?	?	?	✓		✓		This option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual. The impact of this on soil and land is uncertain as no indication is given of where this provision would be, so it is not known the extent to which soil and land would be affected. In the medium to long term, estimations regarding the scale of provision required throughout the plan period may be amended upwards or downwards depending upon the outcomes of the monitoring programme, leading to further uncertainty regarding potential effects.
6.	-	-	-	✓		✓		A further 27.5 mt of sand and gravel extraction would require an increased amount of energy to extract and transport the resource, and further release of carbon from soil loss. As carbon in the atmosphere is cumulative this option works against the objective to reduce the causes of climate change.
7.	?	?	?	✓			✓	The impact of this on climate adaptation is uncertain as no indication is given of where this provision would be, so it is not known the extent to which climate adaptation would be affected. In the medium to long term, estimations regarding the scale of provision required throughout the plan period may be amended upwards or downwards depending upon the outcomes of the monitoring programme, leading to further uncertainty regarding potential effects.

8.	-	-	-	✓		✓		This option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual. This would work against minimising the use of resources as effectively this would allow for a further 27.5 mt of primary resources to be consumed at a steady rate similar to that of the last 10 years.
9.	-	-	-	✓			✓	This option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual. This would work against minimising waste generation as effectively it would allow for a further 27.5 mt of further primary resources to be consumed at a steady rate similar to that of the last 10 years.
10.	?	?	?	✓		✓		This option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual. The impact of this on the historic environment is uncertain as no indication is given of where this provision would be, so the extent to which the historic environment would be affected is not known. In the medium to long term, estimations regarding the scale of provision required throughout the plan period may be amended upwards or downwards depending upon the outcomes of the monitoring programme, leading to further uncertainty regarding potential effects.
11.	?	?	?	✓		✓		This option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual. The impact of this on landscape is uncertain as no indication is given of where this provision would be, so it is not known the extent to which landscape would be affected. In the medium to long term, estimations regarding the scale of provision required throughout the plan period may be amended upwards or downwards depending upon the outcomes of the monitoring programme, leading to further uncertainty regarding potential effects.
12.	+	+ +	+ +	✓		✓		This option is likely to have a strong positive effect on economic growth as due to the introduction of regular monitoring, supply of minerals is likely to match demand.
13.	?	?	?	✓		✓		This option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual. The impact of this on the vitality of local communities is uncertain as no indication is given of where this provision would be, so it is not known the extent to which communities would be affected. In the medium to long term, estimations regarding the scale of provision required throughout the plan period may be amended upwards or downwards depending upon the outcomes of the monitoring programme, leading to further uncertainty regarding potential effects.

14.	0	0	+					In the long term opportunities for creation of leisure and recreation opportunities in the plan area may occur through site reclamation.
15.	?	?	?	✓			✓	This option would encompass the sales position across approximately equal periods of recession and growth and could be seen as business as usual. The impact of this on the health and wellbeing of local communities is uncertain as no indication is given of where this provision would be, so it is not known the extent to which the health and wellbeing of communities would be affected. In the medium to long term, estimations regarding the scale of provision required throughout the plan period may be amended upwards or downwards depending upon the outcomes of the monitoring programme, leading to further uncertainty regarding potential effects.
16.	+	+	+	✓			✓	Continued provision of sand and gravel resources is likely to continue to open up opportunities for future flood storage as sand and gravel often occurs in the floodplain and is often restored to flood storage.
17.	+	+ +	+ +	✓			✓	The development needs of local communities are likely to continue to be supported by this objective particularly as regular monitoring would ensure that the scale of provision can respond to any changes in demand from those projected.

Proposed alternative option 10: (Or) This option would calculate future provision by projecting forward 10 year average sales with the addition of a review of sand and gravel sales at the end of 2019. In the event that sales of sand and gravel recover to a level such that short term average sales (as measured over a three year averaging period for the years 2017, 2018 and 2019) exceed the 10 year average sales figure used to define provision at the time of plan preparation by an amount exceeding 10%, then additional provision can be made in line with that referred to in option 3 above, i.e. provision of an additional 10% leading to a total provision of 31.9mt over the plan period. When reviewing provision at the end of 2019 consideration will also be given to provision and potential provision from outside of the plan area.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA object	Impact / timescale	Type of effect	Analysis

	S	M	L	P	T	D	I	
1.	?	?	?	✓		✓		In the short term effects would be uncertain for the same reasons as option 1. In the medium to long term effects would continue to be as option 1 or would be a combination of option 3 and option 7.
		-	-					
		+	+					
2.	?	?	?	✓		✓		In the short term effects would be uncertain for the same reasons as option 1. In the medium to long term effects would continue to be as option 1 or would be a combination of option 3 and option 7.
		-	-					
		+	+					
3.	?	?	?	✓		✓		In the short term effects would be uncertain for the same reasons as option 1. In the medium to long term effects would continue to be as option 1 or would be a combination of option 3 and option 7.
		-	-					
		+	+					
4.	?	?	?	✓		✓		In the short term effects would be uncertain for the same reasons as option 1. In the medium to long term effects would continue to be as option 1 or would be a combination of option 3 and option 7.
		-	-					
		+	+					
5.	?	?	?	✓		✓		In the short term effects would be uncertain for the same reasons as option 1. In the medium to long term effects would continue to be as option 1 or would be a combination of option 3 and option 7.
		-	-					
		+	+					
6.	-	-	-	✓		✓		In the short term effects would be negative for the same reasons as option 1. In the medium to long term effects would continue to be as option 1 or would be a combination of option 3 and option 7.
		--	--					
7.	?	?	?	✓			✓	In the short term effects would be uncertain for the same reasons as option 1. In the medium to long term effects would continue to be as option 1 or would be a combination of option 3 and option 7.
		-	-					
8.	-	-	-	✓		✓		In the short term effects would be negative for the same reasons as option 1. In the medium to long term effects would continue to be as option 1 or would be a combination of option 3 and option 7.

		--	--					
9.	-	-	-	✓			✓	In the short term effects would be negative for the same reasons as option 1. In the medium to long term effects would continue to be as option 1 or would be a combination of option 3 and option 7.
		--	--					
10.	?	?	?	✓		✓		In the short term effects would be uncertain for the same reasons as option 1. In the medium to long term effects would continue to be as option 1 or would be a combination of option 3 and option 7.
		-	-					
		+	+					
11.	?	?	?	✓		✓		In the short term effects would be uncertain for the same reasons as option 1. In the medium to long term effects would continue to be as option 1 or would be a combination of option 3 and option 7.
		-	-					
		+	+					
12.	+	?	?	✓		✓		In the short term effects would be positive for the same reasons as objective 1. In the medium to long term effects would continue to be as option 1 or would be a combination of option 3 and option 7. However, this option brings with it greater flexibility to adapt to changing circumstances which could reduce the potential for over or undersupply in the long term, which will help maintain the viability of quarry operators.
		-	-					
		+	+ +					
13.	?	?	?	✓		✓		In the short term effects would be uncertain for the same reasons as option 1. In the medium to long term effects would continue to be as option 1 or would be a combination of option 3 and option 7.
		-	-					
		+	+					
14.	0	+	+					In the short term it is not anticipated that this option would have any impact upon this objective. In the medium to long term opportunities for creation of leisure and recreation opportunities in the plan area may occur through site reclamation.
15.	?	?	?	✓		✓		In the short term effects would be uncertain for the same reasons as option 1. In the medium to long term

								effects would continue to be as option 1 or would be a combination of option 3 and option 7.
		-	-					
		+	+					
16.	+	+	+	✓			✓	In the short term effects would be positive for the same reasons as objective 1. In the medium to long term effects would continue to be as option 1 or would be a combination of option 3 and option 7.
		+ +	+ +					
		-	-					
17.	+	+	+	✓			✓	In the short term effects would be positive for the same reasons as objective 1. In the medium to long term effects would continue to be as option 1 or would be a combination of option 3 and option 7.
		--	--					

Summary of assessment

There is a significant amount of uncertainty in relation to all of these options due to uncertainty over where provision would be made. However, generally there are likely to be negative effects on climate change, resource minimisation and waste, which range in severity depending on the amount extracted varying from Option 2 (which performs least well) to Option 6 (which performs the best).

Negative effects are also observed in other areas for individual options, with Options 2, 3, 4, 8 and 10 exhibiting the most certain negative environmental effects. Option 5 also has the potential to lead to negative effects on marine environments and Option 7 has the potential to displace negative effects outside of the plan area. Most options also have some positive effects, particularly in relation to economic growth, flood risk and changing population. This is because it is important to match supply of aggregate with demand to support the economy, and because new sand and gravel sites may open up opportunities to contribute to a range of SA objectives, including flood storage and to meet the development needs of local communities and businesses. The exceptions to this are Options 6 and 7, which shows uncertain to negative economic and population effects as shortfalls in provision may result. These options would however be likely to have positive environmental effects (at least within the plan area) due to a lower level of land take.

Recommendations

Option 6 performs the most positively in terms of the sustainability appraisal. However, this option does present some uncertainty in terms of meeting demand for sand and gravel. This might be addressed by allowing greater flexibility to increase supply in a similar way to option 4 and Option 10.

The SA Team felt that as option 6 takes account of the potential for other alternative sources of supply, final consideration of this option should also include consideration of the alternatives presented under ID14.

Overall Distribution of Sand and Gravel Provision (id04)

Assumptions – This assessment assumes that market demands will remain constant over the plan period.

Option 1. This option could make future provision for sand and gravel on the basis of separate provision for the southwards and northwards distribution areas (concreting sand and gravel) and for building sand, at a ratio of 50:45:5.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	+	✓		✓	✓	Planning for a 50:45:5 split would align the plan with current market demand; meaning more efficient transport of minerals with fewer impacts on species (in terms of traffic fatalities) and less air pollution impacts on biodiversity than not planning in this way. However, these effects are expected to be relatively minor. The split may lead to some cumulative pressure on the network of SINC sites and ancient woodlands in the south of the plan area, however, in the main impacts would not be known until locations are confirmed. The distribution may also help create greater opportunities for biodiversity in the long term if sites are restored to flood storage / nature conservation. 45 per cent of the split would also favour a more northward distribution which would bring effects on the SINC / woodland network in that area too (albeit to a lesser extent). There is, however, significant uncertainty in this assessment.
	-	-	-					
2.	?	?	?		✓	✓	✓	A greater rate of extraction in the south may bring some sites closer to Source Protection Zones than the opposite approach. Water quality in the south is generally moderate, which given operations like dewatering may be used, at a local scale this might have a negative effect on the achievement of water body status

	-	-	-					objectives. The net effect is therefore rated as minor negative in the medium to long term. 45 per cent of the split would also favour a more northward distribution which would continue to bring (slightly lesser) effects there. There is, however, significant uncertainty in this assessment
3.	+	+ +	+ +	✓		✓		Planning for a 50:45:5 split would align the plan with current market demand meaning more efficient transport, particularly over time as more provision adheres to the split.
4.	+	+	+	✓			✓	Planning for a 50:45:5 split would align the plan with current market demand meaning more efficient transport, and therefore fewer emissions to air, particularly over time as more provision adheres to the split. It is not possible to say, though it is not thought likely, that Air Quality Management Areas would be affected by this split.
5.	? -	? -	? -	✓		✓		A greater emphasis on southward distribution would potentially steer more development to some of the best agricultural land in the plan area. However, a northward distribution would also steer sand and gravel extraction towards best and most versatile agricultural land. 45 per cent of the split would favour a more northward distribution which would bring slightly lesser, though still significant, negative effects. There is, however, significant uncertainty in this assessment.
6.	+	+ +	+ +	✓			✓	Although a greater emphasis on the south might affect slightly more woodland, leading to increased carbon loss, this is likely to be cancelled out by savings in traffic (see objective 3) and corresponding reductions in carbon from vehicles.
7.	0	0	0					No clear link
8.	0	0	0					This option does not affect the quantities of sand and gravel that might be extracted; rather it focusses on sand and gravel's broad spatial distribution. The effect is therefore neutral.
9.	0	0	0					This option does not affect the quantities of sand and gravel that might be extracted, and thus future waste generated, rather it focusses on sand and gravel's broad spatial distribution. The effect is therefore neutral.
10.	?	?	?	✓		✓	✓	There is the potential for some sand and gravel sites to be steered close to concentrations of historic assets in the south of the plan area (and still some slightly lesser potential for a similar effect in the north) under this

	-	-	-					option. This may affect historic assets' settings or directly affect those sites. Effects will be cumulative over time as more development occurs. There is a particular concentration of historic assets close to the West Heslerton area (building sand) though no indication is made of where building sand is favoured under this option. There is, however, significant uncertainty in this assessment.
11.	? - 	? - 	? - +	✓		✓	✓	This configuration may make more sites visible from AONBs and the setting of York may also be affected, depending on location of allocations. However, a lesser amount (45 per cent) of the sand and gravel development would also be in the northern part of the plan area which may bring it within visible range of the national parks. Restoration may bring some positive effects in the longer term. There is, however, significant uncertainty in this assessment.
12.	+	+ +	+ +	✓		✓		Planning for a 50:45:5 split would align the plan with current market demand (meaning more efficient transport of minerals and quicker delivery times). This will help keep costs down, and therefore businesses and quarry operators alike will benefit.
13.	0	- 	- +	✓		✓		Planning for a 50:45:5 split would align the plan with current market demand but would direct slightly more development towards parts of the plan area with a higher population density, which may result in a higher probability of both positive and negative impacts on the viability of local communities over time.
14.	? -	? -	? +		✓	✓	✓	There is a more or less even distribution of right of way and green infrastructure across the northern and southern parts of the plan area, however the northern area might fall within visual range of national parks, while in the south views out of AONBs may be affected. This 50:45:5 split potentially has minor negative effects on these recreational assets as views and access may be disturbed (particularly in the south), but in the longer term sand and gravel sites may well create recreational resources in themselves or enhance views from other recreational areas. There is, however, significant uncertainty in this assessment.
15.	+ - ?	+ - ?	+ - ?	✓			✓	Although this configuration may bring more sand and gravel development closer to higher population densities, this configuration also reduces vehicle miles travelled as a whole, so there is likely to be small scale benefits on health and wellbeing from less traffic, though local scale negative impacts may also be more likely to occur. There is, however, significant uncertainty in this assessment.
16.	0	0	+	✓			✓	As 'water compatible' development, sand and gravel sites can be appropriately located in the floodplain. A

								more southerly orientation may bring sites lower down river catchments, though they will still have potential for flood storage (albeit slightly less effective flood storage as this would not benefit settlements upstream) in the long term.
17.	0	+	+	✓		✓		Bringing sites closer to markets will help support the development needs of local communities as this should bring costs down.

Option 2 This option could make future provision for sand and gravel on the basis of separate provision for the southwards and northwards distribution areas with an increased emphasis on provision for the southwards distribution area. This could assume provision based on a ratio of 55:40:5 southwards: northwards: building sand.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	?	?	?	✓		✓	✓	This option would increase the emphasis on the southern area and lessen the emphasis on the north. This could result in some uncertainty over whether supply would be close to market which may result in some lengthened journeys. So some of the air pollution and animal traffic fatality benefits of option 1 may be lost. It would also result in additional pressure on southern area SINC sites and ancient woodland (subject to location of sites). 40 per cent of the split would also favour a more northward distribution which would bring effects on the SINC / woodland network there. There is, however, significant uncertainty in this assessment.
	-	-	-					

2.	?	?	?		✓	✓	✓	A greater rate of extraction in the south may bring some sites closer to Source Protection Zones (minor increase in association of areas which potentially could be worked with Source Protection Zones) in comparison to the northern area. Water quality in the south is generally moderate, which given operations like dewatering may be used at a local scale, might have a negative effect on the achievement of status objectives. The net effect is therefore rated as minor negative (though a potentially stronger effect than option 1) in the short, medium and long term. 45 per cent of the split would also favour a more northward distribution which would continue to bring (slightly lesser) effects there. There is, however, significant uncertainty in this assessment.
	-	-	-					
3.	-	-	-	✓		✓		This option would increase the emphasis on the southern area and lessen the emphasis on the north. This could result in some uncertainty over whether supply would be close to market which may result in some lengthened journeys. There is, however, significant uncertainty in this assessment.
	?	?	?					
4.	-	-	-	✓			✓	This option would increase the emphasis on the southern area and lessen the emphasis on the north. This could result in some uncertainty over whether supply would be close to market which may result in some lengthened journeys and therefore minor negative effects on air quality. There is, however, significant uncertainty in this assessment.
	?	?	?					
5.	?	?	?	✓		✓		This even greater emphasis on southward distribution would potentially steer more development to some of the best agricultural land in the plan area. However, a northward distribution would also steer sand and gravel extraction towards best and most versatile agricultural land. 40 per cent of the split would still favour a more northward distribution which would bring slightly lesser, though still significant, negative effects. There is, however, significant uncertainty in this assessment.
	-	-	-					
6.	0	-	-	✓			✓	This option would increase the emphasis on the southern area and lessen the emphasis on the north. This could result in some uncertainty over whether supply would be close to market which may result in some lengthened journeys and therefore greater carbon emissions.
	?	?	?					

7.	0	0	0					No clear link
8.	0	0	0					This option does not affect the quantities of sand and gravel that might be extracted, rather it focusses on its broad spatial distribution. The effect is therefore neutral.
9.	0	0	0					This option does not affect the quantities of sand and gravel that might be extracted, and thus future waste generated, rather it focusses on its broad spatial distribution. The effect is therefore neutral.
10.	? -	? -	? -	✓		✓	✓	There is the potential for more sand and gravel sites to be steered close to concentrations of historic assets in the south of the plan area (and a similarly strong potential for the remainder of the sites in the north to be steered close to historic assets) under this option. This may affect historic assets' settings or the assets themselves. Effects will be cumulative over time as more development occurs. There is a particular concentration of historic assets close to the West Heslerton area (building sand) though no indication is made of where building sand is favoured under this option. There is, however, significant uncertainty in this assessment.
11.	? - +	? - +	? - +	✓		✓	✓	This configuration may make more sites visible from AONBs and the setting of York may also be affected, depending on location of allocations (stronger effect than option 1). However, a lesser amount (40 per cent) of the sand and gravel development would also be in the northern part of the plan area which may bring it within visible range of the national parks. Therefore this option would have some benefits in relation to national parks in comparison to option 1. There is, however, significant uncertainty in this assessment.
12.	?	?	?	✓		✓		Planning for a 55:40:5 split would help meet demand in the southern part of the plan area though there may be an undersupply in the north. This may have an effect on prices – with the potential for increases in price in the north. The net effects are considered uncertain.
13.	0	- +	- +	✓		✓		Planning for a 55:40:5 split would direct more development towards parts of the plan area with a higher population density, which may result in a higher probability of both positive and negative impacts on the viability of local communities over time.
14.	?	?	?		✓	✓	✓	There is a more or less even distribution of rights of way and green infrastructure across the northern and southern parts of the plan area, however the northern area might fall within visual range of national parks,

	-	-	+					while in the south views out of AONBs may be affected. This 55:40:5 split would potentially have minor negative effects on the recreational assets of the southern area as views and access may be disturbed, and would be of some benefit to views from national parks. But in the longer term sand and gravel sites may well make recreational resources in themselves or enhance views from other recreational areas. There is, however, significant uncertainty in this assessment.
15.	? -	? -	? -	✓			✓	Although this configuration may bring more sand and gravel development closer to higher population densities, unlike option 1 this configuration may also increase the length of some journeys, so there is likely to be negative effects on health and wellbeing from traffic as a whole, though local scale negative impacts may still occur. There is, however, significant uncertainty in this assessment.
16.	0	0	+	✓			✓	As 'water compatible' development, sand and gravel sites can be appropriately located in the floodplain. A more southerly orientation may bring sites lower down river catchments, though they will still have potential for flood storage in the long term (though settlements upstream won't benefit).
17.	?	?	?	✓		✓		Planning for a 55:40:5 split would help meet demand in the southern part of the plan area though there may be an undersupply in the north. This may have an effect on prices – with the potential for increases in price in the north. The effect of these prices on community scale development and this objective is unknown.

Option 3 This option could make future provision for sand and gravel on the basis of separate provision for the southwards and northwards distribution areas with increased emphasis on provision for the northwards distribution area. This could assume provision on the basis of a ratio of 45:50:5 southwards: northwards: building sand.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	

1.	?	?	?	✓		✓	✓	This option would increase the emphasis on the northern area and lessen the emphasis on the south. This could result in some uncertainty over whether supply would be close to market which may result in some lengthened journeys. So some of the air pollution and animal traffic fatality benefits of option 1 may be lost. It would also result in additional pressure on northern area SINC sites and ancient woodland (subject to location of sites). 45 per cent of the split would also favour a more southern distribution which has the potential for effects on the relatively high density SINC / ancient woodland density there. There is, however, significant uncertainty in this assessment.
	-	-	-					
2.	?	?	?		✓	✓	✓	A greater rate of extraction in the north may slightly reduce proximity to Source Protection Zones than the opposite approach. Water quality in the north ranges from poor to moderate to good, which given operations like dewatering may be used at a local scale, might have a negative effect on the achievement of status objectives. The net effect is therefore rated as neutral to minor negative in the short, medium and long term. 45 per cent of the split would also favour a more southward distribution which would continue to bring (slightly greater) effects there. There is, however, significant uncertainty in this assessment.
	-	-	-					
3.	?	?	?	✓		✓		This option would increase the emphasis on the northern area and lessen the emphasis on the south. This could result in less of an association between the supply of sand and gravel and its destination market which is likely to result in some lengthened journeys in the medium to long term.
	-	-	-					
4.	?	?	?	✓			✓	This option would increase the emphasis on the northern area and lessen the emphasis on the south. This could result in less of an association between the supply of sand and gravel and its destination market which is likely to result in some lengthened journeys in the medium to long term and therefore minor negative effects on air quality.
	-	-	-					
5.	?	?	?	✓		✓		A greater emphasis on northward distribution would potentially steer more development to best and most versatile agricultural land.

	-	-	-					45 per cent of the split would still favour a more southern distribution which would bring development into proximity of some of the best agricultural land in the plan area, with significant negative effects.
6.	0	-	-	✓			✓	This option would increase the emphasis on the northern area and lessen the emphasis on the south. This could result in some lengthened journeys (due to less of a close geographical association between supply and markets) and therefore greater carbon emissions.
7.	0	0	0					No clear link
8.	0	0	0					This option does not affect the quantities of sand and gravel that might be extracted, rather it focusses on its broad spatial distribution. The effect is therefore neutral.
9.	0	0	0					This option does not affect the quantities of sand and gravel that might be extracted, and thus future waste generated, rather it focusses on its broad spatial distribution. The effect is therefore neutral.
10.	?	?	?	✓		✓	✓	There is the potential for sand and gravel sites to be steered close to concentrations of historic assets in the north of the plan area (as well as the smaller number of sites steered towards a rich heritage in the south) under this option. This may affect historic assets' settings or the assets themselves. Effects will be cumulative over time as more development occurs. There is a particular concentration of historic assets close to the West Heslerton area (building sand) though no indication is made of where building sand is favoured under this option.
	-	-	-					
11.	-	-	-	✓		✓	✓	This configuration may make more sites visible from national parks, depending on location of allocations. However, a lesser amount (45 per cent) of the sand and gravel development would also be in the southern part of the plan area which may bring it within visible range of the AONBs and the setting of York. So there may be some positive effects on this southern area as the distribution emphasises a greater northern distribution.
	+	+	+					
	?	?	?					
12.	?	?	?	✓		✓		Planning for a 45:50:5 split would help meet demand in the northern part of the plan area though there may be an undersupply in the south. This may have an effect on prices – with the potential for increases in price in the south. The net effects are considered uncertain.
13.	0	0	0	✓		✓		Planning for a 45:50:5 split would direct more development towards parts of the plan area with a lower population density, which may result in a lower probability of negative impacts on the viability of local communities over time (such as effects on tourism) though, equally, positive impacts (such as jobs / employee spend) may be less accessible to communities. At a local scale effects may be significant, but on balance the effect is neutral.
14.	?	?	?		✓	✓	✓	There is a more or less even distribution of rights of way and green infrastructure across the northern and southern parts of the plan area, however the northern area might fall within visual range of national parks, while in the south views out of AONBs may be affected. This 45:50:5 split potentially has minor negative

	-	-	+					effects on the recreational assets of the northern area as views and access may be disturbed (particularly views from national parks), though is of some benefit to recreational resources and views out of them in the southern area. In the longer term sand and gravel sites may well make recreational resources in themselves or enhance views from other recreational areas.
15.	? +	? +	? +	✓			✓	This option shifts a proportion of the sand and gravel extraction northwards into an area with lower population density. Therefore the frequency of traffic accidents and wellbeing impacts should be lessened, though local scale negative impacts may still occur.
16.	0	0	+ +	✓			✓	As 'water compatible' development, sand and gravel sites can be appropriately located in the floodplain. A more northerly orientation may bring sites higher up river catchments, where they will have potential for flood storage in the long term.
17.	?	?	?	✓		✓		Planning for a 45:50:5 split would help meet demand in the northern part of the plan area though there may be an undersupply in the south. This may have an effect on prices. The effect of these prices on community scale development and this objective is therefore unknown.

Option 4 This option could make provision for sand and gravel on the basis of a single subdivision, combining concreting sand and gravel provision across the northwards and southwards distribution areas.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	? -	? -	? -	✓		✓	✓	This option would result in sand and gravel being distributed across the resource area, though market forces may favour areas close to markets. This would lead to uncertain effects on biodiversity and geodiversity as sites may be more widely distributed, though there is some correlation between the resource areas and higher concentrations of SINC and woodland sites meaning that there is the potential for negative effects (but also a greater possibility of avoiding the most sensitive sites).

2.	+	+	+	✓		✓		While groundwater Source Protection Zones could be affected by northern and southern distributions, a single subdivision may leave more scope for avoiding Source Protection Zones (though some of the largest SPZs coincide with parts of the sand and gravel resource and other locational factors and market forces may add uncertainty to locational decisions).
	?	?	?					
3.	-	--	--	✓		✓		While the site allocations process could put sites just about anywhere in the resource area under a single subdivision (subject to a range of considerations), in practice when developers make decisions on location, market forces may moderate transport impacts. This may mean, if market forces are not effective in controlling distance to market, or the allocations process gives a lesser consideration to transport impact, longer journeys may result. There is however significant uncertainty in this assessment.
	?	?	?					
4.	-	--	--	✓			✓	While the site allocations process could put sites just about anywhere in the resource area under a single subdivision (subject to a range of considerations), in practice when developers make decisions on location, market forces may moderate transport impacts. If market forces are not effective in controlling distance to market, or the allocations process gives a lesser consideration to transport impact, longer journeys may result. This could lead to greater air pollution. There is however, significant uncertainty in this assessment.
	?	?	?					
5.	-	-	-	✓		✓		As best and most versatile land broadly coincides with the resource area, negative effects may occur.
	?	?	?					
6.	-	--	--	✓			✓	If market forces (or the allocations process) are not effective in controlling distance to market, then longer journeys may result. This could lead to a greater contribution to climate change. There is however, significant uncertainty in this assessment.
	?	?	?					
7.	0	0	0					No clear link
8.	0	0	0					This option does not affect the quantities of sand and gravel that might be extracted; rather it focusses on its broad spatial distribution. The effect is therefore neutral.
9.	0	0	0					This option does not affect the quantities of sand and gravel that might be extracted, and thus future waste generated, rather it focusses on its broad spatial distribution. The effect is therefore neutral.
10.	+	+	+	✓		✓	✓	The sand and gravel area broadly coincides with an area relatively rich in historic assets. Although there is more potential to avoid impacts with this option, other locational factors could mean that avoidance is not possible and negative impacts occur. The effect may be cumulative in the longer term. The effect of market forces adds uncertainty to this assessment.
	?	?	?					

11.	+ ?	+ ?	+ ?	✓			✓	The effect on landscapes is unknown though some positive effects are noted as it may be possible to locate sites in less sensitive parts of the plan area under this option. However, other locational factors and market forces may act against this and bring sites within range of key visual receptors.
12.	? +	? +	? +	✓		✓	✓	A single subdivision may allow the positive effect of letting the market decide on location to a greater degree. However, there is a risk that several sites chase a more lucrative market simultaneously, while other markets become less well served.
13.	?	?	?					A single subdivision would make it difficult to predict effects on community vitality.
14.	?	?	?	✓			✓	This option would result in sand and gravel being distributed across the resource area, though market forces may favour areas closer to markets. This may mean that the setting (and thus recreational value) of national parks, AONBs and the setting of York are all equally affected by minerals development, or it may mean that impacts can be avoided through a greater choice of sites. On balance the impact is unknown.
15.	?	?	?	✓			✓	Effects on health and wellbeing are uncertain as there may the potential for more air pollution and a statistically greater chance of more road accidents if longer journeys result, though there is uncertainty over how market forces may affect location choice. It is also not possible to predict how community level wellbeing may be affected without greater spatial resolution.
16.	0	0	+	✓		✓		As the resource area in the main broadly follows the north – south routes of key river catchments, there will remain longer term potential for creating flood storage under this option. However, it is not known which settlements will, and which settlements won't, be protected by this flood storage.
17.	?	?	?	✓		✓	✓	It is not known how changing population needs will be affected as a single allocation may shorten or lengthen supply chains or increase or decrease costs faced by community scale development.

Proposed alternative option 5: (And) This option would enable provision for sand and gravel to be made from across the plan area to meet either northwards or southwards demand where there is a shortfall in either the northwards or southwards distribution area**.**

Assumptions- this 'and' option only considers the additional effects that would result from combining this option with the 'or' options assessed above. Where it is stated that 'effects are as other options', it is not considered that that the combining of this option with those assessed above (1-4) would lead to any additional effects than those already stated above for each option individually.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?	✓			✓	Depending upon how this option is implemented, there may be the possibility of a minor positive effect on biodiversity and geodiversity. Where a shortfall exists in the northwards or southwards distribution area, this option would allow provision to be made from across the plan area. This results in a larger number of sites from which overall sand and gravel provision can be made meaning that it is less likely that the most sensitive sites will need to be developed in order to meet demand. However, other locational factors and market forces may act against this and therefore there is also a great deal of uncertainty in this assessment.
	+	+	+					
2.	?	?	?	✓			✓	Depending upon how this option is implemented, there may be the possibility of a minor positive effect. Where a shortfall exists in the northwards or southwards distribution area, this option would allow provision to be made from across the plan area. This results in a larger number of sites from which overall sand and gravel provision can be made meaning that it is less likely that the most sensitive sites will need to be developed in order to meet demand. However, other locational factors and market forces may act against this and therefore there is also a great deal of uncertainty in this assessment.
	+	+	+					
3.	-	-	-	✓		✓		Whilst provision would be made from within the northwards and southwards distribution areas where possible (therefore keeping transport miles to a minimum where possible), this option would allow for provision from the entire plan area where a shortfall exists. In this situation longer journeys may result leading to a minor negative impact on this objective.
4.	-	-	-	✓			✓	Whilst provision would be made from within the northwards and southwards distribution areas where possible (therefore keeping transport emissions to a minimum), this option would allow for provision from the entire plan area where a shortfall exists. In this situation longer journeys may result leading to greater air pollution.

5.	? +	? +	? +	✓			✓	Depending upon how this option is implemented, there may be the possibility of a minor positive effect. Where a shortfall exists in the northwards or southwards distribution area, this option would allow provision to be made from across the plan area. This would result in a larger number of sites from which overall sand and gravel provision can be made meaning that it is less likely that the most sensitive sites will need to be developed in order to meet demand. However, other locational factors and market forces may act against this and therefore there is also a great deal of uncertainty in this assessment.
6.	? -	? -	? -	✓			✓	Although demand will be met from within the northwards and southwards distribution area where possible, if a shortfall does exist then enabling provision to be made from across the plan area may lead to longer journeys. This could lead to a greater contribution to climate change. There is however, significant uncertainty in this assessment.
7.	0	0	0					Effects are as other options.
8.	0	0	0					Effects are as other options.
9.	0	0	0					Effects are as other options.
10.	? +	? +	? +	✓			✓	The sand and gravel area broadly coincides with an area relatively rich in historic assets. Although there is more potential to avoid impacts with the addition of this option (as demand could be met from another distribution area within the plan area rather than developing the most sensitive sites where a shortfall exists), other locational factors could mean that avoidance is not possible and negative impacts occur. The effect of market forces adds uncertainty to this assessment.
11.	? +	? +	? +	✓			✓	The effect on landscapes is unknown due to the uncertainty under this option regarding the location of sand and gravel sites. It is however considered that the addition of this option would lead to some positive effects in terms of landscape as it allows a larger number of sites from which overall sand and gravel provision can be made meaning that it is less likely that the most sensitive sites will need to be developed in order to meet demand. However, other locational factors and market forces may act against this and bring sites within range of key visual receptors.
12.	+	+	+	✓		✓	✓	The addition of this option would ensure that economic growth is sustained through an adequate supply of sand and gravel throughout the plan area. This option would also ensure that certain regions do not suffer from an undersupply resulting in localised price increases. As this option only allows provision from across the whole plan area where a shortfall exists in the northern or southern distribution area, it is considered that transport costs and delivery times will be kept to a minimum whilst still ensuring an adequate supply is maintained.
13.	?	?	?					It is not possible to predict the effects of this option on community viability and vitality as the greater level of flexibility provided by this option in terms of where provision is made leads to uncertainty in relation to the location of sand and gravel sites.

14.	0	0	0					Effects are as other options.
15.	?	?	?	✓			✓	Effects on health and wellbeing are uncertain as there may be the potential for more air pollution and a statistically greater chance of more road accidents if longer journeys result, though there is uncertainty over how the distribution of supply and demand may affect location choice. It is also not possible to predict how community level wellbeing may be affected without greater spatial resolution.
16.	0	0	0 + -	✓		✓		Effects are as other options although where this option leads to sand and gravel development moving from the southern distribution area to the northern distribution area this may lead to an additional minor positive effect in relation to minimising flooding as it may bring sites higher up river catchments, where they will have greater potential for flood storage in the long term. Conversely, where this option leads to sand and gravel development moving from the northern distribution area to the southern distribution area, this may lead to a minor negative impact as sites move lower down river catchments to locations where flood storage schemes will be of benefit to less communities (as they lie upstream).
17.	+	+	+	✓		✓		This option would enable the sand and gravel demands of the whole plan area to be met by allowing greater flexibility in terms of the distribution of sand and gravel provision where a shortfall exists. This would enable development to meet the needs of the population.

Summary of assessment

All options display a mixture of uncertain, negative and positive effects. However, Option 1 displays the strongest positive effects largely because it matches well with current market demand, so effects on transport, air pollution and climate change as well as economic growth are all positive. There are also a number of areas where positive effects are either balanced by uncertainty or are confined to a particular period.

Other options tend to perform less well, and effects vary depending on the ratio of northern to southern division. For instance, landscape effects are both positive and negative under Options 1 to 4 though some uncertainty is noted. Similarly, the transport related benefits become negative under Options 2 and 3, or uncertain to negative for option 4.

Option 4 displays significant uncertainty across most of the SA objectives as it is not clear where sand and gravel extraction will occur under this objective.

The addition of Option 5 is considered likely to result in a number of minor positive effects as it would ensure that demand is met leading to positive economic benefits, and where a shortfall exists, it would allow a larger number of sites from which overall sand and gravel provision can be made. This means that it is less likely that the most sensitive sites will need to be developed in order to meet demand. Option 5 would lead to some minor negative impacts in relation to transport, air quality and climate change although wherever possible provision would be met within the designated distribution areas, keeping these negative effects to a minimum.

Recommendations

Option 1 is associated with a clear economic, and a number of outright environmental, benefits and is seen to perform best in relation to the SA Framework. It is considered that Option 1 should be combined with Option 5 in order to ensure that demand can be met and to strengthen the economic benefits.

Landbanks for Sand and Gravel (id05)

Assumptions - It is assumed that the southern distribution areas included sites more likely to serve the Leeds City Region.

Option 1.
Provide for separate 7 year landbanks for concreting sand and gravel for both the southwards and northwards distribution areas and for building sand.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0 -	-	✓		✓	✓	Maintaining separate seven year land banks in the north and south areas is likely to mean that in both areas permissions must be held at a level which meets expected requirements for at least the next seven years. In the longer term this could mean that there is increased pressure to maintain the landbank in defined (and therefore finite) areas (i.e. a northern or southern distribution area), which may put additional pressure to approve sites in areas where cumulative effects on biodiversity are already starting to build. The net effect of this is, therefore, a cumulative negative effect for biodiversity / geodiversity.
2.	0	0 -	-	✓		✓	✓	Maintaining separate seven year land banks in the north and south areas is likely to mean that in both areas permissions must be held at a level which meets expected requirements for at least the next seven years. In the longer term this could mean that there is increased pressure to maintain the landbank in defined (and therefore finite) areas (i.e. a northern or southern distribution area), which may put additional pressure to approve sites in areas where cumulative effects on water are already starting to build. The net effect of this is, therefore, negative for water quality.
3.	0	0	0	✓		✓		As with the above objectives, in the longer term this could mean that there is increased pressure to maintain the landbank in defined (and therefore finite) areas (i.e. a northern or southern distribution area), which may

		-						put additional pressure to approve sites in areas where cumulative traffic effects are already starting to build. The net effect of this is, therefore, negative for transport. However, market demand will ultimately dictate how much is extracted, so traffic may normalise (to the baseline) over time.
4.	0	0 -	0	✓		✓	✓	As this option would lead to increased traffic in the medium term (as is the case at objective 3) so local air quality would be affected by the associated emissions of that traffic. However, market demand will ultimately dictate how much is extracted, so emissions may normalise (to the baseline) over time.
5.	0	0 -	- -	✓		✓		In the longer term this could mean that there is increased pressure to maintain the landbank in defined (and therefore finite) areas (i.e. a northern or southern distribution area), which may increase pressure to approve sites in areas where cumulative effects on soils and land are already starting to build. The net effect of this is, therefore, negative for soils and land. Because the resource area for sand and gravel is mostly grade 2 or grade 3 agricultural land and effects on soils and land are more likely to be cumulative, the long term effect is rated major negative.
6.	0	-	0	✓			✓	This option, because of its 7 year land bank requirement, will potentially require a greater amount of development (than not maintaining a landbank) to be permitted at any one time and in two separate distribution areas. This could bring forward some carbon emissions (probably in the medium term) if it results in more operational sites as more energy will be required for construction and transport. However, market demand will ultimately dictate how much is extracted, so emissions may normalise (to the baseline) over time.
7.	0	0	0					No clear link
8.	--	--	--	✓		✓		Maintaining a landbank is likely to decrease any incentive for reducing the use of resources.
9.	--	--	--	✓		✓		Maintaining a landbank is likely to decrease any incentive for using recycled / secondary resources.
10.	0	0 -	-	✓		✓	✓	Maintaining separate seven year land banks in the north and south areas is likely to mean that in both areas permissions must be held at a level which meets expected requirements for at least the next seven years. In the longer term this could mean that there is increased pressure to maintain the landbank in defined (and therefore finite) areas (i.e. a northern or southern distribution area), which may put additional pressure to approve sites in areas where cumulative effects on the historic environment are already starting to build. The net effect of this is, therefore, a cumulative negative effect for the historic environment.
11.	0	0	-					Maintaining separate seven year land banks in the north and south areas is likely to mean that in both areas permissions must be held at a level which meets expected requirements for at least the next seven years. In the longer term this could mean that there is increased pressure to maintain the landbank in defined (and

		-						therefore finite) areas (i.e. a northern or southern distribution area), which may put additional pressure to approve sites in areas where cumulative effects on the landscape are already starting to build. The net effect of this is, therefore, a cumulative negative effect for the landscape.
12.	+ +	+ +	+ +		✓		✓	This option would enable sufficient materials to be provided to support the economy and would also help to support jobs in the minerals sector.
13.	0	+ -	+ -	✓			✓	Maintaining separate seven year land banks in the north and south areas is likely to mean that in both areas permissions must be held at a level which meets expected requirements for at least the next seven years. In the longer term this could mean that there is increased pressure to maintain the landbank in defined (and therefore finite) areas (i.e. a northern or southern distribution area), which may detract from the tourism dividend enjoyed by some communities or, alternatively, may provide a source of local employment. The net effect of this is, therefore, mixed positive and negative effects for community vitality.
14.	0	0 -	-	✓			✓	As cumulative effects are identified as occurring on a number of recreational assets (e.g. landscape and biodiversity) elsewhere in this assessment, and are equally likely to occur to the access and green infrastructure network, effects are likely to become minor negative in the longer term.
15.	0	0 -	0		✓		✓	Elsewhere in the assessment of this option a number of factors that contribute or detract from health and wellbeing (e.g. traffic, air quality) have been identified as potentially deteriorating and then normalising. Other issues such as noise may also behave in the same way, as landbanks in the two separate areas require maintaining. This may have temporary effects on health and wellbeing objective.
16.	0	0	0					No clear link
17.	0	+	+	✓		✓		Under this option the maintenance of seven year landbanks in separate areas is likely to positively impact on the needs of changing population as it will help secure shorter supply chains for a key building material and will help development that supports changing communities through a more secure supply of building materials.

Option 2 Provide for a 7 year landbank for concreting sand and gravel over the whole Joint Plan area and a separate 7 year landbank for building sand

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0 -	-	✓			✓	This option would prevent some of the potential cumulative effects for option 1 as it would allow greater flexibility in the locations that contribute towards the landbank. As the current landbank for building sand is around 12 years, the effects of maintaining this at 7 years (i.e. additional pressure to approve future permissions) are unlikely to be seen until the medium term to long term.
2.	0	0 -	-	✓			✓	This option would prevent some of the potential cumulative effects for option 1 as it would allow greater flexibility in the locations that contribute towards the landbank. As the current landbank for building sand is around 12 years, the effects of maintaining this at 7 years (i.e. additional pressure to approve future permissions) are unlikely to be seen until the medium term to long term.
3.	0	0 -	- ?	✓			✓	This option would prevent some of the potential local cumulative effects for option 1 as it would allow greater flexibility in the locations that contribute towards the landbank. However, it is uncertain whether offsetting a shortfall in a distribution area landbank with a surplus elsewhere might create temporary gaps when supply is not fully available, forcing buyers to source material from further afield. As the current landbank for building sand is around 12 years, the effects of maintaining this at 7 years (i.e. additional pressure to approve future permissions) are unlikely to be seen until the medium term to long term.
4.	0	0 -	- ?	✓			✓	This option would prevent some of the potential cumulative effects for option 1 as it would allow greater flexibility in the locations that contribute towards the landbank. However, the uncertainty highlighted at objective 3 is also applicable to the air pollution effects generated by sand and gravel traffic. As the current landbank for building sand is around 12 years, the effects of maintaining this at 7 years (i.e. additional pressure to approve future permissions) are unlikely to be seen until the medium term to long term.
5.	0	0 -	--	✓			✓	This option would mitigate some of the potential cumulative effects for option 1 as it would allow greater flexibility in the locations that contribute towards the landbank. As the current landbank for building sand is around 12 years, the effects of maintaining this at 7 years (i.e. additional pressure to approve future permissions) are unlikely to be seen until the medium term to long term. As most of the land likely to be affected is high quality farmland, even with greater flexibility the long term effects may be major negative.
6.	0	0	-	✓			✓	This option would mitigate some of the potential cumulative effects for option 1 as it would allow greater flexibility in the locations that contribute towards the landbank. However, the uncertainty highlighted at

		- -						objective 3 is also applicable to the climate change effects generated by sand and gravel traffic. As the current landbank for building sand is around 12 years, the effects of maintaining this at 7 years (i.e. additional pressure to approve future permissions) are unlikely to be seen until the medium term to long term.
7.	0	0	+	✓		✓		The flexibility inherent in this option may allow landbanks to be maintained as effects of climate change (such as increased flooding) become more apparent.
8.	--	--	--	✓		✓		Maintaining a landbank is likely to decrease any incentive for reducing the use of resources.
9.	--	--	--	✓		✓		Maintaining a landbank is likely to decrease any incentive using previously used resources.
10.	0	0 -	-	✓			✓	This option would prevent some of the potential cumulative effects for option 1 as it would allow greater flexibility in the locations that contribute towards the landbank. As the current landbank for building sand is around 12 years, the effects of maintaining this at 7 years (i.e. additional pressure to approve future permissions) are unlikely to be seen until the medium term to long term.
11.	0	0 -	-	✓			✓	This option would prevent some of the potential cumulative effects for option 1 as it would allow greater flexibility in the locations that contribute towards the landbank. As the current landbank for building sand is around 12 years, the effects of maintaining this at 7 years (i.e. additional pressure to approve future permissions) are unlikely to be seen until the medium term to long term.
12.	+ +	+ +	+ ?	✓	✓		✓	This option would enable sufficient materials to be provided to support the economy and would also help to support jobs in the minerals sector. However, in the longer term, if this option allows offsetting between the north and south distribution within the landbank supply problems in certain areas may ensue (see also objective 3).
13.	0	+ -	+ -	✓			✓	This option would prevent some of the potential cumulative effects for option 1 as it would allow greater flexibility in the locations that contribute towards the landbank. As with option 1, there may be benefits and dis-benefits for community vitality under this option, but there is likely to be a slightly greater opportunity to use this greater flexibility to maximise benefits and minimise dis-benefits. As the current landbank for building sand is around 12 years, the effects of maintaining this at 7 years (i.e. additional pressure to approve future permissions) are unlikely to be seen until the medium term to long term.
14.	0	0	0	✓			✓	This option would prevent some of the potential cumulative effects for option 1 as it would allow greater flexibility in the locations that contribute towards the landbank. As the current landbank for building sand is

		-	-					around 12 years, the effects of maintaining this at 7 years (i.e. additional pressure to approve future permissions) are unlikely to be seen until the medium term to long term.
15.	0	0 -	0 -	✓			✓	This option would prevent some of the potential cumulative effects for option 1 as it would allow greater flexibility in the locations that contribute towards the landbank. As the current landbank for building sand is around 12 years, the effects of maintaining this at 7 years (i.e. additional pressure to approve future permissions) are unlikely to be seen until the medium term to long term.
16.	0	0	0					No clear link
17.	0	?	?	✓	✓		✓	Unlike option 1 it is not certain that shorter supply chains or indeed more competitive building materials will be achieved if, for example, a land bank is made up of reserves in permitted distant sites far from their eventual market.

Option 3 This option would support the principle of time extensions at existing sand and gravel quarries where necessary to allow full extraction of permitted reserves.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0	+ ?	+ ?		✓	✓	✓	Considering the additional effect of this option only, under this option biodiversity may benefit as this would reduce the demand for new sites and associated infrastructure. However, there may also be negative impacts which result from delays to site restoration (unless restoration is phased).
2.	0	+	+	✓	✓	✓	✓	Considering the additional effect of this option only, under this option effects on water quality and supply are likely to be positive in the longer term as the overall demand for new sites is reduced, and thus their impacts on local hydrology avoided or delayed. Extensions may however extend the time period that extant hydrological issues continue for (without appropriate mitigation), however this is considered to be a lesser effect than opening new sand and gravel quarries – so the net effect is considered positive.

3.	0	0	0	✓		✓		Considering the additional effect of this option only, assuming the amount of extraction remains the same under this option (and the landbank is maintained) there is not expected to be any difference in the net traffic levels generated, though any local issues may continue without mitigation.
4.	0	0	0	✓	✓	✓		Considering the additional effect of this option only, assuming the amount of extraction remains the same under this option (and the landbank is maintained) there is not expected to be any difference in the net traffic levels generated, so net vehicle and dust emissions are likely to remain the same. However, any extant local issues may continue for a longer time period (without appropriate mitigation).
5.	0	+ ?	+ ?	✓		✓		Considering the additional effect of this option only, under this option soils and land may benefit as this would reduce the demand for new sites and associated infrastructure. However, there may also be negative impacts in terms of land restoration which result from delays to site restoration (unless restoration is phased).
6.	0	+	+	✓			✓	Considering the additional effect of this option only, assuming the amount of extraction remains the same under this option, traffic levels and energy use from extensions to sites are likely to be similar to new sites. However, because new sites also often require the building of supporting infrastructure such as road access, which may have a significant carbon footprint[1], extending sites as opposed to building new ones is likely to have a net carbon benefit.
7.	0	0	0					No clear link
8.	0	+	+	✓		✓	✓	Considering the additional effect of this option only, this option would reduce the material consumption requirements associated with new site construction and supporting infrastructure.
9.	0	0 +	0 +	✓		✓		Considering the additional effect of this option only, extending sites is likely to generate similar waste impacts to creating new sites, though there may be additional waste generated from supporting infrastructure at new sites.
10.	0	+	+	✓		✓	✓	Considering the additional effect of this option only, under this option the historic environment may benefit as this would reduce the demand for new sites and associated infrastructure (which may have significant impacts on in situ heritage and setting). However, there may also be negative impacts which result from delays to site

[1] See for example University of Washington Civil and Environmental Engineering, 2011, Research Highlight: Greenroads: sustainability performance metrics for roadway design and construction [URL: http://www.ce.washington.edu/research/construction/greenroads.html] which considered the environmental footprint of constructing and maintaining one 'lane-mile' of highway, which in terms of energy accounts for 3 to 8 terra Joules of energy consumption.

		?	?					restoration which may affect the setting of historic assets (unless restoration is phased). The site extension may also have negative effects. All things being equal there would be a net benefit, however negative effects cannot be discounted with site extensions, adding to the uncertainty in this assessment.
11.	+	+	+	✓		✓	✓	Considering the additional effect of this option only, while at a local scale the landscape impacts of a site extension may be significant, the net visual intrusion caused by a new site is likely to be greater, though this is subject to location. Net effects are, therefore, recorded as minor positive.
12.	0	0	0	✓	✓	✓	✓	Considering the additional effect of this option only, there is likely to be a neutral to negative effect in the longer term under this objective as while extensions to existing sites help to secure jobs into the longer term, the alternative approach of building more new sites would help to create new jobs while existing jobs are lost. As new sites would also require additional jobs in construction, the option of extending sites is likely to slightly lessen the net potential level of employment in minerals.
		-	-					
13.	+	+	+	✓	✓	✓	✓	Considering the additional effect of this option only, this option is likely to extend existing jobs and maintain sand and gravel 'employee spend' in existing communities for longer, which is beneficial. However, the impacts associated with quarries may also affect communities for longer periods of time – which might deter tourism.
	-	-	-					
14.	0	+	+	✓	✓	✓		Considering the additional effect of this option only, under this option recreation and leisure may benefit as this would reduce the demand for new sites and associated infrastructure. However, there may also be negative impacts which result from delays to site restoration, if that restoration is to have a recreational component (unless restoration is phased).
		?	?					
15.	+	+	+	✓	✓	✓	✓	Considering the additional effect of this option only, this option will lessen the amount of new sites and their associated health and wellbeing impacts. However, it may also extend the lifetime of exiting sites, and so adjacent communities may continue to experience impacts on their wellbeing.
	-	-	-					
16.	0	-	-	✓		✓		Considering the additional effect of this option only, in the longer term this option may lessen the opportunities for creating flood storage as less new sites will come on stream and extended sites will operate for longer.
17.	0	0	0					No clear link

Summary of assessment

Options 1 and 2 have relatively similar effects, although Option 2 allows more flexibility, which may result in lesser environmental effects. However Option 2 is assessed as having worse effects in relation to transport, air quality and climate change. Both options have major negative effects on soils in the long term as the potential for increased activity could impact on best and most versatile agricultural land.

Option 3, which would act in combination with Option 1 or 2, displays a number of sustainability benefits as site extensions have a number of inherent sustainability benefits due to their reduced land take and lesser resource consumption requirements.

Recommendations

The SA considers that option 3 combined with one of the first two options would be the most sustainable option.

Safeguarding Sand and Gravel (id06)

Option 1.
This option could safeguard all known sand and gravel resources with a 250m buffer zone to help prevent sterilisation from proximal development

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
	?	?	?					
2.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
3.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
4.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement
	?	?	?					

								effects on development cannot yet be considered.
5.	0 ?	+ ?	+ ?	✓		✓	✓	Safeguarding keeps open the option of developing the optimum locations for sand and gravel extraction. This may help minimise land take when compared to extraction from a sub optimum location (which may require more land take). Positive effects would occur when minerals are extracted, which may be some years in the future. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
6.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
7.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
8.	+ +	+ +	+ +	✓		✓		Safeguarding sand and gravel resources would enable the option of future extraction and thus strongly contribute to the safeguarding and wise use of minerals sub objective.
9.	0	0	0					As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.
10.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
11.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.

	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
12.	+	+ +	+ +	✓		✓	✓	Safeguarding sand and gravel will keep open the future option of extraction as this option will prevent sterilisation of the resource. This potentially retains a future economic opportunity. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered (e.g. potential for displacement of non-minerals economic activity within the safeguarded area).
	?	?	?					
13.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
14.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
15.	+	+	+ +	✓			✓	Under this option, users of new developments would be well protected from potential future minerals extraction through the inclusion of a 250m buffer. The overall benefits across the Plan area would increase over time. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
	?	?	?					
16.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
17.	+	+	+	✓		✓		The option would have a positive effect in terms of ensuring that minerals are available to support the needs of the population. Some uncertainty is noted as the stringency of any eventual safeguarding policy and

	?	?	?					therefore the likelihood of displacement of other development is not known.

Option 2 This option could safeguard all known sand and gravel resources with a 100m buffer zone to help prevent sterilisation from proximal development.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
	?	?	?					
2.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
3.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
4.	0	?	?	✓		✓	✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. However, should

	?							development occur (this is highly uncertain) in the longer term, a 100 metre buffer may bring communities closer to dust impacts for example, which may be significant up to 100 metres (see footnote 2). The proximity of receptors to dust may limit the extent of area which could be worked. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
5.	0 ? ?	+ ? ?	+ ? ?	✓		✓	✓	Safeguarding keeps open the option of developing the optimum locations for sand and gravel extraction. This may help minimise land take when compared to extraction from a sub optimum location (which may require more land take). Positive effects would occur when minerals are extracted, which may be some years in the future. However, because the buffer is closer to the boundary of some possible environmental significance thresholds (without mitigation), problems such as proximity of receptors to noise and dust may limit the extent of area which could be worked. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
6.	0 ? ?	0 ? ?	0 ? ?	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
7.	0 ? ?	0 ? ?	0 ? ?	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
8.	++ ? ?	++ ? ?	++ ? ?	✓		✓		Safeguarding sand and gravel resources would enable the option of future extraction and thus strongly contributes to the safeguarding and wise use of minerals sub objective.
9.	0	0	0					As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.
10.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.

	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
11.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
12.	+	+	+	✓		✓	✓	Safeguarding sand and gravel will keep open the future option of extraction as this option will prevent sterilisation of the resource. This potentially retains a future economic opportunity. However, because the buffer is closer to the boundary of some possible environmental significance thresholds (without mitigation), problems such as proximity of receptors to noise and dust may limit the extent of area which could be worked. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered (e.g. potential for displacement of non-minerals economic activity within the safeguarded area).
	?	-	-					
		?	?					
13.	0	?	?	✓		✓	✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.

	?							However, the modest buffer zone proposed under this objective may mean that if development happens in the future the distance between the site and nearby communities is significantly less than option 1. Some impacts may still be experienced at a low level close to 100 meters[2], making development close to the buffer boundary a potential receptor. This may affect community vitality, for instance by negatively affecting tourism, however, in practice proximity of receptors to noise and dust impacts may simply limit the extent of area which could be worked. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
14.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
15.	0	?	?	✓	✓		✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.

[2] For instance, MPS2 sets the maximum noise levels at sensitive receptors at an average of 55 decibels or 10 decibels above background noise levels. In practice acoustic screening would reduce sound levels considerably, so noise assessments must be made at a site level. A general engineering principal, however, is that, in the absence of features that may block noise, for every doubling of distance where noise is from a point source, energy will be spread over four times the area, so will be one quarter as intense. If a sound from a point source followed this inverse square rule this would equate to a drop of 6 decibels for every doubling of distance (see for example Hyperphysics, undated. Inverse square law, sound [URL: http://hyperphysics.phy-astr.gsu.edu/hbase/acoustic/invsqs.html#c1]. In relation to impacts from dust, BGS report that *'effects [of dust] tend to diminish with distance from the source as larger particles rapidly settle back to the surface and the most acute impacts are likely to occur close to major sources of dust. Local communities can potentially be affected by dust up to 1 km from the source but concerns about dust are more likely within 100 metres of the source*'. Although this option proposes a 100 metre buffer, if other policies allow certain development within the buffer (e.g. within the curtilage of buildings) this may be more likely to be affected than with a larger buffer (BGS, undated. Planning 4 Minerals: Environment [URL: http://www.bgs.ac.uk/planning4minerals/AirQuality_1.htm]. In practice, however, dust effects will also be reduced by site controls.

	?							However, the modest buffer zone proposed under this objective may mean that if development happens in the future the distance between the site and nearby communities is significantly less than options 1 and 6. Some impacts may still be experienced at 100 meters (see footnote 1), making development close to the buffer boundary a potential receptor. However, in practice proximity of receptors to noise and dust impacts may simply limit the extent of area which could be worked. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
16.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
17.	+	+	+	✓		✓		The option would have a positive effect in terms of ensuring that minerals are available to support the needs of the population. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement of other development is not known.
	?	?	?					

Option 3 This option would only safeguard sand and gravel resources outside urban areas and National Park and AONB designations.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect.

	?	?	?					Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
2.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
3.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
4.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Depending on buffer size air quality effects may be as options 1, 2 or 6. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
5.	0	+	+	✓		✓	✓	Safeguarding keeps open the option of developing the optimum locations for sand and gravel extraction. This may help minimise land take when compared to extraction from a sub optimum location (which may require more land take). Positive effects would occur when minerals are extracted, which may be some years in the future. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
6.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
7.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect.

								Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
8.	+ +	+ +	+ +	✓		✓		Safeguarding sand and gravel resources would enable the option of future extraction and thus strongly contribute to the safeguarding and wise use of minerals sub objective, though this will be a lesser (and in any case low – see objective 11) level than options 1 and 2 due to the exclusion of protected landscapes by the option.
9.	0	0	0					As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.
10.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
11.	0	0	0	✓		✓	✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. The effect on townscapes is considered to be insignificant as it is unlikely that sand and gravel would be extracted in an urban area. In relation to national parks and AONBs there would, even without this option, need to be exceptional circumstances for development to occur[3], so not safeguarding here is also considered to have an insignificant effect. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
12.	+	+	+	✓		✓	✓	Safeguarding sand and gravel will keep open the future option of extraction as this option will prevent sterilisation of the resource. This potentially retains a future economic opportunity. Excluding urban areas and nationally protected landscapes from safeguarding areas is considered to lessen the effect slightly, though not significantly (for the same reasons as objective 11).

[3] See paragraph 116 of the National Planning Policy Framework

	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered (e.g. potential for displacement of non-minerals economic activity within the safeguarded area).
13.	0 ?	0 ?	0 ?	✓		✓	✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered. However, urban communities and the National Park will be unaffected by lost opportunities for non-sand and gravel development under this option.
14.	0 ?	0 ?	0 ?	✓		✓	✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
15.	+ - ?	+ - ?	+ - ?	✓			✓	Under this option, whilst new developments outside of the National Parks and AONBs may be sited away from potential future sand and gravel quarries, within the National Park and AONBs conflicts may arise should there be demand for minerals extraction close to other new development, however the likelihood is considered to be very slight as only relatively limited amounts of development would come forward in the National Park. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement and effects of this on the vitality and viability of communities is not known.
16.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
17.	+	+	+	✓		✓		The option would have a positive effect in terms of ensuring that minerals are available to support the needs of the population, although these effects would be lesser than under Options 1, 2 and 6 as fewer minerals would be safeguarded, but due to the limited amount of sand and gravel extracted from the National Park and

	?	?	?					the AONBs this is not sufficient to create a negative effect. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement of other development is not known.

Option 4
This option could operate in parallel with other options and would only safeguard sand and gravel resource areas with an identified tonnage of 0.75mt or more.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	-	✓			✓	Effects are as other options. However, it is possible, though highly uncertain, that if smaller areas are sterilised, larger areas are more likely to experience cumulative effects, leading to more negative effects in the long term.
	?	?	?					
2.	0	0	-	✓			✓	Effects are as other options. However, it is possible, though highly uncertain, that if smaller areas are sterilised, larger areas are more likely to experience cumulative effects, leading to more negative effects in the long term.
	?	?	?					
3.	0	0	-	✓			✓	Effects are as other options. However, it is possible, though highly uncertain, that if smaller areas are sterilised, larger areas are more likely to experience cumulative effects, leading to more negative effects in the long term.
	?	?	?					
4.	0	0	-	✓			✓	Effects are as other options. However, it is possible, though highly uncertain, that if smaller areas are sterilised, larger areas are more likely to experience cumulative effects, leading to more negative effects in the long term.
	?	?	?					
5.	0	+	0	✓			✓	Effects are as other options. However, safeguarding only larger resource areas may allow some sterilising development in smaller areas. This might in the long term reduce the choice of optimum sites causing some small scale unnecessary land take.
	?	?	?					
6.	0	0	0					Effects are as other options.

7.	0	0	0					Effects are as other options.
8.	+	+	+	✓		✓		Safeguarding larger areas of sand and gravel resources would, as with other options, enable the option of future extraction and thus contribute to the safeguarding and wise use of minerals sub objective. However, the effect is moderated in the longer term by the potential for some sterilisation of smaller areas.
9.	0	0	0					As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.
10.	0 ?	0 ?	-	✓			✓	Effects are as other options. However, it is possible, that if smaller areas are sterilised, larger areas are more likely to experience cumulative effects, leading to more negative effects in the long term.
11.	0 ?	0 ?	-	✓			✓	Effects are as other options. However, it is possible, though highly uncertain, that if smaller areas are sterilised, larger areas are more likely to experience cumulative effects, leading to more negative effects in the long term.
12.	+	+	+	✓		✓		Safeguarding sand and gravel will keep open the future option of extraction as this option will prevent sterilisation of the resource. This potentially retains a future economic opportunity. However restricting safeguarding to areas above 0.75 mt is considered to lessen the effect slightly, though not significantly as there will be less future resource.
13.	0 ?	0 ?	- ?	✓			✓	Effects are as other options. However, it is possible, though highly uncertain, that if smaller areas are sterilised, larger areas are more likely to experience cumulative effects, leading to more negative effects in the long term on certain communities within them.
14.	0	0	0					Effects as other options.
15.	0 ?	0 ?	- ?	✓			✓	Effects are as other options. However, it is possible, though highly uncertain, that if smaller areas are sterilised, larger areas are more likely to experience cumulative effects, leading to more negative effects in the long term on the wellbeing of certain communities within them.
16.	0	0	0					Effects as other options.
17.	0	0	0					Effects as other options.

Option 5
This option could operate in parallel with other options and would safeguard any additional resources (not identified in the current evidence base) where proposed in site allocations and preferred areas and supported by adequate resource information.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					Effects are as other options.
2.	0	0	0					Effects are as other options.
3.	0	0	0					Effects are as other options.
4.	0	0	0					Effects are as other options.
5.	0 ?	+ ?	+ ?	✓		✓		Safeguarding keeps open option of developing the optimum locations for sand and gravel extraction. This may help minimise land take when compared to extraction from a sub optimum location (which may require more land take). Positive effects would occur when minerals are extracted, which may be some years in the future. However, because this option allows additional resources to be put forward in addition to other options, positive effects will be stronger (though still relatively small scale). Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
6.	0	0	0					Effects are as other options.
7.	0	0	0					Effects are as other options.
8.	++	++	++	✓		✓		Safeguarding sand and gravel resources would enable the option of future extraction and thus strongly contribute to the safeguarding and wise use of minerals sub objective. This option, which allows additional resource to be considered for safeguarding would further strengthen the effect.
9.	0	0	0					As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.

10.	0	0	0					Effects as other options
11.	0	0	0					Effects as other options
12.	+	+ +	+ +	✓		✓		Safeguarding sand and gravel will keep open the future option of extraction as this option will prevent sterilisation of the resource to a greater extent than other options. This potentially retains a future economic opportunity.
13.	0	0	0					Effects as other options
14.	0	0	0					Effects as other options
15.	0	0	0					Effects as other options
16.	0	0	0					Effects as other options
17.	0	0	0					Effects as other options

Proposed alternative option 6 (or)
This option could safeguard all known sand and gravel resources with a 500m buffer zone.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.
	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
2.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.

	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
3.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
4.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
5.	0	+	+	✓		✓	✓	Safeguarding keeps open the option of developing the optimum locations for sand and gravel extraction. This may help minimise land take when compared to extraction from a sub optimum location (which may require more land take). Positive effects would occur when minerals are extracted, which may be some years in the future. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
6.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
7.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
8.	+ +	+ +	+ +	✓		✓		Safeguarding sand and gravel resources would enable the option of future extraction and thus strongly contribute to the safeguarding and wise use of minerals sub objective.
9.	0	0	0					As safeguarding does not infer any sand and gravel development will take place there is no predicted effect.

								Were development to take place it would need to accord with other policies in the plan.
10.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
11.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
12.	+	+ +	+ +	✓		✓	✓	Safeguarding sand and gravel will help to ensure that minerals are available for economic growth. This positive effect will increase over time as minerals which may have been sterilised over time are safeguarded. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered (e.g. potential for displacement of non-minerals economic activity within the safeguarded area).
	?	?	?					
13.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
14.	0	0	0	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
15.	+	+	+ +	✓			✓	Under this option, users of new developments would be well protected from potential future minerals extraction through the inclusion of a 500m buffer. The overall benefits across the Plan area would increase over time. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
	?	?	?					

16.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any sand and gravel development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
17.	+ ?	+ ?	+ ?	✓		✓		The option would have a positive effect in terms of ensuring that minerals are available to support the needs of the population. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement of other development is not known.

Summary of assessment

As safeguarding does not infer any sand and gravel development will take place there is generally no predicted effect. Were development to take place it would need to accord with other policies in the Plan.

Most of the options perform strongly in terms of minimising the use of resources as well as the economic growth objective as future sterilisation is avoided, thus conserving resources for future economic benefit. Options 1 and 6 perform better than Options 2 and 3 in relation to the economy, whilst Options 1, 2, 3 and 6 all perform strongly in relation to resource efficiency and addressing the needs of a changing population. There are indirect negative effects associated with the reduced buffer size under Option 2 as problems such as proximity of receptors to noise and dust may limit the extent of area which could be worked. The positive effects under option 6 are likely to be greater than those resulting from the other options due to the presence of a larger buffer. Option 4 may be subject to the cumulative effects of more concentrated areas of development if smaller sand and gravel resource areas are sterilised through lack of safeguarding and thus possible future development. Option 5 would strengthen the performance of other options in relation to the economy and resource efficiency where used together with them.

Under each option, effects from displacement of development which would have taken place are uncertain as this will depend upon the stringency of any policy approach applied. This will need to be considered when assessing policies at the Preferred Options stage.

Recommendations

The SA does not show a strong preference for one particular option, though options 2 and 4 are considered less sustainable than options 1 and 6. Option 5 can add some beneficial effects to other options when used together with them.

Provision of Crushed Rock (id07)

Assumptions – As reserves (i.e. planning permissions) exist for extraction of 96mt of crushed rock the effects of these are not taken into account as these will come forward either with or without the Plan. There is no crushed rock resource in the City of York area so it is assumed there would be no extraction from that area.

Option 1
This option could identify future provision for crushed rock utilising the most recent 10 year average sales figures available at the time of production of the Joint Plan (i.e. total provision of 66.5mt). This option would not result in any requirement to release further reserves of crushed rock to meet requirements over the plan period.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					Planning permission is already granted for extraction to meet these requirements and therefore the Plan would not have any effect.
2.	0	0	0					Planning permission is already granted for extraction to meet these requirements and therefore the Plan would not have any effect.
3.	0	0	0					Planning permission is already granted for extraction to meet these requirements and therefore the Plan would not have any effect.
4.	0	0	0					Planning permission is already granted for extraction to meet these requirements and therefore the Plan would not have any effect.
5.	0	0	0					Planning permission is already granted for extraction to meet these requirements and therefore the Plan would not have any effect.
6.	0	0	0					Planning permission is already granted for extraction to meet these requirements and therefore the Plan would not have any effect.
7.	0	0	0					Planning permission is already granted for extraction to meet these requirements and therefore the Plan would not have any effect.

8.	-	-	-	✓		✓		The option does not aim to restrict the use / extraction of minerals in any way.
9.	-	-	-	✓			✓	The option does not encourage reusing or recycling aggregates as it just relies on extraction to meet requirements.
10.	0	0	0					Planning permission is already granted for extraction to meet these requirements and therefore there the Plan would not have any effect.
11.	0	0	0					Planning permission is already granted for extraction to meet these requirements and therefore the Plan would not have any effect.
12.	0	0	0					Planning permission is already granted for extraction to meet these requirements and therefore the Plan would not have any effect.
13.	0	0	0					Planning permission is already granted for extraction to meet these requirements and therefore the Plan would not have any effect.
14.	0	0	0					Planning permission is already granted for extraction to meet these requirements and therefore the Plan would not have any effect.
15.	0	0	0					Planning permission is already granted for extraction to meet these requirements and therefore the Plan would not have any effect.
16.	0	0	0					Planning permission is already granted for extraction to meet these requirements and therefore the Plan would not have any effect.
17.	+ +	+ +	+ +	✓		✓		Under this option there would be sufficient provision of crushed rock to meet demand for new development throughout the Plan period.

Option 2

This option could identify future provision for crushed rock utilising the most recent 10 year average sales figures available at the time of production of the Joint Plan, but with the identification of separate provision for Magnesian limestone at a level equivalent to 50% of the theoretical shortfall of Magnesian Limestone (i.e. provision of an additional 8mt).

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale	Type of effect	Analysis

	S	M	L	P	T	D	I	
1.	-	-	- +	✓		✓	✓	Whether or not there are any effects would depend on the location of any sites coming forward but there are some important habitats in the area of Magnesian limestone, particularly SINCs in the southern part. In the longer term there may be more opportunities to provide enhancements for biodiversity through site reclamation.
2.	-	-	-	✓		✓	✓	Whether or not there are any effects would depend on the location of any sites coming forward but the Magnesian limestone resource does coincide with the Nitrate Vulnerable Zones and Groundwater Source Protection Zones in some places.
3.	+	+	+		✓	✓		This would help ensure availability if a resource in parts of the plan area where other crushed rock sources don't exist, thus potentially helping to ensure availability of supply relatively near to established markets - overall this could help reduce transport to some extent
4.	-	-	-	✓		✓		There are likely to be effects on air quality at locations where Magnesian limestone extraction would take place, this may increase over time should more extraction take place but would be localised to the areas around the quarries.
5.	-	-	-	✓		✓		Magnesian limestone is found mostly in areas of grade 2 agricultural land (high quality) and therefore there could be negative effects against this objective which could increase over time as more extraction takes place.
6.	-	-	-	✓			✓	Additional extraction is likely to result in increased transportation requirements and therefore increased greenhouse gas emissions.
7.	0	0	+	✓			✓	Additional quarries may provide more opportunities for flood water storage in the longer term.
8.	--	--	--	✓		✓		As this option is supporting additional extraction it would not encourage minimising the use of resources.
9.	-	-	-	✓			✓	The option does not encourage reusing or recycling aggregates as it relies on extraction to meet requirements. This is slightly more negative than option 1 as it also promotes extraction from new sites that do not already have planning permission.
10.	-	-	-	✓		✓		There are some historic assets located in association with the Magnesian limestone resource and therefore there is potential for some effects although this depends on the precise location of any extraction sites.
11.	-	-	-	✓		✓		The Magnesian limestone resource is located away from the nationally protected landscapes in and around the Plan area but there is still likely to a degree of local landscape effect from extraction at additional sites.
12.	+	+	+		✓		✓	There are likely to be economic benefits related to job creation and associated knock-on benefits in areas around any new quarries.
13.	+ -	+ -	+ -		✓		✓	There are likely to be benefits for local job creation around any new quarries however there could be local disbenefits on tourism should a new quarry affect the visitor experience of the local area.

14.	-	-	- +	✓		✓	✓	Whilst the Magnesian limestone resource is not located near to the National Park, new quarries could result in the loss of Public Rights of Way or other recreational assets or affect the experience of those using these nearby. In the longer term there may be opportunities to provide enhancements for recreation through site reclamation.
15.	-	-	-	✓		✓	✓	There could be the potential for effects on the health and wellbeing of communities close to any new extraction sites.
16.	0	0	+	✓			✓	Additional quarries may provide more opportunities for flood water storage in the longer term.
17.	++	++	++	✓		✓		Under this option there would be sufficient provision of crushed rock to meet demand for new development throughout the Plan period, and additional extraction of Magnesian limestone would make this option more positive that option 1.

Option 3

This option would operate in parallel with options promoting the increased use of secondary and recycled materials as alternatives to primary aggregate (see subsequent section on Secondary and Recycled Aggregates) by assuming a reduced overall requirement for crushed rock (equivalent to a reduction of 0.1mtpa over the period 2015-2030), such that the overall crushed rock requirement for the plan is reduced by 1.5mt to a total of 65mt.

Note: this option would still result in an increase in provision of crushed rock over Option 1, but this would only be at 6.5mt rather than the 8mt identified under Option 2.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	- +	✓		✓	✓	Whether or not there are any effects would depend on the location of any sites coming forward but there are some important habitats in the area of Magnesian limestone, particularly SINCs in the southern part. Effects would be slightly less than under Option 2. In the longer term there may be more opportunities to provide enhancements for biodiversity through site reclamation.
2.	-	-	-	✓		✓	✓	Whether or not there are any effects would depend on the location of any sites coming forward but the

								Magnesian limestone resource does coincide with the Nitrate Vulnerable Zones and Groundwater Source Protection Zones in some places. Effects would be slightly less than under Option 2.
3.	-	-	-		✓	✓		Additional extraction is likely to result in increased transportation requirements. Effects would be slightly less than under Option 2.
4.	-	-	-	✓		✓		There are likely to be effects on air quality at locations where Magnesian limestone extraction would take place, this may increase over time should more extraction take place but would be localised to the areas around the quarries. Effects would be slightly less than under Option 2.
5.	-	-	-	✓		✓		Magnesian limestone is found mostly in areas of grade 2 agricultural land (high quality) and therefore there could be negative effects against this objective which could increase over time as more extraction takes place. Effects would be slightly less than under Option 2.
6.	-	-	-	✓			✓	Additional extraction is likely to result in increased transportation requirements and therefore increased greenhouse gas emissions. Effects would be slightly less than under Option 2.
7.	0	0	+	✓			✓	Additional quarries may provide more opportunities for flood water storage in the longer term. Effects would be slightly less than under Option 2.
8.	++	++	++	✓		✓		This option supports the promotion of use of secondary and recycled aggregates.
9.	+	+	+	✓			✓	The option encourages reusing and recycling aggregates in place of extraction of primary minerals.
10.	-	-	-	✓		✓		There are some historic assets located in association with the Magnesian limestone resource and therefore there is potential for some effects although this depends on the precise location of any extraction sites. Effects would be slightly less than under Option 2.
11.	-	-	-	✓		✓		The Magnesian limestone resource is located away from the nationally protected landscapes in and around the Plan area but there is still likely to a degree of local landscape effect from extraction at additional sites. Effects would be slightly less than under Option 2.
12.	+	+	+		✓		✓	There are likely to be economic benefits related to job creation and associated knock-on benefits in areas around any new quarries. Effects would be slightly less than under Option 2.
13.	+	+	+		✓		✓	There are likely to be benefits for local job creation around any new quarries however there could be local disbenefits on tourism should a new quarry affect the visitor experience of the local area. Effects would be slightly less than under Option 2.
	-	-	-					
14.	-	-	-	✓		✓	✓	Whilst the Magnesian limestone resource is not located near to the National Park, new quarries could result in the loss of Public Rights of Way or other recreational assets or affect the experience of those using these nearby. Effects would be slightly less than under Option 2. In the longer term there may be opportunities to provide enhancements for recreation through site reclamation.
			+					
15.	-	-	-	✓		✓	✓	There could be the potential for effects on the health and wellbeing of communities close to any new

								extraction sites. Effects would be slightly less than under Option 2.
16.	0	0	+	✓			✓	Additional quarries may provide more opportunities for flood water storage in the longer term.
17.	+	+ +	+ +	✓		✓		Under this option there would be sufficient provision of crushed rock, in conjunction with use of secondary and recycled aggregate, to meet demand for new development throughout the Plan period, and additional extraction of Magnesian limestone would make this option more positive that option 1.

Proposed alternative option 4: Under this option consideration would be given to possibilities to increase imports into the Plan area which would mean a reduced requirement to be provided from within the Plan area itself.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?	✓			✓	A reduced requirement for the extraction of crushed rock from within the Plan area could mean there is less potential impact on protected sites and species in the Plan area. In the longer term there may be fewer opportunities to provide enhancements for biodiversity through site reclamation. The likelihood of any effects depends on its location in relation to protected sites and species. Effects could be displaced to locations outside the Plan area and as locations are not yet known, the effects would be uncertain.
2.	+ ?	+ ?	+ ?	✓		✓		A reduced requirement for the extraction of crushed rock from within the Plan area could have positive effects as this could help to reduce the need for extraction of the crushed rock resource which in places coincides with the Nitrate Vulnerable Zones and Groundwater Source Protection Zones. Of course effects could be displaced to other plan areas (uncertain impact).
3.	-	-	-	✓		✓		Depending on the mode of transport used, more imports of crushed rock into the Plan area could have negative impacts arising from noise and disturbance due to increased lorry traffic, congestion and increased vehicle and carbon emissions.
4.	-	-	-	✓		✓		Depending on the mode of transport used, more imports of crushed rock into the Plan area could have negative impacts on air quality arising from vehicle emissions.
5.	+	+	+	✓		✓		A reduced requirement for the extraction of crushed rock from within the Plan area could have positive effects

	?	?	?					on this objective because crushed rock is found mostly in areas of higher quality agricultural land and there could be less need for extraction from within these areas. However, effects could be displaced to locations outside the Plan area and as locations are not yet known, the effects would be uncertain.
6.	-	-	-	✓		✓		If the import of crushed rock from outside the Plan area is by lorry this could have adverse effects on this objective by increasing vehicle movements and greenhouse gas emissions. This could be offset to a degree by the use of more sustainable modes of transport such as rail, though overall the effect is still considered to be negative.
7.	-	-	-	✓			✓	Under this option there would be fewer opportunities for rainwater storage (which would aid adaptation to climate change) in the longer term due to there being fewer quarries to restore within the Plan area.
8.	-	-	-	✓			✓	This option does not encourage reusing or recycling aggregates as it just relies on extraction to meet requirements.
9.	-	-	-	✓			✓	This option does not encourage reusing or recycling aggregates so therefore could result in the production of more waste and have a negative impact on the part of the objective that seeks to minimise waste generation.
10.	+ ?	+ ?	+ ?	✓			✓	A reduced requirement for the extraction of crushed rock from within the Plan area could have positive effects on this objective because there are some historic assets located in association with the crushed rock resource and there could be less need for extraction from within these areas. Of course effects could be displaced to other plan areas (uncertain impact).
11.	+ ?	+ ?	+ ?	✓			✓	There could be positive effects on this objective as the need for less extraction of the crushed rock resource could help to avoid landscape impacts from visual intrusion and loss of tranquillity associated with mining activity. Effects on landscape could be displaced to locations outside the Plan area and as locations are not yet known, the effects would be uncertain.
12.	- +	- +	- +	✓		✓		A reduced requirement for the extraction of crushed rock from within the Plan area could have negative effects on this objective because it would support less jobs within the Plan area – job generation would, it is assumed, be outside the Plan area (a positive impact outside of the Plan Area). Also a risk that the minerals needed to support the economy are not provided or are more difficult to obtain. May be positive effects arising from fewer quarries in close proximity to communities.
13.	- + ?	- + ?	- + ?	✓			✓	A reduced requirement for the extraction of crushed rock from within the Plan area could have negative effects on this objective because it would support less jobs within the Plan area and hence less support for the viability and vitality of local communities. There may also be positive effects as less crushed rock extraction would disturb local communities. Of course effects could be displaced to other plan areas (uncertain impact).
14.	+ ?	+ ?	+ ?	✓			✓	A reduced requirement for the extraction of crushed rock from within the Plan area could have positive effects on this objective because with fewer sites worked there is less chance of impact on the public rights of network both in terms of physical impact and adverse effects on the enjoyment of users of the network. Of

								course effects could be displaced to other plan areas (uncertain impact).
15.	+ ?	+ ?	+ ?	✓	✓	✓		With fewer sites being worked there is less chance of any adverse impact on the wellbeing, health and safety of local communities (positive impact). Effects could be displaced to communities outside the Plan area but as locations are not yet known, these displaced effects would be uncertain.
16.	-	-	-	✓			✓	Potential negative impacts as with fewer sites being worked there will be less opportunity for reclamation of sites for water storage.
17.	-	-	-	✓			✓	Potential negative impacts as importing crushed rock from outside the Plan area is likely to be less sustainable than working sites within the area. Also a risk that the minerals needed to support the economy are not provided or are more difficult to obtain.

Proposed alternative option 5: (Or) This option would calculate future provision by projecting forward 10 year average sales and considering any likely changes to building rates over the Plan period compared to building rates over the past 10 years.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	?	?	?	✓		✓		This could result in the need for more quarry sites to meet forecast demand for crushed rock. Whether or not there are any effects would depend on the location of any sites coming forward but there are some important habitats in the area of Magnesian limestone, particularly SINCs in the southern part. In the longer term the additional number of sites may result in more opportunities to provide enhancements for biodiversity through site reclamation.
2.	?	?	?	✓		✓		Whether or not there are any effects would depend on the location of any sites needed to meet additional forecast demand but the crushed rock resource does coincide with the Nitrate Vulnerable Zones and Groundwater Source Protection Zones in some places.
3.	-	-	-	✓		✓		Additional extraction to meet forecast demand is likely to result in increased transportation requirements.

								Depending on the mode of transport used, this could have negative impacts arising from noise and disturbance due to increased lorry traffic, congestion and increased vehicle and carbon emissions.
4.	-	-	-	✓		✓		Depending on the mode of transport used, additional extraction to meet forecast demand could have negative impacts on air quality arising from additional vehicle movements.
5.	-	-	-	✓			✓	An increased requirement for the extraction of crushed rock from within the Plan area to meet forecast demand could have negative effects on this objective because crushed rock is found mostly in areas of grade 2 agricultural land (high quality) and there could be a need for more extraction from within these areas.
6.	-	-	-	✓			✓	Additional extraction to meet forecast demand is likely to result in increased transportation requirements and therefore an increase in greenhouse gas emissions.
7.	0	0	+	✓			✓	Additional extraction to meet forecast demand may provide more opportunities for flood water storage in the longer term.
8.	-	-	-	✓			✓	As this option may generate the need for additional extraction to meet forecast future demand, it would not encourage minimising the use of resources.
9.	-	-	-	✓			✓	This option does not encourage reusing or recycling aggregates so therefore could result in the production of more waste and have a negative impact on the part of the objective that seeks to minimise waste generation.
10.	-	-	-	✓			✓	An increased requirement for the extraction of crushed rock from within the Plan area to meet forecast demand could have negative effects on this objective because there are some historic assets located in association with the crushed rock resource and there is potential for some effects although this depends on the location of any extraction sites.
11.	-	-	-	✓		✓		The crushed rock resource is located away from the nationally protected landscapes in and around the Plan area but there is still likely to be a degree of impact on local landscapes from extraction at additional sites.
12.	+	+	+	✓		✓		There are likely to be economic benefits related to job creation and associated knock on benefits in areas around any new quarries needed to meet forecast demand for crushed rock.
13.	+ -	+ -	+ -	✓			✓	There are likely to be benefits from local job creation around any new quarries needed to meet forecast demand and this would assist with the viability and vitality of local communities. However, for communities next to quarries there may be negative effects (e.g. through reduced tourism or investment_
14.	-	-	-	✓			✓	Additional extraction to meet forecast demand could have an adverse impact on this objective because with more sites being worked there is more chance of impact on the public rights of way network.
15.	-	-	-	✓			✓	Additional extraction to meet forecast demand could have a negative impact on this objective through additional sites being worked which could have an adverse impact on the wellbeing, health and safety of local communities.
16.	0	0	+	✓			✓	Additional extraction to meet forecast demand could have a positive effect on this objective as the working of more sites may create more opportunities for reclamation of sites for water storage.

17.	+	+	+	✓		✓		Positive effects as demand can be met from within the Plan area which is more sustainable.

Proposed alternative option 6: (And) Identify Areas of Search for crushed rock extraction towards the end of the Plan period

This assessment does not consider the effects of options individually, rather it considers only the additional effect.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	? -	- ?	✓		✓		Effects are as other options until later in the plan period. Identifying Areas of Search for the end of the Plan period could mean that ultimately this option could allow an opportunity for additional extraction, which could have negative impacts on biodiversity / geo-diversity depending on location. However, through scrutinising constraints and opportunities at the area of search level, such impacts could be minimised.
2.	?	? -	- ?	✓		✓		Effects are as other options until later in the plan period. Identifying Areas of Search for the end of the Plan period could mean that ultimately this option could allow an avenue for additional extraction, which could have negative impacts on water depending on location. However, through scrutinising constraints and opportunities at the area of search level, such impacts could be minimised.
3.	?	? -	-	✓		✓		Effects are as other options until later in the plan period. Depending on the mode of transport used, identifying Areas of Search for crushed rock extraction later in the Plan period could have longer term negative impacts arising from noise and disturbance due to increased lorry traffic, congestion and increased vehicle and carbon emissions.
4.	?	? -	-	✓		✓		Effects are as other options until later in the plan period. Depending on the mode of transport used, identifying Areas of Search for crushed rock extraction later in the Plan period could have longer term negative impacts on air quality arising from additional vehicle movements.

5.	?	? -	- ?	✓			✓	Effects are as other options until later in the plan period. Identifying Areas of Search for crushed rock extraction later in the Plan period could have longer term negative effects on this objective because crushed rock is found mostly in areas of grade 2 agricultural land (high quality) although the precise impact will depend on the location of the sites. However, through scrutinising constraints and opportunities at the area of search level, such impacts could be minimised.
6.	?	? -	-	✓			✓	Effects are as other options until later in the plan period. Identifying Areas of Search for crushed rock extraction later in the Plan period would mean that more extraction could take place, which would mean more energy expended during extraction and transportation, and therefore more greenhouse gases would be emitted.
7.	?	?	?	✓			✓	It is uncertain what the impact of Identifying Areas of Search for crushed rock extraction later in the Plan period would be.
8.	?	?	-	✓			✓	Effects are as other options until later in the plan period. This option does not minimise the use of resources or seek their re-use and safeguarding as it could allow an opportunity for additional extraction.
9.	?	? -	-	✓			✓	Effects are as other options until later in the plan period. This option does not minimise waste generation or prioritise the management of waste as high in the waste hierarchy as possible.
10.	?	? -	- ?	✓			✓	Effects are as other options until later in the plan period. Identifying Areas of Search for crushed rock extraction later in the Plan period could have longer term negative effects as it could mean that ultimately this option could allow an opportunity for additional extraction, which could have negative impacts on the historic environment depending on location
11.	?	? -	-	✓		✓		Effects are as other options until later in the plan period but there could be a longer term impact on local landscapes around extraction sites as this option could mean that ultimately there could be an avenue for additional extraction.
12.	?	?	+	✓		✓		Effects are as other options until later in the plan period. Identifying Areas of Search for crushed rock extraction later in the Plan could be beneficial for the economy in the longer term as it could mean that ultimately this option could support supply of crushed rock in the latter part of the Plan period.
13.	?	? + -	+ -	✓			✓	Effects are as other options until later in the plan period. Identifying Areas of Search for crushed rock extraction later in the Plan could be beneficial for the economy and therefore communities in the longer term as it could mean that ultimately this option could support supply of crushed rock in the latter part of the Plan period. There could also be some negative effects as more communities are brought into close proximity with quarries, though the areas of search chosen, through their capacity for more detailed / local scrutiny, seem likely to mitigate against this to a degree.
14.	?	? -	- ?	✓			✓	Effects are as other options until later in the plan period. Identifying Areas of Search for crushed rock extraction later in the Plan period could have longer term negative effects on this objective as it could mean that ultimately this option could allow an avenue for additional extraction so there could be some impact from

								extraction sites on the public rights of way network although this depends on the location of any extraction sites.
15.								Effects are as other options until later in the plan period. Identifying Areas of Search at the end of the Plan period could mean that ultimately this option could allow an opportunity for additional extraction, which could have negative impacts on wellbeing and health depending on location. However, through scrutinising constraints and opportunities at the area of search level, such impacts could be minimised. .
16.								Effects are as other options until later in the plan period In the longer term there could be more opportunities for flood storage.
17.				✓		✓		Long term positive effects from identifying Areas of Search for crushed rock extraction later in the Plan period as it provides more certainty that the need for the resource can be met from within the Plan Area.

Summary of assessment

The assessment has revealed that Option 2 is likely to result in negative effects on the environment, including biodiversity / geodiversity, water and air quality, the historic environment and landscape, but would act particularly positively in relation to ensuring sufficient minerals are available. Under Option 3 there are likely to be positive effects on environmental objectives, although overall these may be slight as the option represents only a small decrease in crushed rock provision. Option 1 has limited effects as further provision of crushed rock would not be required.

Under Option 4, relying more on imports produces more negative effects in terms of environmental impacts from increased traffic and less support for jobs and the economy but positive effects in terms of less direct impact on habitats and landscape.

Option 5 has more negative effects arising from the potential for greater extraction requirements.

The effects of option 6 are mostly the same as other options in the short and most of the medium term (as the option is additional to other options). In the longer term effects are mostly negative as the option allows the opportunity for further extraction over and above the extraction rates in other options. However, there would be positive economic effects as this option creates greater certainty that demand for crushed rock can be met.

Recommendations

It is recommended that Option 3 be pursued as this would enable sufficient provision of Magnesian limestone whilst limiting negative effects and encouraging of use of secondary and recycled aggregates

Maintenance of Landbanks for Crushed Rock (id08)

Assumptions – There is no resource in the City of York area so it is assumed no extraction would take place in that area under any of the options. It is assumed that, under options 3 and 4, the same of amount of crushed rock would be extracted across the Plan area as a whole.

Option 1
Provide for maintenance of a single 10 year landbank of crushed rock over the plan period and support the principle of time extensions at individual sites where necessary to allow full extraction of permitted reserves.
Note: this option would only lead to effects over and above those resulting from existing planning permissions for crushed rock extraction, which are sufficient to meet current landbank requirements, should it be necessary to provide more reserves to maintain landbanks later in the plan period.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	-	- +	✓		✓	✓	In the longer term there could be additional effects on biodiversity, over and above any resulting from planning permission already granted, although it is not possible to identify the scale, location and significance of any effects at this stage. In the longer term there may also be opportunities for enhancements for biodiversity associated with site reclamation.
2.	0	-	-	✓		✓	✓	In the longer term there could be additional effects on water quality and supply, over and above any resulting from planning permission already granted, although it is not possible to identify the scale, location and significance of any effects at this stage.
3.	0	-	-		✓	✓	✓	In the longer term should additional reserves be permitted to maintain the landbank this would result in more traffic movements and associated effects.
4.	0	-	-	✓		✓		In the longer term should additional reserves be permitted to maintain the landbank this would result in additional localised air quality issues.
5.	0	-	--	✓		✓		In the longer term this option could result in greater take up of agricultural land, recognising that most of the Plan area is Grade 2 or 3 agricultural land quality.
6.	0	-	-	✓			✓	In the longer term should additional reserves be permitted to maintain the landbank this would result in more traffic movements and greenhouse gas emissions.

7.	0	0	+	✓			✓	Should a greater level of reserves be needed to maintain the landbank, once these quarries close there would be increased opportunities for storage of rainwater to help reduce flood risk.
8.	--	--	--	✓		✓		Maintaining a landbank is likely to decrease any incentive for reducing the use of resources.
9.	--	--	--	✓		✓		Maintaining a landbank is likely to decrease any incentive using previously used resources.
10.	0	-	-	✓		✓	✓	In the longer term there could be additional effects on heritage, over and above any resulting from planning permission already granted, although it is not possible to identify the scale, location and significance of any effects at this stage.
11.	0	-	--	✓		✓		In the longer term should additional reserves be permitted this would have effects on the landscape although it is not possible to identify the scale, location and significance of any effects.
12.	+ +	+ +	+ +		✓		✓	This option would enable sufficient materials to be provided to support the economy and would also help to support jobs in the minerals sector.
13.	0 0	+ -	+ -		✓		✓	Whilst this option would have positive effects on jobs and local economies it could have negative effects on the tourism economy by detracting visitors from local tourism assets.
14.	0	-	- +	✓		✓	✓	In the longer term should additional reserves be permitted this could have effects on the recreation assets although it is not possible to identify the scale, location and significance of any effects. In the longer term there may also be positive effects should site reclamation provide enhancements for recreation.
15.	0	-	--	✓		✓	✓	In the longer term should additional reserves be permitted this could have effects on the health and wellbeing of communities although it is not possible to identify the scale, location and significance of any effects.
16.	0	0	+	✓			✓	Should a greater level of reserves be needed to maintain the landbank, once these quarries close there would be increased opportunities for storage of rainwater to help reduce flood risk.
17.	+	+ -	+ -		✓	✓		Through maintaining a single landbank there may be a shortfall of Magnesian limestone in the longer term although overall a sufficient supply of minerals would be maintained.

Option 2
Provide for the maintenance of a separate landbank for Magnesian limestone and other crushed rock reserves over the plan period and support the principle of time extensions at individual sites where necessary to allow full extraction of permitted reserves.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	- +	✓		✓	✓	Should additional Magnesian limestone extraction be permitted, along with additional reserves of other crushed rock resources in the longer term, there could be additional effects on biodiversity, over and above any resulting from planning permission already granted, in particular there are a number of SINCs in areas of Magnesian limestone towards the south of the Plan area. In the longer term there may be opportunities for enhancements for biodiversity through site reclamation.
2.	-	-	-	✓		✓	✓	In the longer term there could be additional effects on water quality and supply, over and above any resulting from planning permission already granted, in particular as the Magnesian limestone resource coincides with Nitrate Vulnerable Zones and Groundwater Source Protection Zones in a number of places.
3.	+	+	+		✓	✓	✓	This could allow some extraction closer to markets.
4.	-	-	-	✓		✓		Should additional Magnesian limestone extraction be permitted, along with additional reserves of other crushed rock resources in the longer term, this would result in additional localised air quality issues.
5.	-	-	--	✓		✓		Negative effects may arise under this option as much of the Magnesian limestone resource is in areas of Grade 2 agricultural land quality, along with wider effects of maintaining the crushed rock landbank.
6.	-	-	-		✓	✓	✓	In the longer term should additional reserves be permitted to maintain the Magnesian limestone landbank this would result in more traffic movements and associated effects.
7.	0	0	+	✓			✓	Should a greater level of reserves be needed to maintain the landbank and also further resources of Magnesian limestone, once these quarries close there would be increased opportunities for storage of rainwater to help reduce flood risk, in addition to the opportunities by provided by maintaining the wider crushed rock landbank.
8.	--	--	--	✓		✓		Maintaining a landbank is likely to decrease any incentive for reducing the use of resources.
9.	--	--	--	✓		✓		Maintaining a landbank is likely to decrease any incentive using previously used resources.
10.	-	-	--	✓		✓	✓	In the longer term there could be additional effects on the historic environment, over and above any resulting from planning permission already granted, in particular there are a number of historic assets in areas of Magnesian limestone resource.
11.	-	-	--	✓		✓		In the longer term should additional reserves be permitted this would have effects on the landscape although it is not possible to identify the scale, location and significance of any effects. Providing additional landbanks of Magnesian limestone could have effects on the setting of the Nidderdale AONB.
12.	++	++	++		✓		✓	This option would enable sufficient materials to be provided to support the economy, in particular through also providing for a landbank of Magnesian limestone, and would also help to support jobs in the minerals sector.

13.	+ / -	+ / -	+ / -		✓		✓	Whilst this option would have positive effects on jobs and local economies it could have negative effects on the tourism economy by detracting visitors from local tourism assets.
14.	-	-	- / +	✓		✓	✓	In the longer term should additional reserves be permitted this could have effects on recreation assets although it is not possible to identify the scale, location and significance of any effects. In the longer term there may be opportunities for enhancements for recreation through site reclamation.
15.	-	-	--	✓		✓	✓	Should additional Magnesian limestone extraction be permitted, along with additional reserves of other crushed rock resources in the longer term, this could have effects on the health and wellbeing of communities although it is not possible to identify the scale, location and significance of any effects.
16.	0	0	+	✓			✓	Should a greater level of reserves be needed to maintain the landbank and also further resources of Magnesian limestone, once these quarries close there would be increased opportunities for storage of rainwater to help reduce flood risk, in addition to the opportunities provided by maintaining the wider crushed rock landbank.
17.	+ +	+ +	+ +	✓		✓		This option enables the types of crushed rock needed to come forward to support development, particularly recognising a potential shortfall in Magnesian limestone.

Option 3
This option could operate in association with either option 1 or 2 above and would seek to ensure that landbanks of crushed rock are maintained within those parts of the plan area outside the National Park and AONBs.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+ +	+ +	✓		✓	✓	Providing landbanks outside of the National Park and the AONBs would have positive effects for habitats and wildlife as much of the SACs, SPAs and SSSIs are within these areas, thus protecting the highest level of sites. The effects are likely to become more positive over time as existing quarries in AONBs close.
2.	-	-	--	✓			✓	As the Nitrate Vulnerable Zones and Groundwater Source Protection Zones are generally in the area outside of the National Park and the AONBs, this option is likely to result in additional pressure for extraction within NVZs and GSPZs.
3.	+	+	+		✓		✓	Under this option extraction would take place closer to users of crushed rock and closer to the main road network, both of which largely exist outside of these designated areas. Effects would increase over time as extraction in the AONBs ceases.
4.	+	+	+	✓		✓		Under this option air quality would be protected in these designated areas, this is particularly important in the National Park as clean, unpolluted air is one of the Park's special qualities.
5.	-	--	--	✓		✓		This option would direct extraction away from the lower quality agricultural land of the designated areas and towards the higher quality land. The effects are likely to increase over time as more higher quality land is taken up as a result of the closure of quarries in the AONBs.
6.	+	+	+		✓		✓	Under this option extraction would take place closer to users of crushed rock and closer to the main road network, both of which largely exist outside of these designated areas, thus reducing greenhouse gas emissions. Effects would increase over time as extraction in the AONBs ceases.
7.	0	0	-	✓		✓		This option would result in fewer options in the long term to store floodwater in upland areas.
8.	0	0	0					Maintaining landbanks outside of the National Park and the AONBs will have no effect on this objective as it is assumed that the same level of crushed rock would be provided overall.
9.	0	0	0					Maintaining landbanks outside of the National Park and the AONBs will have no effect on this objective as it is assumed that the same level of crushed rock would be provided overall and will therefore have no overall

								effect on the use of previously used resources.
10.	+	+	+	✓		✓		There are many heritage assets in the National Park and the AONBs, in addition to conservation and enhancement of the cultural heritage being a part of the statutory National Park purposes, and therefore this option is likely to have positive effects by directing extraction away from these areas.
11.	+ +	+ +	+ +	✓		✓		The option would help to protect the landscape of these areas which is a key reason for their designation. Effects are likely to improve over time as quarries in the AONBs cease operation.
12.	+	+	+		✓		✓	This option would see jobs in the minerals sector being provided closer to the larger centres of population.
13.	+ -	+ -	+ -		✓		✓	This option would see jobs in the minerals sector being provided closer to the larger centres of population. The option could also have positive effects on the tourism economies of the National Park and the AONBs, which are an important of the economies of these areas, by maintaining the areas for types of tourism activity undertaken in these areas. On the other hand existing quarries in AoNBs provide local employment - the largest quarry in the Plan area_ maintenance of landbanks in these areas could help sustain these jobs.
14.	+ +	+ +	+ +		✓		✓	This option is likely to have positive effects on recreation opportunities in National Parks and AONBs as minerals extraction can have negative effects on the recreational activities. Effects would be particularly positive in the National Park where providing opportunities for the understanding and enjoyment of the Park is one of the statutory purposes.
15.	+	+	+		✓		✓	This option could have positive effects by directing quarries, and therefore traffic, away from the generally minor road network in the National Park and AONBs.
16.	0	0	-	✓		✓		This option would result in fewer options in the long term to store floodwater in upland areas.
17.	+	+	+		✓		✓	Under this option there would be a shortened supply chain as crushed rock would be supplied from quarries closer to main centres of population.

Option 4

This option could operate in association with either option 1 or 2 above and would rely on national policy and development management policies in the Plan to ensure that landbanks of crushed rock are maintained within those parts of the Plan area outside the National Park and AONBs. The NPPF requires landbanks for non-energy minerals to be maintained outside of National Parks, AONBs, World Heritage Sites, Scheduled Monuments and Conservation Areas as far as is practical.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+ +	?	✓		✓	✓	Providing landbanks outside of the National Park and the AONBs would have positive effects for habitats and wildlife as much of the SACs, SPAs and SSSIs are within these areas, thus protecting the highest level of sites. The effects are likely to become more positive over time as existing quarries in AONBs close. There would be an element of uncertainty as the NPPF does not place a complete restriction over aggregates extraction in National Parks and AONBs. In the medium to longer term effects would be uncertain as national policy may be replaced or amended.
2.	-	-	?	✓			✓	As the Nitrate Vulnerable Zones and Groundwater Source Protection Zones are generally in the area outside of the National Park and the AONBs, this option is likely to result in additional pressure for extraction within NVZs and GSPZs. There would be an element of uncertainty as the NPPF does not place a complete restriction over aggregates extraction in National Parks and AONBs. In the longer term effects would be uncertain as national policy may be replaced or amended.
3.	+	+	?		✓		✓	Under this option extraction would take place closer to users of crushed rock and closer to the main road network, both of which largely exist outside of these designated areas. Effects would increase over time as extraction in the AONBs ceases. There would be an element of uncertainty as the NPPF does not place a complete restriction over aggregates extraction in National Parks and AONBs. In the longer term effects would be uncertain as national policy may be replaced or amended.
4.	+	+	?	✓		✓		Under this option air quality would be protected in these designated areas, this is particularly important in the National Park as clean, unpolluted air is one of the Park's special qualities. There would be an element of uncertainty as the NPPF does not place a complete restriction over aggregates extraction in National Parks and AONBs. In the longer term effects would be uncertain as national policy may be replaced or amended.
5.	-	--	?	✓		✓		This option would direct extraction away from the lower quality agricultural land of the designated areas and towards the higher quality land. The effects are likely to increase over time as more higher quality land is taken up as a result of the closure of quarries in the AONBs. There would be an element of uncertainty as the NPPF does not place a complete restriction over aggregates extraction in National Parks and AONBs. In the longer term effects would be uncertain as national policy may be replaced or amended.

6.	+	+	?		✓		✓	Under this option extraction would take place closer to users of crushed rock and closer to the main road network, both of which largely exist outside of these designated areas, thus reducing greenhouse gas emissions. Effects would increase over time as extraction in the AONBs ceases. There would be an element of uncertainty as the NPPF does not place a complete restriction over aggregates extraction in National Parks and AONBs. In the longer term effects would be uncertain as national policy may be replaced or amended.
7.	0	0	? -	✓		✓		This option would result in fewer options in the long term to store floodwater in upland areas. There would be an element of uncertainty as the NPPF does not place a complete restriction over aggregates extraction in National Parks and AONBs. In the longer term effects would be uncertain as national policy may be replaced or amended.
8.	0	0	0					Maintaining landbanks outside of the National Park and the AONBs will have no effect on this objective as it is assumed that the same level of crushed rock would be provided overall.
9.	0	0	0					Maintaining landbanks outside of the National Park and the AONBs will have no effect on this objective as it is assumed that the same level of crushed rock would be provided overall and will therefore have no overall effect on the use of previously used resources.
10.	+	+	?	✓		✓		There are many heritage assets in the National Park and the AONBs, in addition to conservation and enhancement of the cultural heritage being a part of the statutory National Park purposes, and therefore this option is likely to have positive effects by directing extraction away from these areas. There would be an element of uncertainty as the NPPF does not place a complete restriction over aggregates extraction in National Parks and AONBs. In the longer term effects would be uncertain as national policy may be replaced or amended.
11.	++	++	?	✓		✓		The option would help to protect the landscape of these areas which is a key reason for their designation. Effects are likely to improve over time as quarries in the AONBs cease operation. There would be an element of uncertainty as the NPPF does not place a complete restriction over aggregates extraction in National Parks and AONBs. In the longer term effects would be uncertain as national policy may be replaced or amended.

12.	+	+	?		✓		✓	This option would see jobs in the minerals sector being provided closer to the larger centres of population. There would be an element of uncertainty as the NPPF does not place a complete restriction over aggregates extraction in National Parks and AONBs. In the longer term effects would be uncertain as national policy may be replaced or amended. On the other hand existing quarries in AoNBs provide local employment - maintenance of landbanks in these areas could help sustain these jobs.
13.	+	+	?		✓		✓	This option would see jobs in the minerals sector being provided closer to the larger centres of population. The option could also have positive effects on the tourism economies of the National Park and the AONBs, which are an important of the economies of these areas, by maintaining the areas for types of tourism activity undertaken in these areas. There would be an element of uncertainty as the NPPF does not place a complete restriction over aggregates extraction in National Parks and AONBs. In the longer term effects would be uncertain as national policy may be replaced or amended.
14.	++	++	?		✓		✓	This option is likely to have positive effects on recreation opportunities in National Parks and AONBs as minerals extraction can have negative effects on the recreational activities. Effects would be particularly positive in the National Park where providing opportunities for the understanding and enjoyment of the Park is one of the statutory purposes. There would be an element of uncertainty as the NPPF does not place a complete restriction over aggregates extraction in National Parks and AONBs. In the longer term effects would be uncertain as national policy may be replaced or amended.
15.	+	+	?		✓		✓	This option could have positive effects by directing quarries, and therefore traffic, away from the generally minor road network in the National Park and AONBs. There would be an element of uncertainty as the NPPF does not place a complete restriction over aggregates extraction in National Parks and AONBs. In the longer term effects would be uncertain as national policy may be replaced or amended.
16.	0	0	? -	✓		✓		This option would result in fewer options in the long term to store floodwater in upland areas. There would be an element of uncertainty as the NPPF does not place a complete restriction over aggregates extraction in National Parks and AONBs. In the longer term effects would be uncertain as national policy may be replaced or amended.
17.	+	+	?		✓		✓	Under this option there would be a shortened supply chain as crushed rock would be supplied from quarries closer to main centres of population. There would be an element of uncertainty as the NPPF does not place a complete restriction over aggregates extraction in National Parks and AONBs. In the longer term effects would be uncertain as national policy may be replaced or amended.

Summary of assessment
The assessment has revealed that both Options 1 and 2 could have negative effects on the environment, including biodiversity / geodiversity, air and water quality, landscape and the historic environment, and communities of the Plan area should these result in the need to release more land for extraction than is currently permitted. They would however, enable a level of minerals supply to meet demand for development.
Option 3 would provide protection for the National Park and the AONBs to a greater extent than Option 4 where there would be a level of uncertainty over potential protection for these areas, particularly in the longer term.

Recommendations
It is recommended that, provided sufficient safeguards exist in the Development Management policies, no further mitigation would be necessary under options 1 and 2. Option 3 should be followed to avoid any uncertainty presented by option 4.

Safeguarding Crushed Rock (id09)

Assumptions – Minerals safeguarding does not create any presumption that the mineral would be extracted and any proposals for extraction in a safeguarded area would still need to meet the same policy requirements as proposals for extraction in an area which is not safeguarded. Equally the presence of a safeguarding area would not preclude any other developments but would enable the presence of potentially important minerals to be considered as part of the usual planning process.

Option 1
This option would safeguard all known crushed rock resources with a 500m buffer zone.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0 ?	0 ?	0 ?	✓	✓	✓	✓	Extraction would still need to accord with other policies relating to biodiversity, habitats and wildlife. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known (so effects of displacing development to elsewhere can't be considered). Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
2.	0 ?	0 ?	0 ?	✓	✓	✓	✓	Extraction would still need to accord with other policies relating to water quality and supply. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
3.	0 ?	0 ?	0 ?	✓		✓	✓	Extraction would still need to accord with other policies relating to transport. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
4.	0 ?	0 +	0 +		✓	✓		Extraction would still need to accord with other policies relating to air quality but the buffer zone may help to ensure that users of new developments are protected from the effects of extraction on local air quality. In the shorter term it is unlikely to have much influence due to the level of crushed rock reserves. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood

		?	?					of displacement along with the nature, location or consequences of any displaced development is not known.
5.	0 ?	+ ?	+ ?	✓		✓		Safeguarding could ensure that in the medium to long term extraction takes place in the 'optimum' locations to minimise landtake. In the shorter term it is unlikely to have much influence due to the level of crushed rock reserves. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
6.	0 ?	0 ?	0 ?	✓		✓	✓	Whilst there is no clear direct link between the option and the objective some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
7.	0 ?	0 ?	0 ?	✓		✓	✓	Whilst there is no clear direct link between the option and the objective some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
8.	++ ++	++ ++	++ ++	✓		✓		Safeguarding with a 500m buffer would very strongly contribute to the sub-objective of safeguarding minerals resources
9.	0	0	0					No clear link
10.	0 ?	0 ?	0 ?	✓		✓	✓	Extraction would still need to accord with other policies relating to conserving and enhancing the historic environment. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
11.	0 ?	0 ?	0 ?	✓		✓	✓	Extraction would still need to accord with other policies relating to protecting and enhancing the landscape. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
12.	+ ?	+ ?	+ ?	✓			✓	Safeguarding crushed rock will help to ensure that minerals are available for economic growth. This positive effect will increase over time as minerals which may have been sterilised over time are safeguarded. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement and effects of this on the economy is not known.
13.	0 ?	0 ?	0 ?	✓			✓	Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement and effects of this on the vitality and viability of communities is not known.
14.	0 ?	0 ?	0 ?	✓	✓	✓	✓	Whilst there is no clear direct link between the option and the objective some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
15.	+	+	++	✓			✓	Under this option, users of new developments would be well protected from potential future minerals extraction through the inclusion of a 500m buffer. The overall benefits across the Plan area would increase

	?	?	?					over time. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
16.	0 ?	0 ?	0 ?	✓		✓	✓	Whilst there is no clear direct link between the option and the objective some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
17.	+ ?	+ ?	+ ?					The option would have a positive effect in terms of ensuring that minerals are available to support the needs of the population. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement of other development is not known.

Option 2
This option would safeguard all known crushed rock resources with a 200m buffer zone.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0 ?	0 ?	0 ?	✓	✓	✓	✓	Extraction would still need to accord with other policies relating to biodiversity, habitats and wildlife. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known (so effects of displacing development to elsewhere cannot be considered). Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
2.	0 ?	0 ?	0 ?	✓	✓	✓	✓	Extraction would still need to accord with other policies relating to water quality and supply. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
3.	0 ?	0 ?	0 ?	✓		✓	✓	Extraction would still need to accord with other policies relating to transport. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
4.	0	0	0		✓	✓		Extraction would still need to accord with other policies relating to air quality but the buffer zone may help to

								ensure that users of new developments are protected from the effects of extraction on local air quality. In the shorter term it is unlikely to have much influence due to the level of crushed rock reserves. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
	?	+	+					
		?	?					
5.	0	+	+	✓		✓		Safeguarding could ensure that in the medium to long term extraction takes place in the 'optimum' locations to minimise landtake. In the shorter term it is unlikely to have much influence due to the level of crushed rock reserves. Whilst this would have positive effects, these would be slightly less positive than for option 1 which proposes a larger buffer. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
	?	?	?					
6.	0	0	0	✓		✓	✓	Whilst there is no clear direct link between the option and the objective some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
	?	?	?					
7.	0	0	0	✓		✓	✓	Whilst there is no clear direct link between the option and the objective some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
	?	?	?					
8.	+	+	+	✓		✓		Safeguarding with a 200m buffer would strongly contribute to the sub-objective of safeguarding minerals resources, although not to the same extent as option 1.
	+	+	+					
9.	0	0	0					No clear link
10.	0	0	0	✓		✓	✓	Extraction would still need to accord with other policies relating to conserving and enhancing the historic environment. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
	?	?	?					
11.	0	0	0	✓		✓	✓	Extraction would still need to accord with other policies relating to protecting and enhancing the landscape. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
	?	?	?					
12.	+	+	+	✓			✓	Safeguarding crushed rock will help to ensure that minerals are available for economic growth. This positive effect will increase over time as minerals which may have been sterilised over time are safeguarded, although will be slightly less positive than effects seen under option 1. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement and effects of this on the economy is not known.
	?	?	?					
13.	0	0	0	✓			✓	Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement and effects of this on the vitality and viability of communities is not known.
	?	?	?					

14.	0 ?	0 ?	0 ?	✓	✓	✓	✓	Whilst there is no clear direct link between the option and the objective some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
15.	+ ?	+ ?	+ ?	✓			✓	Under this option, users of new developments would be well protected from potential future minerals extraction through the inclusion of a 500m buffer. Under this option, users of new developments would be well protected from potential future minerals extraction through the inclusion of a 200buffer. The overall benefits across the Plan area would increase over time but not to the same extent as option 1. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
16.	0 ?	0 ?	0 ?	✓		✓	✓	Whilst there is no clear direct link between the option and the objective some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
17.	+ ?	+ ?	+ ?	✓		✓		The option would have a positive effect in terms of ensuring that minerals are available to support the needs of the population. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement of other development is not known.

Option 3
This option would only safeguard crushed rock and sand and gravel resources outside urban areas and National Park and AONB designations.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0 ?	0 ?	0 + ?	✓	✓	✓	✓	There may be slight positive effects over the longer term should less harmful activities sterilise minerals resources in the National Park and the AONBs, although the possibility of this is considered to be slim bearing in mind the relatively low level of development which comes forward in the areas. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
2.	0 ?	0 ?	0 ?	✓	✓	✓	✓	Extraction would still need to accord with other policies relating to water quality and supply. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
3.	0 ?	0 ?	0 ?	✓		✓	✓	Extraction would still need to accord with other policies relating to transport. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
4.	0 ?	0 + ?	0 + ?		✓	✓		Extraction would still need to accord with other policies relating to air quality but the buffer zone may help to ensure that users of new developments are protected from the effects of extraction on local air quality. In the shorter term it is unlikely to have much influence due to the level of crushed rock reserves. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
5.	0 ?	+ ?	+ ?	✓		✓		Safeguarding could ensure that in the medium to long term any extraction takes place in the 'optimum' locations to minimise landtake in areas outside of National Parks and AONBs, however there would be more uncertainty within these designated areas. In the shorter term it is unlikely to have much influence due to the level of crushed rock reserves and that under current policy crushed rock extraction should take place outside of National Parks and AONBs. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.

6.	0 ?	0 ?	0 ?	✓		✓	✓	Whilst there is no clear direct link between the option and the objective some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
7.	0 ?	0 ?	0 ?	✓		✓	✓	Whilst there is no clear direct link between the option and the objective some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
8.	++ -	++ -	++ --	✓		✓		Whilst a large proportion of minerals resources in the Plan area would be safeguarded, those in the National Parks and AONBs would not be. In the short term this is unlikely to be an issue as relatively low levels of development take place in these areas which would risk sterilising minerals, but over a long enough timescale issues may arise.
9.	0	0	0					No clear link
10.	0 ?	0 ?	0 + ?	✓		✓		There may be slight positive effects on heritage assets over the longer term should less harmful activities sterilise minerals resources in the National Park and the AONBs, although the possibility of this is considered to be slim bearing in mind the relatively low level of development which comes forward in the areas. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
11.	0 ?	0 ?	0 + ?	✓		✓		There may be slight positive effects on heritage assets over the longer term should less harmful activities sterilise minerals resources in the National Park and the AONBs, although the possibility of this is considered to be slim bearing in mind the relatively low level of development which comes forward in the areas. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
12.	+ ?	+ ?	+ ?	✓			✓	This option will help to ensure that minerals outside of the National Park and AONBs are available for economic growth but those within these areas may be sterilised. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement and effects of this on the economy is not known.
13.	0 ?	0 ?	0 ?	✓	✓	✓	✓	There may be a very minor link between safeguarding minerals and job creation although overall it is considered that there is no link. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement and effects of this on the vitality and viability of communities is not known.
14.	0 ?	0 ?	0 + ?	✓		✓	✓	There may be slight positive effects over the longer term should less harmful activities sterilise minerals resources in the National Park and the AONBs, although the possibility of this is considered to be slim bearing in mind the relatively low level of development which comes forward in these areas. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.

15.	+	+	+	✓	✓	✓	✓	Under this option, whilst new developments outside of the National Parks and AONBs may be sited away from potential future crushed rock quarries, within the National Park conflicts may arise should there be demand for minerals extraction close to other new development, however the likelihood is considered to be very slight as only relatively limited amounts of development would come forward in the National Park. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement and effects of this on the vitality and viability of communities is not known.
	-	-	-					
	?	?	?					
16.	0	0	0	✓		✓	✓	Whilst there is no clear direct link between the option and the objective some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
	?	?	?					
17.	+	+	+	✓		✓		The option would have a positive effect in terms of ensuring that minerals are available to support the needs of the population, although these effects would be lesser than under Options 1 and 2 as fewer minerals would be safeguarded, but due to the limited amount of aggregates extracted from the National Park and the AONBs this is not sufficient to create a negative effect. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement of other development is not known.
	?	?	?					

Option 4
This option could operate in parallel with other options and would safeguard any additional resources proposed in site allocations and preferred areas where supported by adequate resource information

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0	0	0	✓	✓	✓	✓	Extraction would still need to accord with other policies relating to biodiversity, habitats and wildlife. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
	?	?	?					
2.	0	0	0	✓	✓	✓	✓	Extraction would still need to accord with other policies relating to water quality and supply. Some uncertainty

	?	?	?				is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
3.	0 ?	0 ?	0 ?	✓		✓	✓	Extraction would still need to accord with other policies relating to transport. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
4.	0 ?	0 + ?	0 + ?		✓	✓		Extraction would still need to accord with other policies relating to air quality but the buffer zone may help to ensure that users of new developments are protected from the effects of extraction on local air quality. In the shorter term it is unlikely to have much influence due to the level of crushed rock reserves. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
5.	0 ?	+ ?	+ ?	✓		✓		Safeguarding could ensure that in the medium to long term extraction takes place in the 'optimum' locations to minimise landtake. In the shorter term it is unlikely to have much influence due to the level of crushed rock reserves. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
6.	0 ?	0 ?	0 ?	✓		✓	✓	Whilst there is no clear direct link between the option and the objective some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
7.	0 ?	0 ?	0 ?	✓		✓	✓	Whilst there is no clear direct link between the option and the objective some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
8.	++	++	++	✓		✓		Safeguarding additional resources would very strongly contribute to the sub-objective of safeguarding minerals resources

9.	0	0	0					No clear link
10.	0 ?	0 ?	0 ?	✓		✓		Extraction would still need to accord with other policies relating to conserving and enhancing the historic environment. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
11.	0 ?	0 ?	0 ?	✓		✓		Extraction would still need to accord with other policies relating to protecting and enhancing the landscape. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
12.	+ ?	+ ?	+ ?	✓			✓	Safeguarding crushed rock will help to ensure that minerals are available for economic growth. This positive effect will increase over time as minerals which may have been sterilised over time are safeguarded. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement and effects of this on the economy is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
13.	0 ?	0 ?	0 ?	✓	✓	✓	✓	There may be a very minor link between safeguarding minerals and job creation although overall there is no link. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement and effects of this on the vitality and viability of communities is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
14.	0 ?	0 ?	0 ?	✓		✓	✓	Whilst there is no clear direct link between the option and the objective some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
15.	0 ?	0 ?	0 ?	✓	✓	✓	✓	Whilst there is no clear direct link between the option and the objective some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
16.	0 ?	0 ?	0 ?	✓		✓	✓	Whilst there is no clear direct link between the option and the objective some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the

								nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
17.	+	+	+	✓		✓		There would be minor positive effects on provision of minerals to support the needs of the population. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement of other development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
	?	?	?					

Summary of assessment

Overall, minerals safeguarding areas are unlikely to have a great effect on sustainability objectives as their presence does not create a presumption, or add any weight, towards minerals extraction. The options would all have significant positive effects on safeguarding minerals resources, although Option 3 would be slightly less positive as these effects would not be felt in the National Park or AONBs. The positive effects under Option 1 are likely to be greater than those resulting from Option 2 due to the presence of a larger buffer. Under each option, effects from displacement of development which would have taken place are uncertain as this will depend upon the stringency of any policy approach applied.

Recommendations

It is recommended that Option 1 be pursued due to the greater level of sustainability benefits along with Option 4 which would bring additional slight positive benefits.

Concreting Sand and Gravel Delivery (id10)

Option 1
This option could seek to deliver Joint Plan requirements for concreting sand and gravel through the identification of specific site allocations where possible, with preferred areas and areas of search identified as alternatives only if necessary.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	++	++	++	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to biodiversity / geodiversity constraints and opportunities. While preferred areas and areas of search are identified as alternatives only where necessary, these are still considered to have modest biodiversity / geodiversity benefits as strategic constraints and opportunities can still be considered to a degree. While there may still be constraints that may be negatively affected through this approach, altogether the net effect of this approach is that it will strongly support the SA objective.
2.	++	++	++	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to water quality and supply constraints and opportunities. While preferred areas and areas of search are identified as alternatives only where necessary, these are still considered to have modest water quality and supply benefits as strategic constraints and opportunities can still be considered to a degree. While there may still be constraints that may be negatively affected through this approach, altogether the net effect of this approach is that it will strongly support the SA objective.
3.	+	+	+	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to their effects on transport. As concreting sand must be extracted where it is found there is potentially less opportunity to reduce transport effects. However, this approach will support the SA objective.
4.	++	++	++	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to air quality constraints. While preferred areas and areas of search are identified as alternatives only where necessary, these are still considered to have modest air

								quality benefits as strategic constraints and opportunities can still be considered to a degree. While there may still be constraints that may be negatively affected through this approach, altogether the net effect of this approach is that it will strongly support the SA objective.
5.	+	+	+	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to their effects on soils and land. While preferred areas and areas of search are identified as alternatives only where necessary, these are still considered to have modest soil and land use benefits as strategic constraints and opportunities can still be considered to a degree. However, inevitably sites will have a significant land take which cannot be avoided, so positive effects should be seen in that context.
6.	++	++	++	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to biodiversity / geodiversity constraints and opportunities. While preferred areas and areas of search are identified as alternatives only where necessary, these are still considered to have modest sustainability and thus climate change benefits as strategic constraints and opportunities can still be considered to a degree. While there may still be constraints that may be negatively affected through this approach, altogether the net effect of this approach is that it will strongly support the SA objective.
7.	+	+	++	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to their resilience to climate change / potential to contribute to climate adaptation. In particular, sand and gravel sites have the potential to play a major role in providing flood storage as part of the response to climate change. While preferred areas and areas of search are identified as alternatives only where necessary, these are still considered to have modest climate resilience benefits as strategic constraints and opportunities can still be considered to a degree. Altogether this approach will support the SA objective in the long term.
8.	--	--	--	✓			✓	Inevitably resources will be used if extraction occurs, and allocating sites will only contribute to increased security of supply for primary aggregate which will work against the objective.
9.	0	-	-	✓		✓	✓	This option should allow for the consideration of waste management impacts, though the option, through supporting primary extraction, inevitably sets in train a process that will act against the minimisation of waste (be it at the extraction stage or at the end of the lifecycle of the extracted material).
10.	++	++	++	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to historic environment constraints and opportunities. While preferred areas and areas of search are identified as alternatives only where necessary, these are still considered to have modest historic environment benefits as strategic constraints and opportunities can still be considered to a degree. While there may still be constraints that may be negatively affected through this

								approach, altogether the net effect of this approach is that it will strongly support the SA objective.
11.	+ +	+ +	+ +	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to landscape and townscape constraints and opportunities. While preferred areas and areas of search are identified as alternatives only where necessary, these are still considered to have modest landscape and townscape sustainability benefits as strategic constraints and opportunities can still be considered to a degree. While there may still be constraints that may be negatively affected through this approach, altogether the net effect of this approach is that it will strongly support the SA objective.
12.	+	+	?	✓		✓		Identifying specific site allocations should allow for viable sites to be identified which should support future demand for concreting sand and gravel. This should make submission of a planning application easier and less costly. However, there is some uncertainty as to whether in the longer term this option limits future locational flexibility.
13.	+ +	+ +	+ +	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to the sorts of constraints and opportunities that affect community vitality. While preferred areas and areas of search are identified as alternatives only where necessary, these are still considered to have modest sustainability and community vitality benefits as strategic constraints and opportunities can still be considered to a degree. While there may still be constraints that may be negatively affected through this approach, altogether the net effect of this approach is that it will strongly support the SA objective.
14.	+ +	+ +	+ +	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to the sorts of constraints and opportunities that affect recreation and leisure. While preferred areas and areas of search are identified as alternatives only where necessary, these are still considered to have modest sustainability and recreation / leisure benefits as strategic constraints and opportunities can still be considered to a degree. While there may still be constraints that may be negatively affected through this approach, altogether the net effect of this approach is that it will strongly support the SA objective.
15.	+ +	+ +	+ +	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to the sorts of constraints and opportunities that affect health and wellbeing. While preferred areas and areas of search are identified as alternatives only where necessary, these are still considered to have modest sustainability and health and wellbeing benefits as strategic constraints and opportunities can still be considered to a degree. While there may still be constraints that may be negatively affected through this approach, altogether the net effect of this approach is that it will strongly support the SA objective.
16.	+	+	+	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they

	+	+	+					will be subject to detailed checks in relation to the sorts of constraints and opportunities that affect flood management. In particular, sand and gravel sites have the potential to play a major role in providing flood storage. While preferred areas and areas of search are identified as alternatives only where necessary, these are still considered to have modest flooding benefits as strategic constraints and opportunities can still be considered to a degree. While there may still be constraints that may be negatively affected through this approach, altogether the net effect of this approach is that it will strongly support the SA objective.
17.	+	0	0	✓		✓		As this option utilises the site allocations process, communities across the plan area will have a greater opportunity to influence decision making in contrast to a planning application which may only generate local interest.

Option 2 This option could seek to deliver Joint Plan requirements for concreting sand and gravel through the identification of specific site allocations only for large scale sites (e. g. sites with greater than 5mt total reserve and planned output of 0.25mtpa or greater), with remaining provision being provided through preferred areas or areas of search.

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	+	+	+	✓		✓		This option would allow sites above the 5mt reserve and planned output of 0.25mtpa or greater threshold to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to biodiversity / geodiversity constraints and opportunities. While preferred areas and areas of search are identified as the means to plan for smaller provision, these are still considered to have modest biodiversity / geodiversity benefits as strategic constraints and opportunities can still be considered to a degree.
2.	+	+	+	✓		✓		This option would allow sites above the stated threshold to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to water quality and supply constraints and opportunities. While preferred areas and areas of search are identified as the means to plan for smaller provision, these are still considered to have modest water quality and supply benefits as strategic constraints and opportunities can still be considered to a degree.

								However, a greater proportion of provision will be identified through these preferred areas / areas of search, which in comparison to option 1 would lead to a lesser positive effect.
3.	+	+	+	✓		✓		This option would allow sites above the stated threshold to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to their effects on transport. As concreting sand must be extracted where it is found there is potentially less opportunity to reduce transport effects. However, this approach will support the SA objective for larger sites.
4.	+	+	+	✓		✓		This option would allow sites above the stated threshold to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to air quality constraints. While preferred areas and areas of search are identified as the means to plan for smaller provision, these are still considered to have modest air quality benefits as strategic constraints and opportunities can still be considered to a degree.
5.	+	+	+	✓		✓		This option would allow sites above the stated threshold to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to their effects on soils and land. While preferred areas and areas of search are identified as the means to plan for smaller provision, these are still considered to have modest soil and land use benefits as strategic constraints and opportunities can still be considered to a degree. However, inevitably sites will have a significant land take which cannot be avoided, so positive effects should be seen in that context.
6.	+	+	+	✓		✓		This option would allow sites above the stated threshold to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to climate change constraints and opportunities. While preferred areas and areas of search are identified as the means to plan for smaller provision, these are still considered to have modest sustainability and thus climate change benefits as strategic constraints and opportunities can still be considered to a degree.
7.	+	+	+	✓		✓		This option would allow sites above the stated threshold to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to their resilience to climate change / potential to contribute to climate adaptation. In particular, sand and gravel sites have the potential to play a

								major role in providing flood storage as part of the response to climate change. While preferred areas and areas of search are identified as the means to plan for smaller provision, these are still considered to have modest climate resilience benefits as strategic constraints and opportunities can still be considered to a degree. Altogether this approach will support the SA objective in the long term.
8.	--	--	--	✓			✓	Inevitably resources will be used if extraction occurs, and allocating sites will only contribute to increased security of supply for primary aggregate which will work against the objective.
9.	0	-	-	✓		✓	✓	This option, should allow for the consideration of waste management impacts for larger sites (e.g. through co-location), though the option, through supporting primary extraction, inevitably sets in train a process that will act against the minimisation of waste (be it at the extraction stage or at the end of the lifecycle of the extracted material).
10.	+	+	+	✓		✓		This option would allow sites above the stated threshold to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to historic environment constraints and opportunities. While preferred areas and areas of search are identified as the means to plan for smaller provision, these are still considered to have modest historic environment benefits as strategic constraints and opportunities can still be considered to a degree.
11.	+	+	+	✓		✓		This option would allow sites above the stated threshold to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to landscape and townscape constraints and opportunities. While preferred areas and areas of search are identified as the means to plan for smaller provision, these are still considered to have modest landscape and townscape benefits as strategic constraints and opportunities can still be considered to a degree.
12.	+	+	+	✓		✓		Identifying specific site allocations should allow for viable sites to be identified which should support future demand for concreting sand and gravel. This should make submission of a planning application easier and less costly for larger sites.
13.	+	+	+	✓		✓		This option would allow sites above the stated threshold to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to the sorts of constraints and opportunities that affect community vitality. While preferred areas and areas of search are identified as the means to plan for smaller provision, these are still considered to have modest sustainability and community

								vitality benefits as strategic constraints and opportunities can still be considered to a degree.
14.	+	+	+	✓		✓		This option would allow sites above the stated threshold to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to the sorts of constraints and opportunities that affect recreation and leisure. While preferred areas and areas of search are identified as the means to plan for smaller provision, these are still considered to have modest sustainability and recreation / leisure benefits as strategic constraints and opportunities can still be considered to a degree.
15.	+	+	+					This option would allow sites above the stated threshold to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to the sorts of constraints and opportunities that affect health and wellbeing. While preferred areas and areas of search are identified as the means to plan for smaller provision, these are still considered to have modest sustainability and health and wellbeing benefits as strategic constraints and opportunities can still be considered to a degree.
16.	+	+	+	✓		✓		This option would allow sites above the stated threshold to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to the sorts of constraints and opportunities that affect flood management. In particular, sand and gravel sites have the potential to play a major role in providing flood storage. While preferred areas and areas of search are identified as the means to plan for smaller provision, this planning process is still considered to have modest flood management benefits as strategic constraints and opportunities can still be considered to a degree.
17.	+	0	0	✓		✓		As this option utilises the site allocations process, communities across the plan area will have a greater opportunity to influence decision making in contrast to a planning application which may only generate local interest.

Option 3 This option could rely on identification of areas of search to meet Joint Plan requirements (based on sand and gravel resource blocks identified in the BGS sand and gravel assessment report 2011).

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	-	✓	✓	✓	✓	This approach relies wholly on areas, which would align with sand and gravel resource blocks. As these resource blocks have considered national and international wildlife designations in their definition, this will ensure that major constraints for biodiversity are less likely to occur. However, locally important nature conservation and geodiversity constraints are not considered, so this approach may, without modification, lead to negative effects as applications may come forward that focus on mitigating or compensating for biodiversity / geodiversity rather than seeking to accommodate or contribute to it through an allocations process.
2.	-	-	-	✓		✓		Water quality / supply was not considered in the resource blocks, so future applications may focus on mitigation rather than planning positively for water quality through an allocations process.
3.	-	-	-	✓		✓		Transport was not considered in the resource blocks, so future applications may focus on mitigation rather than planning positively for sustainable transport through an allocations process.
4.	-	-	-	✓		✓		Air quality was not considered in the resource blocks, so future applications may focus on mitigation rather than planning positively for air quality through an allocations process.
5.	--	--	--	✓		✓		Soil and land issues were not considered in the resource blocks, so future applications may focus on mitigation rather than planning positively for soil and land. Inevitably sites will have a significant land take which cannot be avoided.
6.	-	-	-	✓		✓		Climate change was not considered in the resource blocks, so future applications may focus on mitigation rather than planning positively for reducing emissions through an allocations process.
7.	-	-	-	✓		✓		Climate change adaptation was not considered in the resource blocks, so future applications may focus on mitigation rather than planning positively for adaptation through an allocations process.
8.	--	--	--	✓			✓	Inevitably resources will be used if extraction occurs, and this objective will only contribute to increased security of supply for primary aggregate which will work against increasing demand for secondary or recycled

								aggregates.
9.	0	-	--	✓		✓	✓	This option, through supporting primary extraction, inevitably sets in train a process that will act against the minimisation of waste (be it at the extraction stage or at the end of the lifecycle of the extracted material).
10.	-	-	-	✓	✓	✓	✓	This approach relies wholly on areas, which would align with sand and gravel resource blocks. As these resource blocks have considered national historic environment designations in their definition, this will ensure that major constraints for the historic environment are less likely to occur. However, locally important historic environment constraints are not considered, so this approach may, without modification, lead to negative effects as applications may come forward that focus on mitigating or compensating for the historic environment rather than seeking to plan positively for it through an allocations process.
11.	-	-	-	✓		✓		Landscape was not considered in the resource blocks, so future applications may focus on mitigation rather than planning positively for landscape enhancement through an allocations process.
12.	+ +	+ +	+ +					This approach considers major environmental showstoppers but effectively opens up the rest of the viable resource area as an area of search. This will increase choice of site locations, and may allow the most profitable locations to be more favourably considered (subject to other policies in the plan).
13.	-	-	-	✓		✓		Community vitality was not considered in the resource blocks, so future applications may focus on mitigation rather than planning positively for community vitality through an allocations process.
14.	-	-	-	✓		✓		Recreation and leisure was not considered in the resource blocks, so future applications may focus on mitigation rather than planning positively for recreation and leisure through an allocations process.
15.	-	-	-	✓		✓		Health and wellbeing was not considered in the resource blocks, so future applications may focus on mitigation rather than planning positively for health and wellbeing through an allocations process.
16.	-	-	-	✓		✓		Flood management was not considered in the resource blocks, so future applications may focus on mitigation rather than planning positively for flood management through an allocations process.
17.	-	0	0	✓		✓		This option makes it less clear where sites will eventually be, which works against the community decision making sub objective.

Proposed alternative option 4: (Or) This option could seek to deliver Joint Plan requirements for concreting sand and gravel through identification of specific site allocations only for large scale sites (e.g. sites with greater than 3mt total reserve and planned output of 0.1mpta or greater), with remaining provision being provided through preferred areas or areas of search.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+ + +	+ + +	+ + +	✓		✓		Effects would broadly be the same as option 2. However, a lesser proportion of provision will be identified through these preferred areas / areas of search, which in comparison to option 2 would lead to a more positive effect.
2.	+ + +	+ + +	+ + +	✓		✓		Effects would broadly be the same as option 2. However, a lesser proportion of provision will be identified through these preferred areas / areas of search, which in comparison to option 2 would lead to a more positive effect.
3.	+ + +	+ + +	+ + +	✓		✓		Effects would broadly be the same as option 2. However, a lesser proportion of provision will be identified through these preferred areas / areas of search, which in comparison to option 2 would lead to a more positive effect.
4.	+ + +	+ + +	+ + +	✓		✓		Effects would broadly be the same as option 2. However, a lesser proportion of provision will be identified through these preferred areas / areas of search, which in comparison to option 2 would lead to a more positive effect.
5.	+ + +	+ + +	+ + +	✓		✓		Effects would broadly be the same as option 2. It should also be noted that a lesser proportion of provision will be identified through these preferred areas / areas of search, which in comparison to option 2 would lead to a more positive effect.
6.	+	+	+	✓		✓		Effects would be broadly the same as option 2. However, a lesser proportion of provision will be identified through these preferred areas / areas of search, which in comparison to option 2 would lead to a more positive

	+ +	+ +	+ +					effect.
7.	+ + +	+ + +	+ + +	✓		✓		Effects would broadly be the same as option 2. While preferred areas and areas of search are identified as the means to plan for smaller provision, these are still considered to have modest climate resilience benefits as strategic constraints and opportunities can still be considered to a degree. Altogether this approach will support the SA objective in the long term, though with a slightly more positive emphasis than option 2.
8.	--	--	--	✓			✓	Inevitably resources will be used if extraction occurs, and allocating sites will only contribute to increased security of supply for primary aggregate which will work against increasing demand for secondary or recycled aggregates.
9.	0	-	-	✓		✓	✓	This option, should allow for the consideration of waste management impacts for larger sites in a way similar to option 2 though with a greater proportion of sites subjected to more detailed scrutiny through the allocations, though the option, through supporting primary extraction, inevitably sets in train a process that will act against the minimisation of waste (be it at the extraction stage or at the end of the lifecycle of the extracted material).
10.	+ + +	+ + +	+ + +	✓		✓		Effects would be the same as option 2. However, a lesser proportion of provision will be identified through these preferred areas / areas of search, which in comparison to option 2 would lead to a more positive effect.
11.	+ + +	+ + +	+ + +	✓		✓		Effects would be the same as option 2. However, a lesser proportion of provision will be identified through these preferred areas / areas of search, which in comparison to option 2 would lead to a more positive effect.
12.	+	+	+	✓		✓		Identifying specific site allocations should allow for viable sites to be identified which should support future demand for concreting sand and gravel. This should make submission of a planning application easier and less costly for larger sites. On the other hand, a proportion of provision will be identified through areas of search (though less than option 2), which enhances flexibility over choice of location for concreting sand and gravel businesses (less than option 2). Overall though, the assessment is positive.
13.	+ + +	+ + +	+ + +	✓		✓		Effects would be the same as option 2. However, a lesser proportion of provision will be identified through these preferred areas / areas of search, which in comparison to option 2 would lead to a more positive effect.

14.	+	+	+	✓		✓		Effects would be the same as option 2. However, a lesser proportion of provision will be identified through these preferred areas / areas of search, which in comparison to option 2 would lead to a more positive effect.
15.	+ + +	+ + +	+ + +	✓		✓		Effects would be the same as option 2. However, a lesser proportion of provision will be identified through these preferred areas / areas of search, which in comparison to option 2 would lead to a more positive effect.
16.	+	+	+	✓		✓		Effects would be the same as option 2. However, a lesser proportion of provision will be identified through these preferred areas / areas of search, which in comparison to option 2 would lead to a more positive effect.
17.	+	0	0	✓		✓		As this option utilises the site allocations process, communities across the plan area will have a greater opportunity to influence decision making, in contrast to a planning application which may only generate local interest.

Summary of assessment

Options 1, 2 and 4 all perform well against most sustainability appraisal objectives (other than in relation to minimising the use of resources and managing waste higher up the waste hierarchy). This is because allocating sites helps to plan for constraints and opportunities in advance so the most sustainable sites are utilised. Of these options, however, Option 1 performs the best as this seeks to alleviate uncertainty through allocating the most sites.

Option 3 performs more negatively as only areas of search are utilised, and these have only considered the most major environmental constraints in their definition, leaving localised effects to be addressed through mitigation at the planning application stage. However, there are economic benefits with this approach through allowing flexibility in site selection for developers.

Recommendations

Option 1 is considered the most sustainable option.

Building Sand Delivery (id11)

Option 1
This option could seek to deliver Joint Plan requirements for building sand through the identification of specific site allocations, should any suitable allocations come forward, and via criteria supporting new sites and extensions to existing sites where necessary, in line with environmental and amenity objectives of the Joint Plan.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	++	++	++	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to biodiversity / geo-diversity constraints and opportunities. It would also subject sites and extensions to sites to criteria, including environmental criteria. Altogether this approach will strongly support the SA objective.
2.	++	++	++	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to water quality and supply. It would also subject sites and extensions to sites to criteria, including environmental criteria. Altogether this approach will strongly support the SA objective.
3.	+	+	+	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to their effects on transport. It would also subject sites and extensions to sites to criteria, including environmental criteria. As building sand must be extracted where it is found there is potentially less opportunity to reduce transport effects. However, this approach will support the SA objective.
4.	++	++	++	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to their effects on air quality. It would also subject sites and extensions to sites to criteria, including environmental criteria. Altogether this approach will strongly support the SA objective.
5.	+	+	+	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they

								will be subject to detailed checks in relation to their effects on soils and land. It would also subject sites and extensions to sites to criteria, including environmental criteria. However, inevitably sites will have a significant land take which cannot be avoided, so positive effects should be seen in that context.
6.	++	++	++	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to their effects on climate change. It would also subject sites and extensions to sites to criteria, including environmental criteria. Altogether this approach will strongly support the SA objective.
7.	++	++	++	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to their resilience to climate change / potential to contribute to climate adaptation. It would also subject sites and extensions to sites to criteria, including environmental criteria. Altogether this approach will support the SA objective in the long term.
8.	0	-	-	✓			✓	In the short term this option neither contributes to resource efficiency nor detracts from it. Inevitably resources will be used if extraction occurs, and the option gives the opportunity to moderate some effects. But extraction is an inherently resource intensive process.
9.	0	0 -	-	✓			✓	This option, through consideration of environmental criteria, should allow for the consideration of waste management impacts, though the option, through supporting primary extraction, inevitably sets in train a process that will act against the minimisation of waste (be it at the extraction stage or at the end of the lifecycle of the extracted material).
10.	++	++	++	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to historic environment constraints and opportunities. It would also subject sites and extensions to sites to criteria, including environmental criteria. Altogether this approach will strongly support the SA objective.
11.	++	++	++	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to landscape constraints and opportunities. It would also subject sites and extensions to sites to criteria, including environmental criteria. Altogether this approach will strongly support the SA objective.
12.	+	+	+	✓		✓		Identifying specific site allocations should allow for viable sites to be identified which should support future demand for building sand. This should make submission of a planning application easier and less costly.
13.	++	++	++	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to the sorts of constraints and opportunities that affect community vitality. It would also subject sites and extensions to sites to criteria, including amenity criteria. Altogether this approach will strongly support the SA objective.

14.	++	++	++	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to the sorts of constraints and opportunities that affect recreation and leisure. It would also subject sites and extensions to sites to criteria, including amenity criteria. Altogether this approach will strongly support the SA objective.
15.	++	++	++	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to the sorts of constraints and opportunities that affect health and wellbeing. It would also subject sites and extensions to sites to criteria, including amenity criteria. Altogether this approach will strongly support the SA objective.
16.	++	++	++	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to flood risk constraints and opportunities. It would also subject sites and extensions to sites to criteria, including environmental criteria, which could include flooding criteria. Altogether this approach will strongly support the SA objective.
17.	+	0	0	✓		✓		As this option utilises the site allocations process, communities across the plan area will have a greater opportunity to influence decision making in contrast to a planning application which may only generate local interest.

Option 2 This option could seek to deliver Joint Plan requirements for building sand through the identification of Areas of Search.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	

1.	+	+	+	✓		✓		This option would allow sites to be identified through the 'areas' identification process, which would mean that the areas will be subject to checks in relation to biodiversity / geodiversity constraints and opportunities. However, this is inevitably a more strategic assessment as the actual position of any site would be unknown (though areas of search for building sand may be relatively small). In addition there is no reference to criteria being applied under this option, so the positive effects associated with that do not occur under this option.
2.	+	+	+	✓		✓		This option would allow sites to be identified through the 'areas' identification process, which would mean that the areas will be subject to checks in relation to water quality and supply constraints and opportunities. This is inevitably a more strategic assessment as the actual position of any site would be unknown. (Though areas of search for building sand may be relatively small). In addition there is no reference to criteria being applied under this option, so the positive effects associated with that do not occur under this option.
3.	0 +	0 +	0 +	✓		✓		Areas of search / preferred areas may be able to make links with more sustainable forms of transport, however the effects on transport are expected to be weaker than where sites are actually allocated. In addition there is no reference to criteria being applied under this option, so the positive effects associated with that do not occur under this option.
4.	0 ?	0 ?	0 ?	✓		✓		As there is only potential for weak positive effects on transport, so air quality impacts are uncertain as 'areas' may lack the resolution to secure air quality improvements in the same way as a site allocation. In addition there is no reference to criteria being applied under this option, so the positive effects associated with that do not occur under this option.
5.	0 ?	0 ?	0 ?	✓		✓		Effects on soils and land are neutral to uncertain as 'areas' may lack the resolution to secure soil / land protection in the same way as a site allocation (though areas of search for building sand may be relatively small). In addition there is no reference to criteria being applied under this option, so the positive effects associated with that do not occur under this option.
6.	0 ?	0 ?	0 ?	✓		✓		Effects on climate change are neutral to uncertain as 'areas' may lack the resolution to secure a positive contribution to climate change in the same way as a site allocation. (Though areas of search for building sand may be relatively small). In addition there is no reference to criteria being applied under this option, so the positive effects associated with that do not occur under this option.

7.	0	0	0					There is no clear link between this option and the objective as it is unlikely that climate adaptation effects could be identified at this scale.
8.	-	- -	- -	✓			✓	This option, as it lacks a reference to developing criteria would not moderate effects on resource use and may indirectly encourage unmitigated development in relation to resource use.
9.	0	-	-	✓			✓	This option supports primary extraction so inevitably work against the objective.
10.	+	+	+	✓		✓		This option would allow sites to be identified through the 'areas' identification process, which would mean that the areas will be subject to checks in relation to historic environment constraints and opportunities. However, this is inevitably a more strategic assessment as the actual position of any site would be unknown. In addition there is no reference to criteria being applied under this option, so the positive effects associated with that do not occur under this option.
11.	+	+	+	✓		✓		This option would allow sites to be identified through the 'areas' identification process, which would mean that the areas will be subject to checks in relation to landscape constraints and opportunities. However, this is inevitably a more strategic assessment as the actual position of any site would be unknown. In addition there is no reference to criteria being applied under this option, so the positive effects associated with that do not occur under this option.
12.	+	+	+	✓		✓		Areas of search / preferred areas may help direct development to broadly sustainable locations within the resource area, while at the same time allowing some flexibility in choice of locations which is likely to benefit the building sand extraction businesses.
13.	+	+	+	✓		✓		As areas of search / preferred areas should be able to help direct development away from areas experiencing impacts on community vitality there may be benefits on this objective. However, much will depend on the actual location of sites.
	?	?	?					
14.	+	+	+					As areas of search / preferred areas should be able to help direct development to areas where recreational resources won't be significantly impacted upon, much will depend on the actual location of development.
	?	?	?					
15.	+	+	+	✓		✓		As areas of search / preferred areas should be able to help direct development away from areas experiencing impacts on community level health and wellbeing issues there may be benefits on this objective. However, much will depend on the actual location of sites.
	?	?	?					
16.	+	+	+	✓		✓		As areas of search / preferred areas should be able to help direct development away from areas experiencing significant flood risk issues there may be benefits on this objective. However, much will depend on the actual location of sites.
	?	?	?					

17.	+	0	0	✓		✓		As this option utilises the 'area' identification process, communities across the plan area will have a greater opportunity to influence decision making in contrast to a planning application which may only generate local interest.

Proposed alternative option 3: (Or) This option would seek to deliver Joint Plan requirements for building sand through specific allocations and via criteria supporting new sites, and would also support the identification of Areas of Search if sufficient specific sites are not identified.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	+ + +	+ + +	+ + +	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to biodiversity / geodiversity constraints and opportunities. It would also subject sites and extensions to sites to criteria, including environmental criteria. While areas of search are also allowed, these would only take effect if sufficient sites are not identified and would still allow a degree (albeit lesser degree) of advance scrutiny,
2.	+ + +	+ + +	+ + +	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to water quality and supply. It would also subject sites and extensions to sites to criteria, including environmental criteria. While areas of search are also allowed, these would only take effect if sufficient sites are not identified and would still allow a degree (albeit lesser degree) of advance scrutiny,
3.	+	+	+	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to their effects on transport. It would also subject sites and extensions to sites to criteria, including environmental criteria. While areas of search are also allowed, these would only take effect if sufficient sites are not identified and would still allow a degree (albeit lesser degree) of advance scrutiny, As building sand must be extracted where it is found there is potentially less opportunity to reduce transport effects. However, this approach will support the SA objective.
4.	?	?	?	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to their effects on air quality. It would also subject sites and

	+ +	+ +	+ +					extensions to sites to criteria, including environmental criteria. While areas of search are also allowed, these would only take effect if sufficient sites are not identified, though as noted in option 1 areas of search may not allow sufficient resolution to assess air quality effects,
5.	? +	? +	? +	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to their effects on soils and land. It would also subject sites and extensions to sites to criteria, including environmental criteria. While areas of search are also allowed, these would only take effect if sufficient sites are not identified though as noted in option 1 areas of search may not allow sufficient resolution to assess soil / land quality effects, However, inevitably sites will have a significant land take which cannot be avoided, so positive effects should be seen in that context.
6.	+ + +	+ + +	+ + +	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to their effects on climate change. It would also subject sites and extensions to sites to criteria, including environmental criteria. While areas of search are also allowed, these would only take effect if sufficient sites are not identified and would still allow a degree (albeit lesser degree) of advance scrutiny.
7.	0 + +	0 + +	0 + +	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to their resilience to climate change / potential to contribute to climate adaptation. It would also subject sites and extensions to sites to criteria, including environmental criteria. While areas of search are also allowed, these would only take effect if sufficient sites are not identified. However, they are unlikely to provide any contribution to this objective.
8.	0 -	- --	- --	✓			✓	In the short term this option neither contributes to resource efficiency nor detracts from it. Inevitably resources will be used if extraction occurs, and the option gives the opportunity to moderate some effects. But extraction is an inherently resource intensive process. If, in the event that criteria cannot be applied the areas of search could result in unmitigated development (such as development that requires significant improvements to access roads etc.)
9.	0 -	0 -	- 	✓			✓	Through consideration of environmental criteria, this option should allow for the consideration of waste management impacts, though through supporting primary extraction the option inevitably sets in train a process that will act against the minimisation of waste (be it at the extraction stage or at the end of the lifecycle of the extracted material). In the event that criteria cannot be applied the areas of search could result in unmitigated development (such as development that requires significant improvements to access roads etc.) thus generating waste.
10.	+ + +	+ + +	+ + +	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to historic environment constraints and opportunities. It would also subject sites and extensions to sites to criteria, including environmental criteria. While areas of search are also allowed, these would only take effect if sufficient sites are not identified and would still allow a degree (albeit a

								lesser degree) of advance scrutiny.
11.	+ + +	+ + +	+ + +	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to landscape constraints and opportunities. It would also subject sites and extensions to sites to criteria, including environmental criteria. While areas of search are also allowed, these would only take effect if sufficient sites are not identified and would still allow a degree (albeit lesser degree) of advance scrutiny.
12.	+	+	+	✓		✓		Identifying specific site allocations should allow for viable sites to be identified which should support future demand for building sand. Identifying areas of search would lose some of this benefit, but allow some additional flexibility; however, this approach would only be enacted if sufficient sites are identified.
13.	+ + +	+ + +	+ + +	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to the sorts of constraints and opportunities that affect community vitality. It would also subject sites and extensions to sites to criteria, including amenity criteria. As areas of search should be able to help direct development away from areas experiencing impacts on community vitality there may be a lesser benefit on this objective. However, these areas of search would only be considered after allocations have been considered.
14.	+ + +	+ + +	+ + +	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to the sorts of constraints and opportunities that affect recreation and leisure. It would also subject sites and extensions to sites to criteria, including amenity criteria. While areas of search are also allowed, these would only take effect if sufficient sites are not identified and would still allow a degree (albeit lesser degree) of advance scrutiny,
15.	+ + +	+ + +	+ + +	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to the sorts of constraints and opportunities that affect health and wellbeing. It would also subject sites and extensions to sites to criteria, including amenity criteria. While areas of search are also allowed, these would only take effect if sufficient sites are not identified and would still allow a degree (albeit lesser degree) of advance scrutiny.
16.	+ +	+ +	+ +	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to flood risk constraints and opportunities. It would also subject sites and extensions to sites to criteria, including environmental criteria, which could include flooding criteria. While areas of search are also allowed, these would only take effect if sufficient sites are not identified and would still allow a degree (albeit lesser degree) of advance scrutiny.
17.	+	0	0	✓		✓		As this option utilises the sites / areas allocations process, communities across the plan area will have a greater opportunity to influence decision making in contrast to a planning application which may only generate

								local interest.

Summary of assessment

Option 1, when compared to the sustainability appraisal objectives, performs very well. It includes strong positive effects for all or part of the short to long term time period considered for biodiversity and geo-diversity, water quality and supply, air quality, climate change, climate adaptation, heritage, landscapes and town and cityscapes, community vitality, recreation and leisure, health and wellbeing and flooding. This is because, through allocating sites and considering criteria, the most sustainable locations can be chosen.
Option 2 also reports a number of (albeit less strong) positive effects as strategic sustainability issues can be considered when deciding upon areas of search and preferred areas. However, there is greater uncertainty as specific locations are unknown.

Option 3 retains many of the positive benefits of option 1, though where it is not possible to allocate specific sites those benefits would be lessened in the same way as option 2.

All options report negative effects for the resource efficiency objective as these options will inevitably, if applications are approved under them, lead to significant non-renewable resource consumption.

Recommendations

Option 1 performs significantly more strongly against the sustainability appraisal objectives.

Magnesian Limestone Delivery (id12)

Option 1.
This option could seek to deliver any Joint Plan requirements for Magnesian limestone through the identification of specific site allocations, and via criteria supporting new sites and extensions to existing sites where necessary, in line with environmental and amenity objectives of the Joint Plan.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA obje	Impact / timescale	Type of effect	Analysis

	S	M	L	P	T	D	I	
1.	++	++	++	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to biodiversity / geodiversity constraints and opportunities. It would also subject sites and extensions to sites to criteria, including environmental criteria. Altogether this approach will strongly support the SA objective.
2.	++	++	++	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to water quality and supply. It would also subject sites and extensions to sites to criteria, including environmental criteria. Altogether this approach will strongly support the SA objective.
3.	+	+	+	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to their effects on transport. It would also subject sites and extensions to sites to criteria, including environmental criteria. As Magnesian limestone must be extracted where it is found there is potentially less opportunity to reduce transport effects. However, this approach will support the SA objective.
4.	++	++	++	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to their effects on air quality. It would also subject sites and extensions to sites to criteria, including environmental criteria. Altogether this approach will strongly support the SA objective.
5.	+	+	+	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to their effects on soils and land. It would also subject sites and extensions to sites to criteria, including environmental criteria. However, inevitably sites will have a significant land take which cannot be avoided, so positive effects should be seen in that context.
6.	++	++	++	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to their effects on climate change. It would also subject sites and extensions to sites to criteria, including environmental criteria. Altogether this approach will strongly support the SA objective.
7.	+	+	++	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to their resilience to climate change / potential to contribute to climate adaptation. It would also subject sites and extensions to sites to criteria, including environmental criteria. Altogether this approach will support the SA objective, particularly in the long term.
8.	0	-	-	✓		✓		In the short term this option neither contributes to resource efficiency nor detracts from it. Inevitably resources will be used if extraction occurs, and the option gives the opportunity to moderate some effects. But extraction is an inherently resource intensive process.

9.	0	0 -	-	✓		✓	✓	This option, through consideration of environmental criteria, should allow for the consideration of waste management impacts, though the option, through supporting primary extraction, inevitably sets in train a process that will act against the minimisation of waste (be it at the extraction stage or at the end of the lifecycle of the extracted material).
10.	+ +	+ +	+ +	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to historic environment constraints and opportunities. It would also subject sites and extensions to sites to criteria, including environmental criteria. Altogether this approach will strongly support the SA objective.
11.	+ +	+ +	+ +	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to landscape constraints and opportunities. It would also subject sites and extensions to sites to criteria, including environmental criteria. Altogether this approach will strongly support the SA objective.
12.	+	+	+	✓		✓		Identifying specific site allocations should allow for viable sites to be identified which should support future demand for Magnesian limestone. This should make submission of a planning application easier and less costly.
13.	+ +	+ +	+ +	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to the sorts of constraints and opportunities that affect community vitality. It would also subject sites and extensions to sites to criteria, including amenity criteria. Altogether this approach will strongly support the SA objective.
14.	+ +	+ +	+ +	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to the sorts of constraints and opportunities that affect recreation and leisure. It would also subject sites and extensions to sites to criteria, including amenity criteria. Altogether this approach will strongly support the SA objective.
15.	+ +	+ +	+ +	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to the sorts of constraints and opportunities that affect health and wellbeing. It would also subject sites and extensions to sites to criteria, including amenity criteria. Altogether this approach will strongly support the SA objective.
16.	+ +	+ +	+ +	✓		✓		This option would allow sites to be identified through the site allocations process, which would mean that they will be subject to detailed checks in relation to flood risk constraints and opportunities. It would also subject sites and extensions to sites to criteria, including environmental criteria, which could include flooding criteria. Altogether this approach will strongly support the SA objective.
17.	+	0	0	✓		✓		As this option utilises the site allocations process, communities across the plan area will have a greater opportunity to influence decision making in contrast to a planning application which may only generate local interest.

Option 2 This option could seek to deliver Joint Plan requirements for Magnesian Limestone through the identification of preferred areas or areas of search.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓		✓		This option would allow sites to be identified through the 'areas' identification process, which would mean that the areas will be subject to checks in relation to biodiversity / geodiversity constraints and opportunities. However, this is inevitably a more strategic assessment as the actual position of any site would be unknown. In addition there is no reference to criteria being applied under this option, so the positive effects associated with that do not occur under this option.
2.	+	+	+	✓		✓		This option would allow sites to be identified through the 'areas' identification process, which would mean that the areas will be subject to checks in relation to water quality and supply constraints and opportunities. This is inevitably a more strategic assessment as the actual position of any site would be unknown. In addition there is no reference to criteria being applied under this option, so the positive effects associated with that do not occur under this option.
3.	0 +	0 +	0 +	✓		✓		Areas of search / preferred areas may be able to make links with more sustainable forms of transport; however the effects on transport are expected to be weaker than where sites are actually allocated. In addition there is no reference to criteria being applied under this option, so the positive effects associated with that do not occur under this option.
4.	0	0	0	✓		✓		As there is only potential for weak positive effects on transport, so air quality impacts are uncertain as 'areas' may lack the resolution to secure air quality improvements in the same way as a site allocation. In addition

	?	?	?					there is no reference to criteria being applied under this option, so the positive effects associated with that do not occur under this option.
5.	0 ?	0 ?	0 ?	✓		✓		Effects on soils and land are neutral to uncertain as 'areas' may lack the resolution to secure soil / land protection in the same way as a site allocation. In addition there is no reference to criteria being applied under this option, so the positive effects associated with that do not occur under this option.
6.	0 ?	0 ?	0 ?	✓		✓		Effects on climate change are neutral to uncertain as 'areas' may lack the resolution to secure a positive contribution to climate change in the same way as a site allocation. In addition there is no reference to criteria being applied under this option, so the positive effects associated with that do not occur under this option.
7.	0	0	0					There is no clear link between this option and the objective.
8.	- -	- -	- -	✓			✓	This option, as it lacks a reference to developing criteria would not moderate effects on resource use and may indirectly encourage unmitigated development in relation to resource use.
9.	0	-	-	✓			✓	This option does nothing to moderate potential waste generation, and lack of criteria may worsen the situation with waste.
10.	+	+	+	✓		✓		This option would allow sites to be identified through the 'areas' identification process, which would mean that the areas will be subject to checks in relation to historic environment constraints and opportunities. However, this is inevitably a more strategic assessment as the actual position of any site would be unknown. In addition there is no reference to criteria being applied under this option, so the positive effects associated with that do not occur under this option.
11.	+	+	+	✓		✓		This option would allow sites to be identified through the 'areas' identification process, which would mean that the areas will be subject to checks in relation to landscape constraints and opportunities. However, this is inevitably a more strategic assessment as the actual position of any site would be unknown. In addition there is no reference to criteria being applied under this option, so the positive effects associated with that do not occur under this option.
12.	+	+	+	✓		✓		Areas of search / preferred areas may help direct development to broadly sustainable locations within the resource area, while at the same time allowing some flexibility in choice of locations which is likely to benefit Magnesian limestone extraction businesses.
13.	+	+	+	✓		✓		As areas of search / preferred areas should be able to help direct development away from areas experiencing impacts on community vitality there may be benefits on this objective. However, much will depend on the

	?	?	?					actual location of sites.
14.	+	+	+					Areas of search / preferred areas should be able to help direct development to areas where recreational resources won't be significantly impacted upon, though much will depend on the actual location of development.
	?	?	?					
15.	+	+	+	✓		✓		As areas of search / preferred areas should be able to help direct development away from areas experiencing impacts on community level health and wellbeing issues there may be benefits on this objective. However, much will depend on the actual location of sites.
	?	?	?					
16.	+	+	+	✓		✓		As areas of search / preferred areas should be able to help direct development away from areas experiencing significant flood risk issues there may be benefits on this objective. However, much will depend on the actual location of sites.
	?	?	?					
17.	+	0	0	✓		✓		As this option utilises the 'area' identification process, communities across the plan area will have a greater opportunity to influence decision making in contrast to a planning application, which may only generate local interest.

Summary of assessment
Option 1 is likely to result in positive effects for biodiversity and geodiversity, water quality and supply, air quality, climate change, climate adaptation, heritage, landscapes and townscapes, community vitality, recreation and leisure, health and wellbeing and flooding. This is because, through allocating sites and considering criteria, the most sustainable locations can be chosen.

Option 2 also reports a number of (albeit less strong) positive effects as strategic sustainability issues can be considered when deciding upon areas of search and preferred areas. However, there is greater uncertainty as specific locations are unknown.

Both options report negative effects for the resource efficiency objective as these options will inevitably, if applications are approved under them, lead to significant non-renewable resource consumption.

Recommendations
Option 1 performs significantly more strongly against the sustainability appraisal objectives.

Unallocated Extensions to Existing Aggregates Quarries (id13)

Option 1
This option could support the principle of extensions on unallocated sites subject to it being demonstrated that the development would be consistent with the overall aggregates supply strategy in the Joint Plan, or meet another demonstrable need for aggregates consistent with Joint Plan objectives, would not significantly undermine the potential for a greater total proportion of supply to come from alternatives to primary aggregate, and that the site to be extended is not located within the National Park or an AONB.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	? +	? + -	? + -	✓	✓	✓	✓	There may be localised negative effects on biodiversity at locations outside of the National Parks and AONBs, with positive effects within AONBs where there are currently aggregates quarries. The option does however direct extraction away from the most highly protected sites which generally coincide with the National Park and AONB designations. In the medium to longer term permitting extensions may delay any opportunities for enhancements for biodiversity through site reclamation.
2.	? +	? +	? +	✓		✓	✓	There may be localised negative effects on water quality at locations outside of the National Parks and AONBs, with positive effects within AONBs where there are currently aggregates quarries.
3.	-	-	-	✓			✓	Under this option, additional extraction is likely to result in additional vehicle movements and therefore additional emissions. However, indirectly construction impacts associated with creating infrastructure on new sites would (to a lesser degree) be reduced.
4.	? +	? +	? +	✓		✓	✓	There may be localised negative effects on water quality at locations outside of the National Parks and AONBs, with positive effects within AONBs where there are currently aggregates quarries.
5.	-	-	-	✓		✓		Under this option permitting extensions would result in more landtake equalling more loss of soil and agricultural land. Over time the cumulative effects would become greater.
6.	-	-	-	✓			✓	Under this option, additional extraction is likely to result in additional vehicle movements and therefore

								additional emissions.
7.	0	- ?	- ?		✓	✓		In the medium to long term, permitting extensions may delay any opportunity for quarries to be used for flood water storage.
8.	-	-	-		✓		✓	Permitting extensions may not help with promoting the use of secondary and recycled materials, although this option recognises that there would be a requirement for extensions to not undermine the potential for a greater proportion to be supplied from alternative sources.
9.	0	0	0					No clear link
10.	- ?	- ?	- ?	✓		✓		It is possible that there may be impacts on the historic environment but this would depend upon the location of any extension in relation to historic assets. Effects may become greater over time as cumulatively more historic assets are affected.
11.	+	+	+	✓		✓		Landscape impact under this option is likely to increase, and effects would cumulatively become more negative over time. The option would have a positive effect for the landscape of the National Park and the AONBs and would on balance therefore have positive effects.
12.	+	+	+ ?	✓			✓	Under this option additional minerals would be provided which may have a positive effect on the economy through additional jobs being provided in the minerals sector with local knock-on benefits for the economy, as well as the provision of minerals to contribute to economic growth. Allowing unallocated extensions may also allow developers to maximise returns on investments. In the longer term this option could lead to a reduced need for new sites somewhere else, effectively displacing future job creation.
13.	+	+	+ ?	✓			✓	Under this option, additional jobs may be provided in the minerals sector which would contribute positively towards this objective. Allowing unallocated extensions may, however, in the longer term lead to a reduced need for new sites somewhere else, effectively displacing future job creation.
14.	? -	? -	? -	✓		✓		It is possible that there may be impacts on the recreational opportunities but this would depend upon the location of any extension in relation to recreational assets such as rights of way. Effects may become greater over time as cumulatively more assets are affected. In the medium to longer term permitting extensions may delay any opportunities for enhancements for recreation through site reclamation.
15.	-	-	-		✓	✓	✓	Under this option there may be negative effects on the health and safety of communities close to extended quarries through additional noise, traffic, dust etc.
16.	0	-	-		✓		✓	In the medium to long term, permitting extensions may delay any opportunity for quarries to be used for flood water storage.
17.	+	+	+	✓			✓	This option would have positive effects on the supply of minerals which would help to enable new development to come forward.

Option 2

This option would only support the principle of extensions, where the proposed extension area has not been allocated in the Plan, where the reserves are necessary in order to maintain the landbank of permitted reserves above the minimum required by national and local policy and the site to be extended is not located within the National Park or an AONB.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	? +	? + -	? + -	✓	✓	✓	✓	There may be localised negative effects on biodiversity at locations outside of the National Parks and AONBs, with positive effects within the AONBs where there are currently aggregates quarries. The option does however direct extraction away from the most highly protected sites which generally coincide with the National Park and AONB designations. In the medium to longer term permitting extensions may delay any opportunities for enhancements for biodiversity through site reclamation. Negative effects would be to a lesser extent than under option 1 due to the more restrictive approach.
2.	? +	? +	? +	✓		✓	✓	There may be localised negative effects on water quality at locations outside of the National Parks and AONBs, with positive effects within the AONBs where there are currently aggregates quarries. Negative effects would be to a lesser extent than under option 1 due to the more restrictive approach.
3.	0	0	0					There are not predicted to be any effects as the total number of journeys is likely to be the same, as permission would only be granted where this is to maintain the landbank.
4.	? +	? +	? +	✓		✓	✓	There may be localised negative effects on water quality at locations outside of the National Parks and AONBs, with positive effects within the AONBs where there are currently aggregates quarries. Effects would be to a lesser extent than under option 1 due to the more restrictive approach.
5.	0	0	0					Overall there would be no effect on landtake as the option would only permit extensions to maintain the landbank. Provision would otherwise be provided by new quarries.
6.	0	0	0					There are not predicted to be any effects as the total number of journeys, and therefore transport emissions, is likely to be the same as permission would only be granted where this is to maintain the landbank.
7.	0	-	-					In the medium to long term, permitting extensions may delay any opportunity for quarries to be used for flood water storage. Effects are likely to be less negative than for option 1 as extensions are limited to those which are necessary to maintain the landbank.

8.	-	-	-		✓		✓	Permitting extensions may not help with promoting the use of secondary and recycled materials, although effects under this option would be limited to that essential to maintain a landbank. Unlike option 1 however this option would not require consideration to be given to effects on the use of alternatives to primary minerals.
9.	0	0	0					No clear link
10.	? -	? -	? -	✓		✓		It is possible that there may be impacts on the historic environment but this would depend upon the location of any extension in relation to historic assets. Effects may become greater over time as cumulatively more historic assets are affected.
11.	+ -	+ -	+ -	✓		✓		Landscape impact under this option is likely to increase, and effects would cumulatively become more negative over time. However, the effects are likely to be less than under option 1 as extensions are limited to those which are necessary to maintain the landbank. The option would have a positive effect for the landscape of the National Park and the AONBs and would on balance therefore have positive effects.
12.	+	+	+ ?	✓			✓	Under this option additional minerals would be provided which may have a positive effect on the economy through additional jobs being provided in the minerals sector with local knock-on benefits for the economy, as well as the provision of minerals to contribute to economic growth. Allowing unallocated extensions may, however, in the longer term lead to a reduced need for new sites somewhere else, effectively displacing future job creation.
13.	+	+	+ ?	✓			✓	Under this option, additional jobs may be provided in the minerals sector which would contribute positively towards this objective. Allowing unallocated extensions may, however, in the longer term lead to a reduced need for new sites somewhere else, effectively displacing future job creation.
14.	?	? -	? -	✓		✓		It is possible that there may be impacts on the recreational opportunities but this would depend upon the location of any extension in relation to recreational assets such as rights of way. Effects may become greater over time as cumulatively more assets are affected. In the medium to longer term permitting extensions may delay any opportunities for enhancements for recreation through site reclamation. Effects are likely to be less than under option 1 as extensions are limited to those which are necessary to maintain the landbank.
15.	-	-	-		✓	✓	✓	Under this option there may be negative effects on the health and safety of communities close to extended quarries through additional noise, traffic, dust etc. Effects are likely to be less negative than for option 1 as extensions are limited to those which are necessary to maintain the landbank.
16.	0	-	-		✓		✓	In the medium to long term, permitting extensions may delay any opportunity for quarries to be used for flood water storage. Effects are likely to be less negative than for option 1 as extensions are limited to those which are necessary to maintain the landbank.
17.	+	+	+	✓			✓	This option would have positive effects on the supply of minerals which would help to enable new development to come forward.

Option 3
This option would not support the principle of extensions on unallocated sites, including proposals for the extension of existing sites.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+ ?	+ ?	+ ?	✓	✓	✓	✓	Under this option biodiversity would be protected at sites which may otherwise have been permitted for minerals extraction. It may also enable sites to come forward for restoration, with associated biodiversity benefits, sooner than if an extension had taken place. However, lack of flexibility may lead to sites coming forward in less appropriate locations in order to maintain a landbank. There may also be positive effects related to enabling opportunities for enhancements for biodiversity through reclamation to take place in the shorter term.
2.	+ ?	+ ?	+ ?	✓		✓	✓	Under this option water quality would be protected at sites which may otherwise have been permitted for minerals extraction. It may also enable sites to come forward for restoration, with associated biodiversity benefits, sooner than if an extension had taken place. Lack of flexibility may lead to sites coming forward in less appropriate locations in order to maintain a landbank.
3.	0	0	0					No effects
4.	+ ?	+ ?	+ ?	✓		✓		Under this option, potential increases in dust pollution would be avoided. Not allowing unallocated extensions may, however, could lead to an increased need for new sites somewhere else, effectively displacing future job creation.
5.	+ ?	+ ?	+ ?	✓		✓		Not permitting any further extraction would help to safeguard soil and agricultural land. However, lack of inflexibility may lead to sites coming forward in less appropriate locations in order to maintain a landbank.
6.	0 - ?	0 - ?	0 - ?					No effects at existing sites. Indirectly, however, this option might drive a greater demand for new quarries elsewhere (or greater take-up of allocations) which would have unknown effect on overall CO2 input to the atmosphere (for instance a new site might be less well located for transport of aggregates to market, or require new carbon intensive infrastructure such as new access roads, car parking etc.)
7.	0	0	0					No clear link

8.	+ ??	+ ?	+ + ?	✓			✓	By not permitting any extensions this may increase demand for secondary and recycled aggregates, especially in the longer term. Alternatively it might encourage new sites to come forward which would result in continued primary aggregate extraction.
9.	0	0	0					No clear link
10.	+ ?	+ ?	+ ?	✓		✓		Under this option heritage assets would be protected from development coming forward at non-allocated sites. However, lack of flexibility may lead to sites coming forward in less appropriate locations in order to maintain a landbank.
11.	+ ?	+ ?	+ ?	✓		✓		Under this option landscape would be protected from development coming forward at non-allocated sites. However, lack of flexibility may lead to sites coming forward in less appropriate locations in order to maintain a landbank.
12.	- ?	-- ?	-- ?	✓			✓	This option would not support the economy as it would limit the potential for employment in the minerals sector and limit the provision of minerals to support economic growth. Effects would become greater over time as existing quarries close. Not allowing unallocated extensions may also lead to an increased need for new sites somewhere else, which might to a degree moderate this effect.
13.	- ?	-- ?	-- ?	✓			✓	This option would not support the employment in the minerals sector. Effects would become greater over time as existing quarries close. Not allowing unallocated extensions may also lead to an increased need for new sites somewhere else, which might to a degree moderate this effect.
14.	+ ?	+ ?	+ ?	✓		✓	✓	Under this option there would be positive effects through recreational assets being protected from extraction and also it may enable existing quarries to be restored sooner than if extensions had taken place which may enable opportunities for recreation to come forward. However, lack of flexibility may lead to sites coming forward in less appropriate locations in order to maintain a landbank.
15.	+ ?	+ ?	+ ?	✓			✓	Under this option, effects on the health and safety of communities may be prevented or improved over time where extensions are not permitted. However, lack of flexibility may lead to sites coming forward in less appropriate locations in order to maintain a landbank.
16.	+	+	+	✓			✓	Under this option quarries may be able to be used for flood storage sooner than if extensions had been permitted.
17.	?	?	?	✓			✓	The amount of available minerals may be limited under this option, although would depend upon whether a sufficient landbank exists throughout the plan period.

Proposed alternative option 4: (And)This option would prioritise extensions to existing sites over extraction at new locations

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+ ?	+ ?	✓	✓	✓	✓	This option would be likely to prevent or at least delay the creation of some new sites which in broad terms would be positive for biodiversity when considered in addition to other options. Extensions would also benefit from existing infrastructure etc. (so less net impact than a new site). There is however some uncertainty where restoration plans are delayed to support this, and some uncertainty as to whether sites could be extended to the point where some ecological carrying capacity could be breached at a local / landscape scale due to cumulative effects.
2.	?	?	?	✓	✓	✓	✓	This option would be likely to prevent or at least delay the creation of some new sites which in broad terms would have uncertain effects on water as those new sites may be better or worse than current aggregate sites in terms of their potential water environment impacts. At a local scale impacts on water bodies could potentially be prolonged.
3.	- +	- +	- +	✓	✓	✓	✓	This option would reduce the construction impacts associated with creating the new infrastructure etc. to support new sites, though because unallocated extensions would not benefit from the strategic consideration of transport, the negative transport effects potentially associated with option 1 would to some extent be reinforced.
4.	? -	? -	? -	✓	✓		✓	At a local level this option could result in impacts to air being prolonged. At a plan level this option could offset the need for better or worse sites. So broadly uncertain, with localised negative effects.
5.	?	?	?	✓	✓		✓	Potentially this option could delay some phases of restoration, with temporary negative effects. By the same token, it could prevent new sites (which could be better or worse) from coming into being. Broadly uncertain.
6.	+ ?	+ ?	+ ?	✓			✓	New sites (as they involve creating some new supporting infrastructure such as access, possible initial processing facilities etc.) are likely to be marginally less climate friendly than extensions to existing sites, though much will depend on location.

7.	0	- ?	- ?	✓	✓		✓	In the longer term this option could delay restoration at existing sites if used in conjunction with other options (which could mean delayed flood storage). New sites (which are avoided to a degree by this option) may open up new opportunities for flood storage (so indirectly an opportunity may be lost).
8.	+ -	+ -	+ -	✓		✓		In contrast to new sites, extensions would be more resource efficient (due to a reduced requirement for new supporting infrastructure), though the option does little to support re-use, recycling etc.
9.	0	0	0					No significant effects are noted.
10.	0	+ ?	+ ?	✓	✓	✓	✓	This option would be likely to prevent or at least delay the creation of some new sites (which in broad terms would be positive for the historic environment when considered in addition to other options as these sites would benefit from existing access etc.). However, there is some uncertainty as to whether sites could be extended to the point where some historic environment 'carrying capacity' could be breached at a local / landscape scale due to cumulative effects.
11.	0	+ ?	+ ?	✓	✓	✓	✓	This option would be likely to prevent or at least delay the creation of some new sites which in broad terms would be positive for the landscape when considered in addition to other options as these existing sites would benefit from existing infrastructure etc. However, there is some uncertainty as to whether sites could be extended to the point where landscape 'carrying capacity' could be breached at a local / landscape scale due to cumulative effects.
12.	+	+	+ ?	✓	✓	✓	✓	Existing sites and the jobs that they support would benefit from this option, though the jobs / economic benefits associated with new sites would arguably be forgone to a degree in the long term
13.	+	+	+ ?	✓	✓	✓	✓	Existing sites and the jobs that they support would benefit from this option. The jobs / economic benefits associated with new sites would arguably be forgone to a degree in the long term. Negative tourism impacts might occur with new sites, so to some degree this option avoids this.
14.	+	+ -	+ -	✓	✓		✓	Existing sites, if restored, may well have recreational benefits. However this option could delay the achievement of these. However, extending existing sites could also effectively prevent some new sites (with their associated negative effects) from coming into being (at least temporarily). So both positive and negative effects are observed,
15.	+	+ -	+ -	✓	✓		✓	Existing sites, if restored, may well have wellbeing benefits (e.g. access to green infrastructure, reduced exposure to traffic etc.). However this option could delay the achievement of these benefits as extending a site may prolong its life prior to restoration. However, extending existing sites could also effectively prevent some new sites (with their associated negative effects on wellbeing) from coming into being (at least temporarily). So both positive and negative effects are observed.

16.	0	- ?	- ?	✓	✓		✓	In the longer term this option could delay restoration at existing sites if used in conjunction with other options (which could mean delayed flood storage). New sites (which are avoided to a degree by this option) may open up new opportunities for flood storage (so indirectly an opportunity may be lost).
17.	0	0	0					The net effect of this option is neither positive nor negative.

Proposed alternative option 5: (Or) Unallocated extensions would only be permitted where there would be major gains for biodiversity

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	+ +	+ + ?	✓	✓	✓		This option is positive for biodiversity
2.	0	0 ?	0 ?	✓			✓	No clear direct link, though indirectly this might increase pressure to propose new unallocated or develop allocated sites, that may have a better or worse effect than current sites.
3.	0	0 ?	0 ?	✓			✓	No clear direct link, though indirectly this might increase pressure to propose new unallocated or develop allocated sites, that may have a better or worse effect than current sites.
4.	0	0 ?	0 ?	✓			✓	No clear direct link, though indirectly this might increase pressure to propose new unallocated or develop allocated sites, that may have a better or worse effect than current sites.
5.	0	0 ?	0 ?	✓			✓	No clear direct link, though indirectly this might increase pressure to propose new unallocated or develop allocated sites, that may have a better or worse effect than current sites.
6.	0	0 ?	0 ?	✓			✓	No clear direct link, though indirectly this might increase pressure to propose new unallocated or develop allocated sites, that may have a better or worse effect than current sites.
7.	?	?	+ ?	✓	✓	✓	✓	Ultimately this option may result in an increase in the amount of land restored to biodiversity enhancement, which would increase the area of land utilised for the protection of wildlife. This would help increase stepping stones for wildlife which increasingly needs a permeable landscape to adapt to the changes in environmental conditions that are occurring through climate change. However, there may be setbacks to climate adaptation

								prior to restoration, particularly if phased restoration is restructured to accommodate the extension. As mentioned under previous objectives this option may indirectly increase pressure to develop new sites, which may or may not be bad for climate adaptation. Because the mechanism for achieving major gains for biodiversity is uncertain, additional uncertainty is noted. (For instance, biodiversity offsetting might bring benefits to a different location, though might decrease habitat connectivity somewhere else).
8.	? -	? -	? -	✓			✓	No clear direct link, though indirectly this might increase pressure to propose new unallocated or develop allocated sites, that may have a better or worse effect than current sites in terms of their resource intensity. The option does little to support re-use, recycling etc.
9.	0	0	0					No significant effects are noted.
10.	0	0 ?	0 ?	✓			✓	No clear direct link, though indirectly this might increase pressure to propose new unallocated or develop allocated sites, that may have a better or worse effect than current sites.
11.	? -	? -	+ -	✓	✓		✓	Ultimately this option may result in an increase in the amount of land restored to biodiversity, which would potentially create new restored tranquil spaces in the landscape (provided these sites are compatible with the more natural components of landscape character. However, there may be disruption to landscape character and quality prior to restoration, particularly if phased restoration is restructured to accommodate the extension, As mentioned under previous objectives this option may indirectly increase pressure to develop new sites, which may have a negative effect on landscape quality.
12.	-	-	-	✓			✓	Because the option only allows unallocated extensions which bring major gains for biodiversity there is the potential that this could constrain the long term viability of some sites, particularly if there is limited opportunity for an extension to make a meaningful contribution to biodiversity (such as a site that is isolated from other natural habitats, would be vulnerable to excessive edge effects[4] etc.) or restoration to something else would be more desirable. This could lead to underinvestment and job losses.
13.	? -	? -	+ -	✓	✓		✓	In the short and medium term this option is likely to promote more disturbance to local communities as sites are extended, and may help maintain jobs. In the longer term restored areas (or biodiversity offsets) may offer a resource for communities to train and volunteer.

[4] Edge effects take place where two different habitats occur next to each other. Often this can prompt a transitional phase where environmental conditions are different from the two dominant habitats, for instance more light may be available allowing greater plant growth. However, some edge effects are human induced and occur where habitats abut developed or farmed land. These effects can include pollution effects on plants near the edge of a habitats, pet predation on animals or colonization by invasive species.

								On the other hand, this option may indirectly increase pressure to develop new sites, which may have a negative effect on community vitality.
14.	? -	? -	+ -	✓	✓		✓	In the short and medium term this option is likely to promote more disturbance to recreational assets as sites are extended. In the longer term restored areas (or biodiversity offsets) may offer a resource for those seeking outdoor recreation. On the other hand, this option may indirectly increase pressure to develop new sites, which may have a negative effect on recreation / leisure / learning assets elsewhere.
15.	? -	? -	+ -		✓		✓	In the short and medium term this option is likely to promote more disturbance to wellbeing as sites are extended (bringing problems of noise, dust etc). In the longer term restored areas (or biodiversity offsets) may offer a resource for those seeking outdoor recreation, which would help to increase wellbeing. On the other hand, this option may indirectly increase pressure to develop new sites, which may have a negative effect on wellbeing.
16.	0 +	0 +	+	✓			✓	Restoring to biodiversity could (if wetland biodiversity is part of the scheme) lead to some benefits for flood storage, as could new sites if this option has an indirect effect of promoting new sites.
17.	?	?	?	✓		✓		This option could lead to some uncertainty as if it is a constraint on future site development, it will be left to new sites to fill the gap in aggregate supply. Where the economics is marginal this might curtail future supply.

Proposed alternative option 6: (Or) Under this option unallocated extensions would be permitted where they meet the broad sustainability criteria of the NPPF.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	

1.	- + ?	- + ?	?	✓	✓	✓	✓	As the NPPF requires that the planning system should contribute to and enhance the natural environment one would expect that adverse effects would be minimised in line with the mitigation hierarchy in the NPPF[5]. However, the NPPF also promotes that adverse impacts should significantly outweigh the benefits of development – so the emphasis would be on approving unallocated sites. This has a land take and inevitably impacts on biodiversity, though this is moderated by the aforementioned mitigation hierarchy. The emphasis in the NPPF is also on approving development that accords with the plan – so to simply say that the NPPF offers the planning framework for unallocated extensions risks disregarding some of the locally specific elements that a plan can bring to site development and restoration – such as the priorities for restoration. Indeed, the NPPF states that in preparing local plans, local planning authorities should… put in place policies to ensure worked land is reclaimed at the earliest opportunity…. including for geo-diversity, biodiversity, native woodland," In the longer term in particular there is a fear that sites might not be restored in a way that is fully sensitive to the local environment. Ultimately any permission for an unallocated extension could temporarily disrupt the site restoration scheme, which could impact on biodiversity.
2.	+	+	+	✓		✓	✓	The NPPF aims to prevent new and existing development from contributing to water pollution. This is likely to prevent significant impacts (i.e. maintain water quality), though is unlikely to improve the situation. However, a greater emphasis on water could be achieved through the plan, as the NPPF states that "in preparing local plans, local planning authorities should….not have unacceptable impacts on…. the flow and quantity of surface and groundwater'.
3.	+	+	+	✓		✓	✓	The NPPF includes a number of criteria related to reducing transport impacts. This is likely to prevent significant impacts and encourage greater us of sustainable transport. However, a greater emphasis on sustainable travel could be achieved through the plan, as the NPPF states "plans should protect and exploit opportunities for the use of sustainable transport modes for the movement of goods and people". To put all the emphasis on the NPPF, would be a lost local opportunity to promote sustainable movement.
4.	+	+	+	✓		✓	✓	The NPPF aims to prevent new and existing development from contributing to air pollution. This is likely to prevent significant impacts (i.e. protect air quality), though is unlikely to improve the situation. However, a

[5] The mitigation hierarchy in the NPPF states "if significant harm resulting from a development cannot be avoided (through l*o*cating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused"

								greater emphasis on air quality could be achieved through the plan, as the NPPF states that "in preparing local plans, local planning authorities should…ensure that permitted operations do not have unacceptable adverse impacts…including from …dust".
5.	+ ?	+ ?	+ ?	✓	✓	✓	✓	The NPPF aims to prevent new and existing development from contributing to risk to soils. This is likely to prevent significant impacts (i.e. 'use soil efficiently'). However, a greater emphasis on soils could be achieved through the plan, as the NPPF states that "in preparing local plans, local planning authorities should…put in place policies to ensure land is reclaimed at the earliest opportunity….including for agriculture (safeguarding the long term potential of best and most versatile agricultural land and conserving soil resources)…" Ultimately any permission for an unallocated extension could temporarily disrupt the site restoration scheme, which could impact on restoration of soils.
6.	+	+	+	✓		✓	✓	The NPPF promotes planning for 'new development in locations and ways which reduce greenhouse gas emissions'. However, greater emphasis is placed on the plan achieving this as 'local planning authorities should adopt proactive strategies to mitigate and adapt to climate change". To put all the emphasis on the NPPF, would be a lost local opportunity to promote climate mitigation.
7.	+ ?	+ ?	+ ?	✓	✓	✓	✓	While site specific flood risk assessment is required for unallocated development by the NPPF (which may or may not take account of climate change), greater emphasis on responding to the effects of climate change in a more holistic manner is placed on local plans: "Local Plans should take account of climate change over the longer term, including factors such as flood risk, coastal change, water supply and changes to biodiversity and landscape. New development should be planned to avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which is vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure". To put all the emphasis on the NPPF, would be a lost local opportunity to promote climate adaptation. Ultimately any permission for an unallocated extension could temporarily disrupt the site restoration scheme, which could impact on water storage if that is what the site is to be restored to.
8.	- +	- +	- +	✓		✓	✓	Little or no consideration would be given to using recycled or secondary aggregates as an alternative through this option. The emphasis on substitute or secondary and recycled materials in the NPPF is placed on the Plan to deliver. However, the lower bar provided by relying on the NPPF alone to make decisions on extended sites might allow more extensions to sites as opposed to new sites – which in effect would be more resource efficient.
9.	0	0	0					No significant effects are noted.

10.	+	+	+	✓		✓	✓	The NPPF requires that "Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this assessment into account when considering the impact of a proposal on a heritage asset, to avoid or minimise conflict between the heritage asset's conservation and any aspect of the proposal". This is quite a strong level of protection. Although local planning policies for determining unallocated extensions might add some extra emphasis on local significance, the effects of an NPPF led approach are still considered to be outright positive.
11.	+ - ?	+ - ?	+ - ?	✓	✓		✓	The NPPF states "great weight should be given to conserving landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to landscape and scenic beauty". Compliance with this would allow aggregate extension sites to minimise impacts on designated areas, though would not contribute to character outside designated sites, which would reliant on the Local Plan to highlight (e.g. through criteria based policies). Ultimately any permission for an unallocated extension could temporarily disrupt the site restoration scheme, which could impact on local landscape.
12.	+ +	+ +	+ + ?	✓	✓	✓	✓	As the onus in the NPPF is on approving development unless 'any adverse impacts of doing so would significantly and demonstrably outweigh the benefits' and that local planning authorities should 'give great weight to the benefits of mineral extraction, including the economy' it is expected that this option would see those extensions that have a benefit to the economy viewed favourably where they are consistent with other criteria in the NPPF. The jobs / economic benefits associated with new sites would arguably be forgone to a degree in the long term.
13.	+ ?	+ ?	+ ?	✓	✓	✓	✓	As with objective 12, there will be economic benefits associated with this option. This is likely to help maintain jobs, and indirectly service the economic needs of other employers. As with other options there is the possibility that future tourism benefits associated with site restoration might be delayed under this option if phasing of restoration is disrupted, with negative effects.
14.	- ?	- ?	- ?	✓		✓	✓	As the NPPF only requires that 'planning policies [i.e. those that are found in a local plan] should protect and enhance public rights of way and access", then this option would not consider rights of way particularly well, that being left to the local plan makers. The option would allow sites to be scrutinised against some other recreational assets, such as National Parks, but for a fuller contribution to this objective sites would need to accord with a local plan. Ultimately any permission for an unallocated extension could temporarily disrupt the site restoration scheme, which could impact on recreation.

15.	+	+	+	✓	✓	✓	✓	Broadly the NPPF requires relatively high health and wellbeing criteria to be applied to development management criteria at minerals sites. For instance, it states local planning authorities should ensure 'no unacceptable adverse impacts' on human health, and that 'any unavoidable noise, dust and particle emissions and any blasting vibrations are controlled, mitigated or removed at source, and establish appropriate noise limits for extraction in proximity to noise sensitive properties". This will result in a broadly positive contribution to the 'protect wellbeing' part of this objective. However, as with other objectives, a local plan can set out environmental criteria, including for human health. So in this sense, a policy which approves extensions in line with the NPPF misses the benefits that a local plan can bring. Such an approach may, through setting a lower bar than a local plan, indirectly make unallocated extensions more likely than new sites, which is a benefit to this objective. Ultimately any permission for an unallocated extension could temporarily disrupt the site restoration scheme, which could impact on health and wellbeing.
16.	+	+	+	✓		✓		Site specific flood risk assessment is required for unallocated development by the NPPF, which should help contribute to this objective. Ultimately any permission for an unallocated extension could temporarily disrupt the site restoration scheme, which could impact on flooding if flood storage opportunities are delayed.
17.	+	+	+	✓		✓		Planning applications for minerals should "as far as is practical, provide for the maintenance of landbanks of non-energy minerals from outside National Parks, the Broads, Areas of Outstanding Natural Beauty and World Heritage sites, Scheduled Monuments and Conservation Areas". This will help to ensure this option makes some contribution to shortened supplies of minerals across large parts of the plan area.

Proposed alternative option 7: (Or) This option would act in combination with either Option 1 or Option 2 and would remove the requirement in these options for the site to be located outside of the National Park or an AONB

Assumptions: only the additional effects of this option (as compared to option 1 or 2) are considered.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	? -	? -	? -	✓	✓	✓	✓	This option performs the same as either option 1 or 2. However, there would be additional possibility (depending on location) of negative effects on AONBs (which contain a rich array of biodiversity and geo-diversity assets, particularly close to extant sites). Although effects are relatively small scale as there are not many extant aggregate quarries in the AONBs (Coldstones and Wath, though there is also the possibility that dormant sites could be extended), depending on the nature and the size of the extension they could be of major or minor significance (most likely minor).
2.	? -	? -	? -		✓	✓	✓	This option performs the same as either option 1 or 2. However, there would be a moderate and uncertain additional risk (depending on location) of negative effects on AONBs (which contain limited areas of Nitrate Vulnerable Zones (NVZ) and Source Protection Zones (SPZ)). Effects are relatively small scale as there are not many extant aggregate quarries in the AONBs (For extant sites at Coldstones and Wath there are no local NVZs or SPZs, though local scale effects on hydrology cannot be ruled out).
3.	0	0 -	0 -					No impacts over and beyond options 1 or 2.
4.	? -	? -	? -	✓	✓	✓	✓	This option performs the same as either option 1 or 2. However, there are widespread biodiversity assets in the AONBs which could potentially be impacted by dust or traffic air pollutants if an extension were in close proximity to a sensitive biodiversity asset. It is also notable that extant sites are quite close to human receptors (settlements), though it may be that this option would allow extensions to dormant sites). Effects are relatively small scale as there are not many extant aggregate quarries in the AONBs.
5.	? -	? -	? -		✓	✓		This option performs the same as either option 1 or 2. However, although there is little land inside the Nidderdale AONB that could be called best and most versatile, the Howardian Hills does have significant amounts of best and most versatile land. Some small areas of this could be lost under this option, depending on location, in addition to the effects of either options 1 or 2. Effects are relatively small scale as there are not many extant aggregate quarries in the AONBs. (Wath Quarry is close to best and most versatile land).
6.	0	0	0		✓		✓	No impacts over and beyond options 1 or 2.

7.	0	0 _	? +	✓			✓	This option performs the same as either option 1 or 2. However, this option may offer a small benefit in terms of longer term flood alleviation (such as natural land restoration), if in future sites are allocated there and then extended, particularly in Nidderdale (in 'the uplands' CFMP policy unit). Here the headline policy is to 'take action with others to store water or manage run off in locations that provide overall flood risk reduction or environmental benefits, locally or elsewhere in the catchment'.[6]
8.	0	0 ?	- ?	✓		✓		This would have no effect additional to options 1 and 2 on resource use in the short and medium term, but in the longer term more resource would ultimately be available for extraction through extensions to sites, which could further deplete resources in the plan area.
9.	0	0	0					No clear link
10.	? -	? -	? -	✓	✓	✓	✓	This option performs the same as either option 1 or 2. However, there are clusters of historic assets in the Nidderdale AONB and especially in the Howardian Hills, so there exists the potential for these assets to be negatively affected by unallocated extensions to sites. Depending on the location, such effects could be minor to major in significance, though most likely relatively minor significance. (At extant sites there is some proximity with scheduled monuments and listed buildings).
11.	- --	- --	- --	✓	✓	✓		This option performs the same as either option 1 or 2. However, clearly the AONBs are national landscape designations, so any extensions in these areas could have very significant consequences for landscape quality and character. Although there are relatively few extant aggregates quarries in these areas, so cumulative effects are unlikely, these individual sites, through extension, would still have the potential to display minor to major significant effects, depending on the size and location of the extension.
12.	+	+	+ ?		✓	✓	✓	This option performs the same as either option 1 or 2, though the potential positive benefits could be extended to a wider area. Allowing unallocated extensions may, however, in the longer term lead to a reduced need for new sites somewhere else, effectively displacing future job creation.
13.	+ -	+ - ?	+ - ?		✓	✓	✓	This option performs the same as either option 1 or 2, though the potential positive benefits could be extended to a wider area. Allowing unallocated extensions may, however, in the longer term lead to a reduced need for new sites somewhere else, effectively displacing future job creation. Tourism at local receptors in the AONB may also be negatively affected by either disruption to restoration plans at existing sites or the extended lifetime of a site.
14.	-	-	-	✓	✓	✓	✓	This option performs the same as either option 1 or 2, though recreational assets such as rights of way or visitor attractions may be more negatively affected (as they are likely to be used by a wider audience due to the draw of the AONBs).

[6] Environment Agency, 2010. Ouse Catchment Flood Management Plan Summary Report: Managing Flood Risk [URL: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/289228/River_Ouse_Catchment_Flood_Management_Plan.pdf]

15.	-	-	-		✓	✓	✓	This option performs the same as either option 1 or 2 and would be dependent on location. However, at the two operational sites in AONBs there are local receptors such as nearby settlements that could be impacted by an extended operational period for sites (such as effects from traffic, dust, effects on access etc.).
16.	0	0	0 +	✓			✓	This option performs the same as either option 1 or 2. However, aggregates quarries tend to be less vulnerable or water compatible and only relatively small areas of flood potential are in or close to operational sites. There may however be some opportunity through restoration to create natural features that help prevent runoff at these, and potentially other, sites (if dormant sites come back in to use and are extended).
17.	+	+	+		✓	✓		This option performs the same as either option 1 or 2, though opens up some more potential for additional materials to be available to enable development.

Proposed alternative option 8: (And)In combination with Option 3, this option would however allow small scale extensions to existing quarries

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0 - ?	0 - ?	0 - ?	✓	✓	✓	✓	In addition to Option 3's effects, if only 'small scale' extensions were allowed at existing sites this would have a limited, though still potentially minor significant (depending on location) effect on biodiversity and geo-diversity as some land and associated habitats would be lost and other effects such as the effects of disturbance and dust deposition on adjacent habitat would still occur and possibly for longer. Indirectly, however, this might drive a greater demand for new quarries elsewhere (or greater take-up of allocations) which would have unknown, though potentially significant effects.
2.	0 - ?	0 - ?	0 - ?		✓	✓	✓	In addition to Option 3's effects, if only 'small scale' extensions were allowed at existing sites this would have a limited, though still potentially minor significant (depending on location) effect on water (e.g. through continued or small scale dewatering). The effects of this may be insignificant to minor significant, depending on location. Indirectly, however, this might drive a greater demand for new quarries elsewhere (or greater take-up of allocations) which would have unknown, though potentially significant effects.
3.	0 - ?	0 - ?	0 - ?		✓	✓	✓	In addition to Option 3's effects, small scale extensions might allow either an increased output (thereby generating correspondingly more traffic), or an extended working period (making traffic effects endure for longer). Given the small scale of extensions such effects are likely to be either insignificant or of minor significance. Indirectly, however, this might drive a greater demand for new quarries elsewhere (or greater take-up of allocations) which would have unknown, though potentially significant effects.
4.	0 -	0 -	0 -		✓	✓	✓	In addition to Option 3's effects, if only 'small scale' extensions were allowed at existing sites this would have a limited, though still potentially minor significant (depending on location) effect on air quality as effects such as traffic and dust deposition on adjacent habitat or other receptors would still occur, and possibly for longer. Indirectly, however, this might drive a greater demand for new quarries elsewhere (or greater take-up of

	?	?	?					allocations) which would have unknown, though potentially significant effects.
5.	0 - ?	0 - ?	0 - ?		✓	✓	✓	In addition to Option 3's effects, if only 'small scale' extensions were allowed at existing sites this would have a limited, though still potentially minor significant (depending on location) effect on land and soils as effects there would be a direct land take from this. Indirectly, however, this option might drive a greater demand for new quarries elsewhere (or greater take-up of allocations) which would have unknown, though potentially significant effects on soils.
6.	0 - ?	0 - ?	0 - ?	✓			✓	In addition to Option 3's effects, if only 'small scale' extensions were allowed at existing sites this would have a limited, very minor significant effect on CO2 input to the atmosphere as carbon would be used during extraction and during transport of aggregate to market. Indirectly, however, this option might drive a greater demand for new quarries elsewhere (or greater take-up of allocations) which would have unknown effect on overall CO2 input to the atmosphere (for instance a new site might be less well located for transport of aggregates to market, or require new carbon intensive infrastructure such as new access roads, car parking etc.)
7.	0	0	0					Small scale extensions are unlikely to have a significant effect on climate adaptation.
8.	- ?	- ?	- ?	✓		✓	✓	The direct effect of this option is that a small amount of additional virgin minerals will be used as aggregate, rather than recycled or secondary aggregates. This is of minor negative significance. Indirectly, this option might drive demand for new sites. However, the net resource consumption is likely to be similar, except for the additional resource consumption of new supporting infrastructure.
9.	0	0	0					No significant effects
10.	0 - ?	0 - ?	0 - ?	✓	✓	✓	✓	In addition to Option 3's effects, if only 'small scale' extensions were allowed at existing sites this would have a limited, though still potentially minor significant (depending on location) effect on the historic environment as some land (that might contain historic assets) would be lost and other effects such as the effects of vibration and dust deposition on nearby sites would still occur and possibly for longer. Indirectly, however, this might drive a greater demand for new quarries elsewhere (or greater take-up of allocations) which would have unknown, though potentially significant effects.
11.	0 - ?	0 - ?	0 - ?	✓	✓	✓	✓	In addition to Option 3's effects, if only 'small scale' extensions were allowed at existing sites this would have a limited, though still potentially significant (depending on location) effect on the landscape character as some additional visual disturbance could occur, or effects could last for longer. In some locations, because of cumulative landscape effects between sites a threshold might be crossed which might raise significance, but in most cases effects will be at a relatively small scale/ Indirectly, however, this might drive a greater demand for new quarries elsewhere (or greater take-up of

								allocations) which would have unknown, though potentially significant effects.
12.	0 + ?	0 + ?	0 + ?		✓	✓	✓	Small scale extensions are likely to allow some short term benefit to operators and employees by allowing a small (possibly insignificant) increase in income stream, or an extension to that income stream. So jobs may benefit slightly. If this option, through its restrictive nature, indirectly allows other new sites to be developed (allocated or unallocated) then more jobs will be created elsewhere.
13.	0 ?	0 ?	0 ?		✓	✓	✓	While this option will potentially secure some jobs, which would help community to a degree, it may also work against community vitality, e.g. by extending the time period of operation into the future, and thereby extending quality of life effects, which may discourage tourism for example. This is likely to be at a low level however so the net effect is neutral. Should this option, through its restrictive nature, indirectly allow other new sites to be developed (allocated or unallocated) then effects on communities may be transplanted to somewhere else.
14.	0 - ?	0 - ?	0 - ?		✓		✓	In addition to Option 3's effects, if only 'small scale' extensions were allowed at existing sites this would have a limited, though still potentially minor significant (depending on location) effect on recreation, leisure and learning as effects such as noise, land take and visual disturbance would still occur and have the potential to affect recreational receptors such as rights of way, and possibly for longer. Indirectly, however, this might drive a greater demand for new quarries elsewhere (or greater take-up of allocations) which would have unknown, though potentially significant effects.
15.	- ?	- ?	- ?		✓		✓	In addition to Option 3's effects, if only 'small scale' extensions were allowed at existing sites this would have a limited, though still potentially minor significant (depending on location) effect on wellbeing, health and safety as effects such as traffic, dust deposition, noise and access limitations would still occur, and possibly for longer. Indirectly, however, this might drive a greater demand for new quarries elsewhere (or greater take-up of allocations) which would have unknown, though potentially significant effects.
16.	0	0	0					Small scale extensions to aggregates sites are unlikely to have a significant impact on flooding
17.	0 +	0 +	0 +		✓		✓	In addition to Option 3's effects, if 'small scale' extensions were allowed at existing sites this Would help supply building materials to a minor degree.

Summary of assessment

The assessment revealed that Option 3 would provide greater protection for the environment and communities than Options 1 or 2 yet would raise

questions over the deliverability of minerals, although this would depend on whether or not there was a sufficient landbank maintained at other permitted sites throughout the plan period. It is possible that an indirect result of the option would be to encourage other sites to come forward, with associated sustainability effects

Option 4 has some benefits that largely arise from the fact that less supporting infrastructure, such as access routes, would be required at existing sites. However, there are concerns that prolonged negative effects could occur around existing sites. Option 5 performs well for biodiversity in the longer term, though more than most other options (and to a degree all options that restrict extensions do this) may have the indirect effect of encouraging new allocated or unallocated and potentially less sustainable sites to come forward to meet demand,

Option 6 scored well, but generally minor positive effects were at the lower end of the positive scale as the NPPF tends to encourage local issues to be dealt with through the local plan.

When considered in combination with other relevant options, option 7 had a broad range of effects, though negative impacts were recorded where objectives correlate with the special qualities of local AONBs. Option 8 had a range of effects that mostly were either insignificant or minor negative, though recorded some low level economic benefits.

Recommendations
It is recommended that either Option 2 or 3 would be the most sustainable to follow, although Option 3 is possibly a little inflexible and could lead to negative effects should insufficient landbanks be maintained and /or new unallocated sites come forward. The chosen option should be combined with the element of Option 1 which requires consideration to be given to implications for increasing the contribution that secondary and recycled aggregates make to aggregates supply. There may also be some merit in considering a preference for extending existing sites rather than developing new sites, though it as yet unclear how this could work outside of the allocations process, and the issues of prolonged local effects resulting from extensions to permission for working at a site would need strong mitigation.

Supply of Alternatives to Land Won Primary Aggregates (id14)

Option 1 This option would seek to encourage the maximum use of such materials through one or more supporting measures which could include;

Supporting the principle of development of new infrastructure, such as ancillary manufacturing facilities of appropriate scale utilising secondary aggregate as the primary raw material, at sites where secondary aggregates are produced.

Supporting the principal of limited re-working of secondary aggregate materials already deposited in current or former disposal facilities, where consistent with environmental and amenity objectives of the Joint Plan. These would principally include ash disposal sites and current and former colliery spoil disposal facilities. This could also include supporting the principle of an upward revision to the current annual tonnage export limit for secondary aggregate from the Gale Common ash disposal facility.

Supporting the use of secondary aggregate materials as part of a broader policy approach to the sustainable use of materials in the design and construction of development.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	?	✓			✓	This option would have benefits for biodiversity as it would help reduce the land take and environmental impacts, and thus biodiversity and geodiversity impact, of primary extraction sites by increasing the supply of secondary aggregates. It would also potentially increase the capacity of existing ash disposal and colliery spoil sites to continue to receive colliery / power generation waste (reducing the need for future new ash disposal sites). Future restoration opportunities at aggregates sites may be forgone to a limited degree, depending on the scale of secondary aggregates provision. This may reduce future gains for biodiversity.
		+ +						

								It should also be noted that this option (and particularly the support for a broader policy approach to sustainable use of minerals in design and construction) would potentially reduce the embodied energy[7] of aggregates (depending on the aggregate source replaced) by reducing the energy used in aggregates extraction. This would have indirect benefits for biodiversity. These benefits may decline in the longer term if the supply of sources of secondary aggregates declines (e.g. there may be less Furnace Bottom Ash)
2.	+ -	+ -	? -	✓			✓	Primary aggregate extraction can have impacts on water quality and levels due to dewatering or changes to hydrology. Some aggregates also require washing. This option would reduce demand for primary minerals and thus reduce, to a degree, water impacts. However, there are also water impacts associated with the use of secondary aggregates, particularly materials such as colliery spoil. While these are required to be in an inert state when used in construction (see option 3 below) during working and processing care will need to be taken to avoid sensitive receptors for water pollution. These effects become less certain in the longer term if the supply of sources of secondary aggregates declines.
3.	+	+	?		✓		✓	Potentially this option would reduce transport miles as some key secondary aggregate (colliery spoil and ash) sites are currently in the south of the plan area close to the markets of the Leeds City Region (whereas the primary sites replaced are distributed throughout the plan area, and often further north). These effects become less certain in the longer term if the supply of sources of secondary aggregates declines.
4.	?	?	?		✓		✓	As there is the possibility of shorter journeys to market this option is likely to generally reduce air quality issues. There may be local issues related to dust, particularly as it is unclear how secondary aggregates will be taken off site to their destination and some key types of secondary aggregate such as power station ash have the potential to generate significant dust. This may need to be resolved during the policy development process.

[7] "The embodied energy (carbon) of a building material can be taken as the total primary energy consumed (carbon released over its life cycle)". Greenspec. Embodied Energy [URL: http://www.greenspec.co.uk/embodied-energy.php] . This report also lists the embodied energy associated with a number of materials including aggregate.

								The situation becomes less certain in the longer term if the supply of sources of secondary aggregates declines.
5.	+	+	+		✓		✓	The offsetting of future primary minerals extraction by this option will lead to benefits to soils and land take. Uncertainty will increase in the longer term as supply of secondary aggregates may or may not decrease, depending on the source of those secondary aggregates.
		++	?					
6.	+	++	+	✓			✓	This objective will reduce the embodied energy of aggregates (as a waste rather than a primary resource is utilised) and is considered to be likely to reduce transport (though there remains some uncertainty here). It will also reduce land take of both extraction and disposal. These things taken together will lead to positive effects on the climate change objective. These benefits may decline in the longer term if the supply of sources of secondary aggregates declines.
			?					
7.	0	0	0					There is no significant relationship between this option and the climate change adaptation option.
8.	++	++	+	✓			✓	This option, by substituting secondary materials for primary land and marine won aggregates is a highly efficient use of resources and will have strong benefits. These benefits may decline in the longer term as the supply of sources of secondary aggregates declines.
9.	++	++	+	✓		✓		This option would reduce waste spoil, ash, and fines etc. from other minerals extraction and would therefore help reduce disposal issues and exhibit major positive effects on the waste SA objective. These benefits may decline in the longer term as the supply of sources of secondary aggregates declines.
			?					
10.	+	+	?	✓		✓		Effects on the historic environment are generally thought to be positive in the short and medium term as continued use of secondary aggregates will be reducing the level of demand for primary extraction (and thus land take and historic environment loss).. In the long term, use of secondary aggregates is considered to be either rising (as policies take effect) or possibly falling (as sources of secondary aggregate may or may not decline). In addition, it is not known where routes between secondary aggregate sites and markets will be, meaning that dust, air pollution and vibration impacts on the historic environment are unknown.
	?	?						
11.	+	+	?	✓		✓		Harm to landscapes resulting from the visual intrusion of quarries will be lessened as secondary aggregates offset some of the demand for primary aggregates (though there may be lesser local scale effects from secondary aggregates sites themselves). In the longer term there is less certainty over the supply of secondary aggregates.
12.	0	0	?					This option will have a broadly neutral effect. This is because jobs may be created in secondary aggregates due to rising demand at broadly the same rate as demand reduces for primary extraction.

								The situation becomes less certain in the longer term if the supply of sources of secondary aggregates declines.
13.	0 -	0 -	?					This option will have a broadly neutral effect as jobs may be created in secondary aggregates, while primary aggregate jobs may decline. This will help boost levels of spend in some communities, and will reduce levels of spend in others. Issues around the site for storing and processing secondary aggregate, such as traffic and dust may, however, work against the objective. The situation becomes less certain in the longer term if the supply of sources of secondary aggregates declines.
14.	0	0	0		✓	✓	✓	The effect of this option, if extant sites are utilised for accessing secondary aggregates, would be neutral on the recreation, leisure and learning objective.
15.	-	-	?		✓	✓	✓	Utilising ash and colliery spoil sites for secondary aggregate will increase the number of journeys in and out of existing disposal sites However, by the same token demand for primary materials will decline and journeys elsewhere will be reduced. The net effect will be minor negative as a certain amount of concentration of impacts is expected to occur close to ash / colliery spoil disposal sites in the short and medium term. This will affect wellbeing levels. Insecurity of supply of secondary aggregates (resulting from changes to coal mining or power station demand) leads to uncertainty on the long term.
16.	0	0	0					No clear link
17.	+	+	?		✓	✓		This would help sustain future supplies of minerals. The effects are less certain in the long term as the supply of colliery spoil may run out.

Option 2 This approach could promote the use (including the potential for increased use) of recycled aggregate though a range of measures including;

Supporting the use of recycled aggregate materials as part of a broader policy approach to the sustainable use of materials in the design and construction of development
-Encouraging the maximum recovery of recycled aggregate during demolition activity.
-Encouraging the separation of materials with potential for use as recycled aggregate during waste management processes.
-Encouraging the use of existing minerals extraction sites as locations for the reception, processing and onward sale of recycled aggregate during their period of operation.
-Making adequate provision for any new facilities needed for the management of construction and demolition waste identified through any waste needs assessment undertaken during preparation of the Joint Plan.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+ +	+ +	✓			✓	In a similar way to option 1 there would be positive effects associated with this option as it would offset some future aggregates extraction and future disposal land take, thus reducing land take and biodiversity losses at primary aggregate sites and disposal sites. Recycled aggregates may also have lower embodied energy than primary aggregates[8] with small scale global biodiversity benefits. These benefits would be sustained for longer than option 1 as the supply of recycled materials would be expected to increase and then maintain a steady supply (as opposed to the uncertainty over the long term supply issues associated with secondary aggregates). Some gains would be offset; however, as restoration opportunities at primary minerals sites are foregone and new infrastructure for processing recycled
	?	?	?					

[8] WRAP have developed a number of case studies to look at the carbon benefits of projects using recycled aggregates within built infrastructure projects. These generally show a net carbon reduction from use of recycled aggregates. See WRAP, undated. Sustainability Case Studies [URL: http://aggregain.wrap.org.uk/sustainability/case_studies/]

								aggregates is built.
2.	+	+	+		✓		✓	As with option 1 this option would reduce many of the water impacts associated with primary extraction (though processing of construction aggregates may require washing processes that demand water).
3.	+	+	+		✓		✓	As this option would include 'making adequate provision for construction and demolition waste' this is considered likely to promote sites relatively close to markets (as urban areas will be key sources of construction and demolition waste). However, there is some uncertainty over this (policies arising from this option could potentially promote recycling close to likely sources to ensure that this happens).
	?	?	?					
4.	?	?	?	✓			✓	There may be localised dust issues around recycled aggregates processing sites, and there will be a need to ensure construction waste received is inert (dealt with through the environmental permitting regime) though there is the prospect that emissions from transport could be less.
5.	+	+	+	✓			✓	The offsetting of future minerals extraction by this objective will lead to benefits to soils and land take. This may be offset to a lesser degree by the building of new infrastructure for processing recycled minerals.
6.	+	++	++	✓			✓	Like option 1 this option will reduce the embodied energy of aggregates (as a waste rather than a primary resource is utilised) and is considered to be likely to reduce transport (though there remains some uncertainty here). It will also reduce the land take of both extraction and disposal. These things taken together will lead to positive effects on the climate change objective. These benefits will continue into the longer term as construction waste continues to be generated.
7.	0	0	0					There is no significant relationship between this option and the climate change adaptation option.
8.	++	++	++	✓			✓	This option, by substituting recycled aggregates in the place of primary land won aggregates is a highly efficient use of resources and will have strong benefits. These benefits will continue into the longer term as construction waste continues to be generated.
9.	++	++	++	✓		✓	✓	This option would recycle or reuse a range of construction and demolition materials preventing future landfilling, and offsetting some future generation of more waste (that results from primary extraction). This would lead to major beneficial effects on the waste SA objective.
10.	+	+	+	✓		✓	✓	Effects on the historic environment are generally thought to be positive as continued use of recycled aggregates will be reducing the level of demand for primary extraction (and thus land take and historic environment loss). However, there is some uncertainty as to whether any new infrastructure required would have historic environment / setting impacts (though this would be limited as existing minerals sites are encouraged to be possible locations for this infrastructure).
	?	?	?					

11.	+	+	+	✓		✓	✓	Harm to landscapes resulting from the visual intrusion of quarries will be lessened as recycled aggregates offset some of the demand for primary aggregates. This is lessened to an uncertain degree by the possibility that new built infrastructure may be required to support this objective.
	?	?	?					
12.	0	0	0	✓		✓		This objective will have a broadly neutral to positive effect as jobs may be created in recycled aggregates as demand reduces for primary extraction and the jobs connected with it. However, the more diffuse nature of managing construction waste across a number of sites might shift the balance towards more jobs.
	+	+	+					
13.	0	0	0	✓	✓	✓	✓	This objective will have a broadly neutral effect as jobs may be created in recycled aggregates as demand reduces for primary extraction and the jobs connected with it. Some temporary negative impacts associated with localised traffic and dust could impact community vitality, though the short term impact of this is likely to be insignificant.
14.	0	0	0					There is no significant relationship between this option and the recreation, leisure and learning objective.
15.	-	-	-		✓	✓		Promoting recycled aggregates will not in itself lead to negative effects on health and wellbeing, though there may be local effects around new facilities resulting from noise, dust and road journeys. However, as this option reduces demand for primary minerals, there will be a reduction in the health effects associated with those sites.
	+	+	+					
16.	?	?	?					The location of possible recycled aggregate plant is not detailed at this stage so effects of flooding associated with this option are unknown
17.	0	0	0					There is no significant relationship between this option and the changing population objective.

Proposed alternative option 3: (And) This option supports the use of colliery spoil as secondary aggregate in principle, provided it is not obtained from restored colliery spoil tips

Assumptions: this assessment assumes that both unburnt and burnt colliery spoil may be utilised

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+ ? ?	+ ? ?	?	✓			✓	Generally the use of colliery spoil will have indirect benefits for biodiversity because its use as a construction material effectively prevents the equivalent amount of primary aggregate being obtained from terrestrial or marine sources. As documented elsewhere in this appraisal, effects of primary aggregate extraction on biodiversity are wide ranging and potentially very significant. It should, however, be noted that colliery spoil, because of its bulky nature and low value is often not used far from source, thus limiting its potential to a degree[9]. There are also possible issues associated with leachate, which may affect ecology, however key users of such material (e.g. the Highways Agency) enforce tailored specifications on the chemical composition of secondary aggregates including colliery spoil to ensure they are of a required standard that is within acceptable limits[10]. There may be some issues with storage of the spoil prior to processing and use, which would require an environmental permit, though clearly any policy would need to seek to ensure such a permit is possible by avoiding for example, ecologically sensitive water bodies.

[9] According to the Building Research Establishment transporting most secondary and recycled aggregates over 30 miles makes them uneconomic. Jones, M. 2003. Review of potential wastes and secondary materials as aggregates. Building Research Establishment [URL: http://www.sustainableaggregates.com/library/docs/wrap/L0314_BRE_Buildings_New_Materials_Final_070503.pdf.]

[10] For detail of Department for Transport specification requirements for Colliery Spoil (acceptable uses) are available in the Manual of Contract Documents for Highway Works: Volume 1 [URL: http://www.dft.gov.uk/ha/standards/mchw/vol1/pdfs/series_0600.pdf]. Tests to meet the specification include oxidisable sulphides content and tests for pH value.

								The effects are less certain in the long term as the supply of colliery spoil may run out. This option is subject to the effects of any other options that may work alongside it.
2.	+ ?	+ ?	?		✓		✓	Storage and use of colliery spoil can have water quality issues if leachate finds its way into waterbodies. As discussed above, Users of Colliery Spoil require a high specification that should avoid down the line impacts, through the plan will need to ensure it is consistent with both the Water Framework Directive and future Environmental Permitting requirements for developments by avoiding the most sensitive water bodies (e.g. source protection zones and ecologically sensitive waterbodies[11]) and ensuring the capacity for managing water impacts in less sensitive locations. While most colliery spoil storage will already be on permitted sites, Further facilities to process material and store that processed material will need to be considered from this perspective. However, compared to the current situation where secondary aggregate is infrequently used and spoil accumulates at disposal sites, where impacts on water quality have the potential to be greater, the effect is positive. This is less certain in the long term as the supply of colliery spoil may run out. This option is subject to the effects of any other options that may work alongside it.
3.	+	+	?		✓	✓		Colliery spoil is a potential source of dust when transported, so this option would need appropriate controls if a policy were to result from it. The balance between relying on primary aggregates and implementing this option is probably positive in terms of tonne-kms generated as the locations of spoil sites are close to a number of potential markets across the Leeds City Region Effects become more uncertain over time as colliery spoil may run out.
4.	?	?	?		✓	✓		Colliery spoil is a potential source of dust, and the vehicles which may transport it may also be polluting, which may lead to negative effects on communities and habitats close to the site from where it is stored / processed as well as close to roads between the storage / processing site and where it will ultimately be used, if transported by road. Routes to be taken are however unknown. AQMAs, however, are generally remote from the more likely sites that would generate colliery spoil (most specifically, Kellingley Colliery or the Womersley colliery spoil disposal site), so there is less of a likelihood of cumulative effects, though there are a number of communities that could be affected.

[11] The Environment Agency's 'Guidance for developments requiring planning permission and environmental permits' (2012) states that 'when dealing with a planning application, planning authorities should 'be confident the development will not result in unacceptable risks from pollution when considering if the development is an appropriate use of land' [URL: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/297009/LIT_7260_bba627.pdf]

								This option would be offset to a degree by reduction of impacts at primary aggregate sites, though over time issues of where supply of Colliery spoil would come from make things more uncertain. It should also be recognised that colliery spoil aggregates may well be closer to market than existing primary aggregate sites. Notwithstanding the effects of options that may work alongside this, any effect would be likely to be very short term as spoil would likely go to different markets. Though access roads in close vicinity to a storage / processing site may see repeated (though probably intermittent) journeys.
5.	0 +	0 +	?					It is unlikely that this option would generate significant direct land take as spoil is likely to come either from existing spoil tips at active mine sites, or existing disposal sites. Although new plant may be required to process the spoil for use as secondary aggregate it is likely that this would utilise land within existing sites. It will, however, offset the need for primary aggregates which have a land take of their own. This effect gets less certain in the long term as supply of colliery spoil may be limited.
6.	+	+	?	✓	✓	✓		Primary aggregates require energy to extract, process and transport them to market. Secondary aggregates such as colliery spoil require energy to process and transport them to market. Therefore the embodied energy within colliery spoil is likely to be lower, which means that the CO2 footprint of colliery spoil is likely to be lower. This is subject to other options that work alongside this option. The effects are less certain in the long term as the supply of colliery spoil may run out.
7.	0	0	0					No clear link.
8.	+ + +	+ + +	0 ?	✓			✓	Using colliery spoil as a secondary aggregate saves the equivalent amount of primary aggregate from being used up. The only limiting factor is the quantity used. As colliery spoil is bulky and likely to be geographically confined to the southern part of the plan area, the market is likely to in relatively close proximity to source (which may limit its use to a degree). The effects are neutral to uncertain in the long term as the supply of colliery spoil may run out.
9.	+ + +	+ + +	0 ?	✓			✓	Colliery spoil requires disposal. Using it as an aggregate reduces the need to dispose of it. So positive effects on waste generation are likely (subject to other options that work alongside this option). The effects are neutral to uncertain in the long term as the supply of colliery spoil may run out.

10.	0	0	?	✓			✓	The historic environment is most likely to be impacted by the transport of colliery spoil to market, which could involve road journeys with pollution and vibration. There are historic assets such as conservation areas and scheduled monuments in proximity to possible source of secondary aggregate from colliery spoil. However, much is dependent on the location of markets for spoil. However, these effects should be balanced against the benefits of using secondary aggregates – which offset extraction of primary aggregates and their associated effects on the historic environment. The net effect is likely to be neutral. The effects are less certain in the long term as the supply of colliery spoil may run out.
11.	0 -	0 -	0 -		✓	✓	✓	It is possible that colliery spoil recycling will require additional infrastructure such as processing and lorry reception facilities, which would be a (probably small scale) presence in the landscape. However, this has to be weighed against the reduced need for colliery spoil disposal in heaps. In addition, restored spoil sites would not be reworked (which would have a positive landscape impact). On balance the effect is likely to be both positive and negative. These effects must, however, be considered alongside other options. The effects are less certain in the long term as the supply of colliery spoil may run out.
12.	0	+	+		✓	✓	✓	This option would exhibit some minor benefits on the economy as a source of value will be derived from a material previously seen as a waste product. Although sales of primary aggregate may be lost in the shorter term, replacing primary with secondary aggregates ultimately extends the life of the primary aggregate industry. The effects are less certain in the long term as the supply of colliery spoil may run out.
13.	-	+ -	?		✓	✓	✓	As discussed in the objective above there are long-term benefits for jobs from this option, which will help promote community vitality. Issues around the site for storing and processing aggregate, such as traffic and dust may, however, work against the objective. The effects are less certain in the long term as the supply of colliery spoil may run out.
14.	+	+	?	✓		✓	✓	It is expected that this option (subject to the effects of other options that work alongside it) will have relatively positive effects on recreation, leisure and learning as the option avoids taking spoil from already restored spoil

								tips and would help to prevent spoil tips from growing larger and diminishing the value of views from recreation assets etc. The effects are less certain in the long term as the supply of colliery spoil may run out.
15.	-	-	?	✓		✓	✓	This option would help to reduce the health impacts that may occur at primary aggregate extraction sites. However, storage and transport of spoil may bring wellbeing effects of their own. Minor negative. The effects are less certain in the long term as the supply of colliery spoil may run out.
16.	0	0	0					While one line of reasoning could argue that this would reduce the potential for future flood storage sites, it is doubtful that this effect would be particularly significant.
17.	+	+	?		✓	✓		Alongside other options, this would help sustain future supplies of minerals. The effects are less certain in the long term as the supply of colliery spoil may run out.

Proposed alternative option 4: (And) This option would give preference to using supplies of secondary aggregate direct from source rather than extracting from tip sites.

Assumptions: this option assumes that extraction from tip sites is mostly relevant to manufactured aggregates such as colliery spoil and incinerator bottom ash.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	+	+	+	✓		✓	✓	Subject to the effects of other options, this option would effectively reduce the need for storage (e.g. of spoil or ash) at a disposal site which would benefit biodiversity by reducing demand for land to store spoil. It is also

			?					likely to reduce the demand for additional road journeys, which would reduce any potential impacts from dust deposition on roadside habitats and reduce road kill. There is some uncertainty in the longer term as the supply of colliery spoil may run out.
2.	+	+	+ ?	✓		✓	✓	Subject to the effects of other options, this option would effectively reduce the need for storage (e.g. of spoil or ash) at a disposal site. This would benefit water as it reduces the number of potential water receptors that could be affected by the colliery spoil supply chain. It is also likely to reduce road journeys and consequently reduce runoff from roads, or the need for repeated wheel washing. There is some uncertainty in the longer term as the supply of colliery spoil may run out.
3.	+ + ?	+ + ?	+ + ?	✓		✓		Subject to the effects of other options, this option would effectively reduce the need for storage (e.g. of spoil or ash) at a disposal site which would cut the need to transport bulky spoil. There is some uncertainty noted though as the distance to the eventual markets for secondary aggregates is unknown, and some secondary aggregate (e.g. ash at Gale Common) is transported via pipeline. There is also some uncertainty noted in the longer term as the supply of colliery spoil may run out.
4.	+ ?	+ ?	+ ?	✓			✓	Subject to the effects of other options, this option would effectively reduce the need for storage (e.g. of spoil or ash) at a disposal site which would reduce the need to transport bulky spoil. This would lead to less pollution from traffic, and less dust. There is some uncertainty noted though as the distance to the eventual markets for secondary aggregates is unknown. There is also some uncertainty noted in the longer term as the supply of colliery spoil may run out.
5.	+	+	+ ?	✓		✓	✓	Subject to the effects of other options, this option is more land efficient, though spoil / ash disposal sites tend to be on previously developed land, so significance is minor. There is also some uncertainty noted in the longer term as the supply of colliery spoil may run out.
6.	+ ?	+ ?	+ ?	✓		✓		Subject to the effects of other options, the reduced need to transport secondary aggregates would lessen the production of greenhouse gases, though some uncertainty is noted as the distance to the eventual markets for secondary aggregates is unknown.

								There is also some uncertainty noted in the longer term as the supply of colliery spoil may run out.
7.	0	0	0					No clear link
8.	0	0	0					No clear link
9.	0	0	0					No clear link as this option is about the location of sources of secondary aggregate rather than how it is managed.
10.	+	+	+ ?	✓		✓	✓	Subject to the effects of other options, this option is more land efficient, and by reducing the volume of secondary aggregate that needs to be disposed of at disposal sites, the setting of historic assets would also benefit. It is thought that this is likely to only benefit locally important assets in the areas likely to benefit. There is also some uncertainty noted in the longer term as the supply of colliery spoil may run out.
11.	+	+	+ + ?	✓		✓		Subject to the effects of other options, reducing the volume of secondary aggregate that needs to be disposed of at disposal sites would benefit the landscape setting as tips would be reduced in size and restoration would progress. As much of this area has high visual sensitivity due to its open character[12] this may be a relatively substantive benefit. Phased restoration would be more likely to be achieved on time, increasing beneficial effect in the long term. There is also some uncertainty noted in the longer term as the supply of colliery spoil may run out.
12.	0	0	0 ?		✓		✓	This option probably has a fairly neutral effect on the economy as work done to utilise secondary aggregate will take place at the same rate as extracting from a disposal site, only that work will be in a different location. There is also some uncertainty noted in the longer term as the supply of colliery spoil may run out.
13.	0 +	0 +	+ ?	✓	✓		✓	There are likely to be some benefits for communities around disposal sites as traffic, visual impacts etc. will be reduced, while at source sites traffic levels will be broadly the same (as traffic may go to customers of secondary aggregates in the place of traffic to disposal sites) and visual impact will be broadly similar. So there will be a net benefit to factors like tourism opportunities or passing trade, though this is likely to be at a

[12] See North Yorkshire County Council, 2011, North Yorkshire and York Landscape Characterisation project [URL: http://www.northyorks.gov.uk/media/22473/North-Yorkshire-and-York-landscape-character-assessment-report/pdf/North_Yorkshire_and_York_landscape_character_assessment_report.pdf]

								low level (though benefits may increase more significantly in the longer term as disposal sites are more fully restored). As noted in the objective above, there will be a neutral effect on jobs. There is also some uncertainty noted in the longer term as the supply of colliery spoil may run out.
14.	0 +	0 +	+ ?	✓			✓	Subject to the effects of other options this option probably has relatively insignificant direct impacts on recreation, leisure and learning, though it would help to reduce the visual impact of disposal sites as demand for them is reduced (and phased restoration progresses). There is also some uncertainty noted in the longer term as the supply of colliery spoil may run out.
15.	+	+	+ ?	✓			✓	Reducing use of disposal facilities from the supply chain of secondary aggregate is likely to reduce traffic impacts around disposal sites and eliminate any dust impacts that might occur whilst processing secondary aggregates at these sites. This will benefit safety and wellbeing. There may be some local impacts around source sites, but there would be similar impacts if spoil was being removed from these sites to be transported to disposal sites. So the effect of this option would be positive at disposal sites and neutral at source sites. The net effect is thus positive. There is also some uncertainty noted in the longer term as the supply of colliery spoil may run out.
s16.	0	0	0					No clear link.
17.	0	0	0					As this is option is about the location of secondary aggregate rather than the amount that will be managed there is no net effect.

Summary of assessment
All of these options will result in largely positive effects, with particularly strong positive effects associated with sustainability objectives relating to biodiversity, soil / land, climate change, resource use and minimising waste generation.

Minor areas of negative effects or uncertainty occur for a number of SA objectives and minor negative effects occur under the health and wellbeing SA objective under options 1, 2 and 3, and under the community vitality objective under options 1 and 3 due to the potential for local transport or amenity impacts around secondary or recycled aggregates facilities. Many of the positive effects associated with option 3 are amplified for option 4, which effectively reduces the steps in the secondary aggregate supply chain.

Recommendations
The SA recommends that all options have merits and elements of each could be pursued.

The SA Team felt that as these options take account of the potential for other alternative sources of aggregates to primary aggregates, final consideration of ID03 (particularly option 6) should also consider this option when calculating sand and gravel provision.

Continuity of Supply of Silica Sand (id15)

Option 1.
This option would support the principle of continued production at the Blubberhouses and Burythorpe sites, including the principle of lateral extensions and/or deepening of those sites where necessary, if needed to help provide a 10 year landbank at the Burythorpe site and 15 years at the Blubberhouses site.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	? --	? --	? --	✓	✓	✓	✓	The Blubberhouses Quarry site is the subject of a continuing application to extend working. However, this shows that, while proposals lie outside of European Protected Sites, habitat would be lost across phases of development. However a phased process of restoration of habitat is under discussion, which together with other mitigation may or may not result in residual impacts on biodiversity. It is therefore not certain what the outcome of this application will be, though without considering the detail of this application and its potential for mitigation alternative proposals that accord with this option that might disturb a European Site have at least the potential to cause significant negative effects where implemented without mitigation according to the sustainability appraisal framework. At Burythorpe the biodiversity issues are less significant, though there are woodlands (including a plantation on ancient woodland site) and wetlands (and therefore habitats and species) in the area that could be impacted upon.
2.	? -	? -	? -	✓	✓	✓	✓	Generally groundwater quality around Burythorpe is good, while local rivers are moderate status. There may be some potential for local impacts, e.g. on surface water drainage or groundwater from quarry processes, but these are uncertain and minor and likely to be mitigatable. The situation at Blubberhouses is likely to be similar.

3.	-	-	-	✓		✓		Both sites are relatively remote from markets, but they are standalone sites so transport impacts are considered minor.
4.	-	-	-					Both sites are relatively remote from markets, but they are standalone sites so transport impacts are considered minor. There is some potential for dust from silica sand operations, which may impact local receptors, but both sites are situated at distance from settlements, though effects on habitats from dust at Blubberhouses will be a consideration.
5.	0 -	0 -	0	✓		✓		At a strategic scale Burythorpe lies within grade 3 land. Inevitably quarrying will result in land loss, though restoration plans may reduce the significance of this in the longer term.
6.	0 -	0 -	-	✓			✓	There is likely to be some loss of soil carbon from both sites, though this would only potentially rise above any significance threshold at Blubberhouses. Transport emissions are expected to be relatively low
7.	0	0	0					No clear link
8.	-	-	-					Both sites would extract a non-renewable resource.
9.	0 -	-	0 ?	✓		✓		Overburden will be a waste product at both sites, though this and other mineral wastes may be utilised again in the long term.
10.	0	0 -	0 -	✓		✓	✓	There are few listed historic assets close to Blubberhouses (occasional listed buildings at relative distance), while at Burythorpe a scheduled monument lies relatively close to the site while listed buildings in the area may lie on access routes. Impacts may range from neutral to minor negative.
11.	? -	? --	? -	✓		✓		Impacts from the current application at Blubberhouses are uncertain as this is still the subject of an active planning application. However, in a generic sense the site lies inside a nationally designated landscape (AONB) so the potential for landscape impacts without mitigation is considered to be highly significant. The Burythorpe site is within 5 kilometres of an AONB so there may be some visual impacts from the fringes of the AONB (though intervening undulating terrain may make this less likely) and from nearby settlements. Restoration at sites may reduce landscape impacts in the longer term.
12.	+	+	+	✓		✓		The industrial applications of silica sand make it a nationally important scarce resource – so the principle of supporting landbanks at these sites supports the economic growth objective.
13.	0	0	0	✓		✓		While traffic may impact upon communities, both sites maintain a distance from nearby settlements so impacts on community vitality are considered to be relatively minor.

	-	-	-					
14.	-	-	0 -	✓		✓		The presence of Blubberhouses in the AONB and nearby rights of way at both sites may result in minor impacts on recreation. Restoration in the longer term may mitigate this to a degree.
15.	0 ?	0 ?	0 ?	✓		✓		If traffic from either of these sites is routed through settlements then there may be minor impacts on the health and wellbeing of communities. However the nearby population level at Blubberhouses is very low while road capacity is generally good, and there is potential for avoidance of communities or mitigation at Burythorpe.
16.	0	0	0					As water compatible development there are no clear issues.
17.	0	0	0					No clear link

Option 2 This option would support the principle of continued production at the Burythorpe site only, including the principle of lateral extensions and or deepening where necessary in order to help provide a 10 year landbank.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	-	✓	✓	✓	✓	There are fewer biodiversity and geodiversity receptors to be affected under this option (though the site lies close to a plantation on ancient woodland), so effects are considered likely to be minor.
2.	? -	? -	? -	✓	✓	✓	✓	Generally groundwater quality around Burythorpe is good, while local rivers are moderate status. There may be some potential for local impacts, e.g. on surface water drainage or groundwater from quarry processes, but these are uncertain and minor and likely to be readily mitigated for.
3.	-	-	-	✓		✓		Burythorpe is relatively remote from markets, and is a standalone site, so transport impacts are considered minor.

4.	0	0 -	0 -					Burythorpe is relatively remote from markets, but it is a standalone sites so transport impacts are considered minor, and therefore air pollution is not likely to highly significant. There is some potential for dust from silica sand operations, which may impact receptors such as houses, but the site is situated at distance from settlements.
5.	-	-	0	✓		✓		At a strategic scale Burythorpe lies within grade 3 land. Inevitably quarrying will result in land loss, though restoration plans may reduce the significance of this in the longer term.
6.	0	0	0 -					Pollution from transport is likely to contribute cumulatively to climate change at only very low levels.
7.	?	?	? +					At the Burythorpe site there may be some potential to either damage ecological connectivity in the shorter term, or enhance it in the longer term (through restoration), as the site is adjacent to woodland sites identified in the England Habitat Network.
8.	-	-	-					Extending this site would extract a non-renewable resource.
9.	0	-	0 ?	✓		✓		Overburden will be a waste product, though this and other mineral wastes this may be utilised again in the long term.
10.	0	0 -	0 -	✓		✓	✓	At Burythorpe a scheduled monument lies relatively close to the site while listed buildings in the area may lie on access routes. Impacts may range from neutral to minor negative.
11.	?	?	?	✓		✓		The Burythorpe site is within 5 kilometres of an AONB so there may be some visual impacts from the fringes of the AONB (though intervening undulating terrain may make this less likely) and from nearby settlements. Restoration at the site in the longer term may reduce landscape impacts.
12.	+	+	+	✓		✓		The industrial applications of silica sand make it a potentially important resource – so the principle of supporting a landbank at Burythorpe supports the economic growth objective.
13.	0 -	0 -	0 -	✓		✓		While traffic may impact upon nearby communities, Burythorpe is small in scale and the site maintains a distance from nearby settlements so future impacts on community vitality are considered to be relatively minor
14.	0 ?	0 ?	0 ?					There is some minor uncertainty over the visibility of this site from nearby footpaths and the AONB, though any impact is thought to be of low significance. There may be some limited potential to contribute to this objective in the longer term through restoration.

15.	0 ?	0 ?	0 ?	✓		✓		If traffic from extensions is routed through nearby settlements then there may be minor impacts on the health and wellbeing of communities (e.g. from heavy vehicles). However there is potential for avoidance of communities or mitigation at Burythorpe.
16.	0	0	0					As water compatible development there are no clear issues.
17.	0	0	0					No clear link

Option 3

This option would not express support in principle for continued supply of silica sand but would identify a range of criteria to be applied to any proposals which come forward for development of silica sand resources. Criteria could include adequate demonstration of the quality and quantity of the resource.

In the case of any proposals for the working of silica sand within the Nidderdale AONB a requirement to demonstrate that the proposals are in the public interest and, where international nature conservation designations may be affected, the satisfactory outcome of an Appropriate Assessment under the Habitats Regulations.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	+ ?	+ ?	+ ?	✓	✓	✓	✓	This option would require sites to satisfy criteria which, if such criteria included consideration of environmental criteria (including local biodiversity / geodiversity), would result in positive effects. In the case of the Nidderdale AONB a satisfactory appropriate assessment would be required if international nature conservation designations may be affected. This would mean that the conservation objectives of such sites would be maintained. However, even without such a policy such assessment would be required as a result of legislation.
2.	+	+	+	✓	✓	✓	✓	Criteria could require consideration of environmental effects to ensure they are acceptable, which would benefit water resources. While it is assumed that this would be included in any criteria, this is not stated in the

	?	?	?					option, so uncertainty is noted.
3.	+	+	+	✓		✓		Criteria could require consideration of environmental effects / effects on amenity to ensure they are acceptable, which would benefit this transport objective. While it is assumed that this would be included in any criteria, this is not stated in the option, so uncertainty is noted.
	?	?	?					
4.	+	+	+	✓		✓		Criteria could require consideration of environmental effects to ensure they are acceptable, which would benefit air quality. While it is assumed that this would be included in any criteria, this is not stated in the option, so uncertainty is noted.
	?	?	?					
5.	-	-	+	✓	✓	✓		Criteria could require consideration of environmental effects to ensure they are acceptable, which would benefit soils and land. While it is assumed that this would be included in any criteria, this is not stated in the option, so uncertainty is noted. Inevitably, however, land would be lost (though this may be temporary).
	?	?	?					
6.	+	+	+	✓			✓	Criteria could require consideration of environmental effects to ensure they are acceptable, which would benefit air quality. This would indirectly benefit climate change as emissions would be reduced. While it is assumed that this would be included in any criteria, this is not stated in the option, so uncertainty is noted
	?	?	?					
7.	0	0	0					No clear link
8.	0	0	0					Criteria would be unlikely to cover minimisation of resource use which is more likely to be covered in other, more strategic policies.
9.	0	0	0					Criteria would be unlikely to cover minimisation of resource use which is more likely to be covered in other, more strategic policies.
10.	+	+	+	✓	✓	✓	✓	Criteria could require consideration of historic environment effects to ensure they are acceptable, which would benefit the historic environment. While it is assumed that this would be included in any criteria, this is not stated in the option, so uncertainty is noted.
	?	?	?					
11.	+	+	+	✓	✓	✓	✓	Criteria could require consideration of environmental effects to ensure they are acceptable, which would benefit the landscape. While it is assumed that this would be included in any criteria, this is not stated in the option, so uncertainty is noted.
	?	?	?					
12.	-	--	--					Lack of support for continued working at existing sites may create less certainty that there is a longer term future for these sites. This may deter investment in the existing sites or could encourage key customers to consider alternative supply options.

13.	0	0	0					No clear link
14.	+ ?	+ ?	+ ?	✓		✓		Criteria could require consideration of environmental effects to ensure they are acceptable, which would benefit recreational resources such as green infrastructure. While it is assumed that this would be included in any criteria, this is not stated in the option, so uncertainty is noted.
15.	+ ?	+ ?	+ ?	✓		✓		Criteria could require consideration of amenity effects to ensure they are acceptable, which would benefit the health and wellbeing of communities. While it is assumed that this would be included in any criteria, this is not stated in the option, so uncertainty is noted.
16.	+ ?	+ ?	+ ?	✓		✓		Criteria could require consideration of environmental effects to ensure they are acceptable, which would benefit flood considerations. While it is assumed that this would be included in any criteria, this is not stated in the option, so uncertainty is noted.
17.	0	0	0					No clear link

Summary of assessment

These three options exhibit contrasting sustainability effects. Option 1 is associated with the most negative effects. This is largely because there are some key environmental receptors (such as an internationally important nature conservation site) around the Blubberhouses site in particular. The Burythorpe site was considered to have fewer constraints affecting it.

Option 2 reports similar sustainability effects to Option 1, though these are less significant as Option 2 considers only the possibility of extensions at Burythorpe, which while being close to a number of environmental receptors, these tend to be of a lower order.

Option 3 is considered the most sustainable as no assumptions are made on which of these sites will be developed, and criteria allow the opportunity to consider environmental effects prior to any approval. However, there are negative effects on the economic growth objective under this option.

There is considerable uncertainty in the assessment of all three options and further tests, through the site allocations and Habitats Regulations assessment processes may be necessary to give a more certain assessment of sustainability.

Recommendations

While objective 3 performs comparatively better than other options, the SA considers that the effects of options 1 and 2 are largely the results of

potential and uncertain effects on local receptors. Because of the major negative economic effects of option 3, consideration should be also given to more fully exploring the potential for mitigating the local effects of options 1 and 2 through the allocations process so that if one or more sites proves sustainable a criteria based approach could potentially support one or more allocations.

Safeguarding Silica Sand (id16)

Option 1. This option would safeguard all known silica sand resources, with a 500m buffer zone to help ensure maximum protection of the resource from proximal sterilisation.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were minerals development to take place it would need to accord with other policies in the plan. Although some uncertainty is noted as the stringency of any eventual safeguarding policy is not known (so displacement effects on development cannot yet be considered) it is notable that both of the potential safeguarding areas interface with very little development (the Burythorpe area encompasses the small settlements of Kennythorpe and Burythorpe, both of which are outside of Ryedale's settlement hierarchy, while Blubberhouses encompasses only the fringes of the small village of West End (also outside of Harrogate's settlement hierarchy), though it is possible some small scale rural development might occur (e.g. renewable energy).
	?	?	?					
2.	0	0	0					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were minerals development to take place it would need to accord with other policies in the plan. As with objective 1, if development were displaced by a stringent safeguarding policy, it is not known where that development would be located, so effects on water are unknown.
	?	?	?					
3.	0	0	0					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were minerals development to take place it would need to accord with other policies in the plan.

	?	?	?					As with objective 1, if development were displaced by a stringent safeguarding policy, it is not known where that development would be located, so effects on transport are unknown.
4.	0 ?	0	+ ?	✓		✓		As safeguarding does not infer any minerals development will take place there is no predicted effect. Were minerals development to take place it would need to accord with other policies in the plan. However, if development should occur in the future, a buffer zone would reduce dust impacts to any new users of sensitive development in West End or Blubberhouses, Kennythorpe and Burythorpe. Though these benefits are expected to be very small.
5.	0 ?	0 ?	+ ?	✓		✓	✓	Safeguarding with a buffer keeps open option of developing the optimum locations for silica sand extraction. This may help minimise land take when compared to extraction from a sub optimum location (which may require more land take). Positive effects would occur if minerals are extracted, which may be some years in the future. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
6.	0 ?	+ ?	+ ?	✓			✓	As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered. However, as the Blubberhouses site corresponds with habitats / soils that are likely to be acting as a significant carbon store, displacement may have some beneficial effects if it displaces development to areas with lower soil / habitat carbon.
7.	0 ?	0 ?	0 ?	✓			✓	Relatively little of either of the safeguarding areas (and buffers) is prone to surface water or river flooding. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
8.	++	++	++	✓		✓		Safeguarding the known silica sand resources and buffer would enable the option of future extraction and thus strongly contribute to the safeguarding and wise use of minerals sub objective.
9.	0	0	0					As safeguarding does not infer any silica sand development will take place there is no predicted effect. Were

								development to take place it would need to accord with other policies in the plan.
10.	0 ?	0 ?	0 ?					As safeguarding does not infer any silica sand development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
11.	0 ?	0 ?	0 ?					As safeguarding does not infer any silica sand development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
12.	+	+	+	✓		✓		Safeguarding silica sand will keep open the future option of extraction as this option will prevent sterilisation of the resource. This potentially retains a future economic opportunity.
13.	0 ?	0 ?	0 ?					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
14.	0 ?	0 ?	0 ?					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
15.	0 ?	0 ?	0 ?					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
16.	0	0	0					There is no predicted effect from this option. Relatively little of either of the safeguarding areas (and buffers) is prone to surface water or river flooding

	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
17.	0	0	0					There is no clear link between this option and the changing population SA objective.

Option 2 This option would safeguard all known silica sand resources, without a buffer zone given the absence of expectation of significant additional working of silica sand beyond current permission boundaries during the plan period.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0	0	0					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were minerals development to take place it would need to accord with other policies in the plan. As with option 1 there is some potential for uncertainty as the stringency of any eventual safeguarding policy is not known, though the proposed safeguarding areas under this option avoid settlements so potential development which can be displaced is less than option 1. Nonetheless some uncertainty is noted.
	?	?	?					
2.	0	0	0					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were minerals development to take place it would need to accord with other policies in the plan. As with objective 1, if development were displaced by a stringent policy, it is not known where that development would be located, so effects on water are unknown, though this would be less than option 1.
	?	?	?					

3.	0 ?	0 ?	0 ?					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were minerals development to take place it would need to accord with other policies in the plan. As with objective 1, if development were displaced by a stringent policy, it is not known where that development would be located, so effects on transport are unknown, though this would be less than option 1.
4.	0	0	0					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were minerals development to take place it would need to accord with other policies in the plan. Air quality effects of potentially displaced development are predicted to be insignificant.
5.	0 ?	0 ?	+ ?	✓		✓		Safeguarding keeps open option of developing the optimum locations for silica sand extraction. This may help minimise land take when compared to extraction from a sub optimum location (which may require more land take). Positive effects would occur when minerals are extracted, which may be some years in the future. However, as there is the potential for minerals to be sterilised by development adjacent but not inside the area of minerals resource (e.g. by land ownership boundaries or the creation of nearby receptors for issues like noise)[13], positive effects are less than option 1. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
6.	0 ?	0 ?	+ ?	✓			✓	As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered. However, as the Blubberhouses site corresponds with habitats / soils that are likely to be acting as a significant carbon store, displacement may have some beneficial effects if it displaces development to areas with lower soil / habitat carbon. This effect will be less than for option 1.
7.	0	0	0	✓			✓	Relatively little of either of the safeguarding areas is prone to surface water or river flooding – leaving plenty of space for what is, in any case, 'less vulnerable' development. Other than this issue this option has no clear link with climate adaptation.

[13] See for example Wrighton, CE, McEvoy, FM and Bust, R, 2011. Mineral Safeguarding in England: good practice advice. British Geological Survey Open Report, OR/11/046.

	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered, though the effect is less than for option 1.
8.	++ +	++ +	++ +	✓		✓		Safeguarding the known silica sand resources would enable the option of future extraction and thus strongly contribute to the safeguarding and wise use of minerals sub objective. This would be a lesser contribution than option 1 however, as there may be the potential for limited sterilisation from development outside the boundary of the resource.
9.	0	0	0					As safeguarding does not infer any silica sand development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.
10.	0 ?	0 ?	0 ?					As safeguarding does not infer any silica sand development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
11.	0 ?	0 ?	0 ?					As safeguarding does not infer any silica sand development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
12.	+	+	+	✓		✓		Safeguarding silica sand will keep open the future option of extraction as this option will prevent sterilisation of the resource. This potentially retains a future economic opportunity. The positive effects recorded under this option are at a lesser level than option 1 as there is the potential that some of the resource could be sterilised without a buffer zone.
13.	0 ?	0 ?	0 ?					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
14.	0	0	0					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.

	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
15.	0	0	0					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
16.	0	0	0					There is no predicted effect from this option. Relatively little of either of the safeguarding areas is prone to surface water or river flooding Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
17.	0	0	0					There is no clear link between this option and the changing population SA objective.

Option 3 This option would only safeguard silica sand resources outside AONB and international nature conservation designations as working in these areas are less likely to be acceptable in principle.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	+	+	+	✓			✓	As safeguarding does not infer any minerals development will take place there is no predicted effect. Were minerals development to take place it would need to accord with other policies in the plan. As no land is safeguarded in international conservation areas this would signal that development in these

	?	?	?					areas is less acceptable, which would have a positive effect. Uncertainty relating to the stringency of any safeguarding policy and its possible displacement effects is theoretically possible, for similar reasons to the preceeding 2 options, though the number of possible developments affected by this would be very low
2.	0	0	0	✓	✓		✓	As safeguarding does not infer any minerals development will take place there is no predicted effect. Were minerals development to take place it would need to accord with other policies in the plan. Uncertainty relating to the stringency of any safeguarding policy and its possible displacement effects is theoretically possible, for similar reasons to the preceeding 2 options, though the number of possible developments affected by this would be very low
	?	?	?					
3.	0	0	0					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were minerals development to take place it would need to accord with other policies in the plan. Uncertainty relating to the stringency of any safeguarding policy and its possible displacement effects is theoretically possible, for similar reasons to the preceeding 2 options, though the number of possible developments affected by this would be very low
	?	?	?					
4.	0	0	0					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were minerals development to take place it would need to accord with other policies in the plan. Air quality effects of potentially displaced development are predicted to be so low as to be insignificant.
5.	0	+	?	✓		✓		Safeguarding keeps open option of developing the optimum locations for silica sand extraction. This may help minimise land take when compared to extraction from a sub optimum location (which may require more land take). However, this option effectively excludes a large part of the resource in the Nidderdale AONB (which may or may not in the longer term lead to the consideration of less optimal sites) Uncertainty relating to the stringency of any safeguarding policy and its possible displacement effects is theoretically possible, for similar reasons to the preceeding 2 options, though the number of possible developments affected by this would be very low
	?	?						
6.	0	+	+	✓		✓	✓	As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.

	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered. However avoidance of the resource in the Nidderdale AONB may lead to the avoidance of loss of soil carbon from quarrying operations with minor beneficial effects[14].
7.	0	0	0	✓			✓	Relatively little of the Burythorpe safeguarding area is prone to surface water or river flooding – leaving plenty of space for what is, in any case, 'less vulnerable' development. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered. As less land is safeguarded, this effect will be less than for option 1.
	?	?	?					
8.	+	+	+	✓		✓	✓	Safeguarding the known silica sand resources outside of the AONB would enable the option of future extraction and thus contribute to the safeguarding and wise use of minerals sub objective. This would be a lesser contribution than option 1 and 2 however, as there may be the potential for limited sterilisation from development outside the boundary of the resource (it is not known if a buffer would be applied), and it is possible, though less likely, that development within the AONB might sterilise that resource, particularly if future planning guidance on development in protected landscapes changes. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known.
	?	?	?					
9.	0	0	0					As safeguarding does not infer any silica sand development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.
10.	0	0	0					As safeguarding does not infer any silica sand development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.

[14] It is difficult to estimate the carbon likely to be lost by any development in these areas, which could be highly dependent on local factors. However, although dependent on a range of variables, particularly depth of soils, condition and height of vegetation, upland heathland, which is present alongside other habitats in the Blubberhouses area, contains an average of 88 tonnes of carbon per hectare in the soil and 2 tonnes per hectare in vegetation (national average). This contrasts with arable and horticultural land which contain and average of 43 tonnes per hectare in soils and 1 tonne per hectare in vegetation. To put this in context the per capita emissions in Yorkshire and the Humber are 8.2 tonnes of CO2. So effects for this option can only be considered at the lower end of minor (assuming development happens). (carbon storage data from Natural England, 2012 Natural England Research Report NERR043: Carbon storage by habitat: review of the evidence of the impacts of management decisions and condition of carbon stores and sources [URL: http://publications.naturalengland.org.uk/publication/1412347)

	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered. As less land is safeguarded, this effect will be less than for option 1.
11.	0	0	0					As safeguarding does not infer any silica sand development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered. As less land is safeguarded, this effect will be less than for option 1.
	?	?	?					
12.	+	+	+	✓		✓		Safeguarding silica sand will keep open the future option of extraction as this option will prevent sterilisation of the resource at Burythorpe. This potentially retains a future economic opportunity. The positive effects recorded under this option are at a lesser level than option 1 and 2 as there remains uncertainty that a buffer zone will be applied (there is the potential that some of the resource could be sterilised without a buffer zone) and the resource in the Nidderdale AONB may be sterilised, particularly if future planning policy changes.
	?	?	?					
13.	0	0	0					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered. As less land is safeguarded, this effect will be less than for option 1.
	?	?	?					
14.	0	0	0					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered. If sterilising activity occurs at Blubberhouses, it is not known whether the sterilising activity or the quarry itself would have greater impact on the special qualities of the AONB.
	?	?	?					
15.	0	0	0					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered. As less land is safeguarded, this effect will be less than for option 1.
	?	?	?					
16.	0	0	0					There is no predicted effect from this option. Relatively little of the Burythorpe safeguarding areas is prone to

								surface water or river flooding Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered. As less land is safeguarded, this effect will be less than for option 1.
	?	?	?					
17.	0	0	0					There is no clear link between this option and the changing population SA objective.

Option 4 This option could operate in parallel with other options and would safeguard any additional resources of silica sand (not identified in current minerals resource evidence) proposed in site allocations and preferred areas, where supported by adequate resource information.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were minerals development to take place it would need to accord with other policies in the plan. As with option 1 there is some potential for uncertainty as the stringency of any eventual safeguarding policy is not known so it is not known whether it would displace any development to sensitive areas.
	?	?	?					
2.	0	0	0					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were minerals development to take place it would need to accord with other policies in the plan. As with option 1 there is some potential for uncertainty as the stringency of any eventual safeguarding policy is not known so it is not known whether it would displace any development to sensitive areas.
	?	?	?					

3.	0 ?	0 ?	0 ?					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were minerals development to take place it would need to accord with other policies in the plan. As with option 1 there is some potential for uncertainty as the stringency of any eventual safeguarding policy is not known so it is not known whether it would displace any development (leading to lesser or greater transport effects).
4.	0	0	0 ?					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were minerals development to take place it would need to accord with other policies in the plan. Air quality effects of potentially displaced development are predicted to be insignificant (unless buffers are applied as in option 1), hence the uncertainty noted in the long term.
5.	0 ?	?	+ ?	✓		✓		Safeguarding keeps open option of developing the optimum locations for silica sand extraction. This may help minimise land take when compared to extraction from a sub optimum location (which may require more land take). In combination with other options positive effects would occur when minerals are extracted, which may be some years in the future. However, as there is the potential for minerals to be sterilised by development adjacent but not inside the area of minerals resource (as it is unclear whether buffers would be applied under this and some other options) this adds greater uncertainty to this assessment. Some uncertainty is also noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
6.	0 ?	+ ?	+ ?	✓			✓	As safeguarding does not infer any minerals development will take place there is no predicted effect. Were minerals development to take place it would need to accord with other policies in the plan. Some uncertainty is also noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered. However, for the same reasons as other options, there are considered to be uncertain positive effects associate with displacing some types of other development away from this area of high carbon soils, or avoiding it altogether (as in option 3).
7.	0	0	0					Relatively little of either of the safeguarding areas is prone to surface water or river flooding – leaving plenty of space for what is, in any case, 'less vulnerable' development. Other than this issue this option has no clear link with climate adaptation.

	?	?	?				It is not known whether additional resource areas would be any more vulnerable to the effects of climate change. However, uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
8.	++	++	++				Safeguarding the known silica sand resources and additional resources would enable the option of future extraction and thus strongly contribute to the safeguarding and wise use of minerals sub objective. There may, however, be some potential for limited sterilisation from development outside the boundary of the resource as it is not clear if a buffer would be applied with this option, and the magnitude of effect is also partly dependent on the other options this option acts in combination with.
	?	?	?				
9.	0	0	0				As safeguarding does not infer any silica sand development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.
10.	0	0	0				As safeguarding does not infer any silica sand development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?				
11.	0	0	0				As safeguarding does not infer any silica sand development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?				
12.	+	+	+	✓		✓	✓ Safeguarding silica sand will keep open the future option of extraction as this option will prevent sterilisation of the resource. This potentially retains a future economic opportunity. There remains uncertainty that a buffer zone will be applied (there is the potential that some of the resource could be sterilised without a buffer zone) or whether, in combination with option 3, sites in protected landscpes would be excluded.
	?	?	?				
13.	0	0	0				As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?				

14.	0	0	0					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
15.	0	0	0					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
16.	0	0	0					There is no predicted effect from this option. Relatively little of either of the known safeguarding areas (and buffers) is prone to surface water or river flooding. It is not known whether other sites would be more or less vulnerable. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
17.	0	0	0					There is no clear link between this option and the changing population SA objective.

Summary of assessment

As safeguarding does not infer any silica sand development will take place there is generally no predicted direct effect. Were development to take place it would need to accord with other policies in the plan.

Safeguarding contributes positively, however, to the SA objective 'to minimise the use of resources and encourage their re-use and safeguarding'. In a number of other ways positive indirect effects are noted for all options, though these vary in significance according to factors such as whether or not a buffer is used and whether sites are allowed within protected landscapes or international sites.

Under each option, effects from displacement of development which would have taken place are uncertain as this will depend upon the stringency of any policy approach applied.

Recommendations

While sustainability benefits are possible for all options there is a good deal of uncertainty associated with all options, which can only be resolved when a detailed development management policy is put forward. However, on the basis of the information currently available options 1 and 4 perform most strongly in sustainability terms.

Continuity of Supply of Clay (id17)

Option 1

This option would support the principle for the continued production at the Alne and Hemingbrough sites and seek to make specific provision, through allocation, of sites or preferred areas, for the working of further reserves of clay as extensions to Hemingbrough and Alne clay pits, in order to provide a 25 year land-bank at each of these sites. It could also seek to identify resources at Escrick as being suitable in principle to meet longer term requirements for clay to serve Plasmor Brick Works. Alternatively, where suitable specific sites or areas could not be identified, this option would seek to identify Areas of Search for clay sites in proximity to existing locations where clay is utilised (at Alne brick works and Great Heck).

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	? -	? -	? -	✓		✓		The baseline shows that existing sites within option 1 do not significantly overlap with areas designated for nature conservation. However, the most significant impact may be in relation to SINC sites in relation to extensions at Hemingbrough or resources at Escrick which expand across Selby and York districts. Identifying areas of search for minerals would need to consider effects on biodiversity and geodiversity. Effects overall could be minor to significant depending on the location and scale of any additional clay works. Uncertainty is noted as the stringency of criteria to identify a 'suitable site' or 'preferred location' is not specified.
2.	0	0	0					It is not considered supporting the allocation of sites would have a detrimental impact on water. However, these areas are within nitrate vulnerable zones and would need to ensure that their identification would not conflict with the effective management of water supply/demand or quality. Effects would be dependent on the scale of additional development. Uncertainty is noted as the stringency of criteria to identify a 'suitable site' or 'preferred location' is not specified.
3.	+	+	+	✓		✓		Allowing extensions to existing extraction location and in areas adjacent to areas which would process the clay, such as brick works, should help to reduce the number of additional trips The baseline states that a large majority of the clay extracted is manufactured within North Yorkshire with small export amounts. This option In principle would continue to support this and also minimise potential import of clay in the future.
4.	0	0	0					There is no clear link between this policy and the objective for air quality.

5.	-	-	-	✓		✓		Areas of high quality agricultural land and clay deposits overlap and therefore could be effected through additional land identified for extraction. However, this option is likely to result in different effects on this objective overall because identifying known areas adjacent to existing sites may exacerbate any localised effects and because of the uncertain nature of identifying areas of search (which keeps open options of developing deposits within the area identified). Both would be dependent upon the scale and specific location of extraction. Overall the effects are considered to be minor negative as well as uncertain.
	?	?	?					
6.	+	+	+					Because there are positive effects on transport there are positive effects on climate change.
7.	0	0	0					There is no clear link between the policy and the objective to adapt to climate change.
8.	+	+	+	✓		✓		This option would ensure that areas of search to identify areas for preferred clay working or areas of search were identified. This would be in areas with known deposits in proximity to existing works or close to the manufacturing associated with clay. Whilst some resources would be saved through co-location with existing sites and manufacturing site, this is still and extractive process, increasing the supply of which does little to promote a circular economy in clay production. This is considered to have positive and negative effects.
	-	-	-					
9.	0	0	0					There is no clear link between the policy and objective to effective management of waste.
10.	+	+	+	✓		✓		Extraction of clay can be used to make locally sourced bricks which are often distinctive and add to the cultural heritage of an area. Identifying additional extraction in locations adjacent to existing sites at Hemingbrough and Alne is unlikely to have significant additional effects over and above the current baseline. However, identifying capacity at Escrick may have implications on local heritage assets and the existing conservation area; as well as, depending on where a pit would be, an impact on the historic character and setting of York, particularly if identified within the greenbelt. Identification of 'areas of search' should also consider effects in relation to heritage assets and their setting. Effects overall could be minor to significant depending on the location and scale of any additional clay works and currently there is uncertainty as the stringency of criteria to identify a 'suitable site' or 'preferred location' is not specified. The impacts overall however are considered to have both minor positive (in relation to existing locations and cultural heritage) and uncertain effects.
	?	?	?					
11.	-	-	-	✓		✓		Clay extraction can have adverse impacts on the landscape. Identifying additional extraction at known locations is likely to minimise significant additional adverse effects although this will depend upon their specific location and scale and the cumulative impacts of increased extraction. Identifying capacity at Escrick may also have implications on the landscape setting of York, depending on whereabouts a pit would be, particularly if identified within the draft greenbelt.
	?	?	?					
12.	+	+	+	✓		✓		This option would help to support the economy by directly ensuring that extraction at existing clay pits can

								continue for the next 25 years. It would also support additional locations which process / manufacture the clay for bricks. This option would however maybe restrict other areas for clay extraction if they are not attributed to a preferable area but which has potential for extraction as it assumes that the existing locations would be optimal. On balance, the net effects on the economy are still likely to be positive for the duration of the plan.
13.	+	+	+	✓		✓		This option is likely to be positive in supporting the local economy and functionality of existing clay extraction sites. The baseline also acknowledges that the bricks made in North Yorkshire serve local building demand and therefore is directly contributes to the sub-objective for locally sourced materials.
14.	?	?	?	✓		✓		There may be impacts on recreation and leisure in locations specifically identified within the option (particularly in connection with identifying locations around Escrick and as a result of any areas of search). This is location specific and therefore the effects are uncertain.
15.	? -	? -	? -	✓		✓		Safety concerns would need to be assessed commensurate to the scale and commencement of additional extraction. Additional extraction may also increase noise and traffic, which may have adverse effects for local communities. The scale of this would be dependent on the specific location and scale of additional workings.
16.	? -	? -	? +	✓		✓	✓	Areas identified in this option overlap with areas which are vulnerable to flooding. Identification of areas of search or locations near Escrick would also have to consider where viable mining can take place which is not susceptible to fluvial or pluvial flooding. Effects overall could be minor to significant depending on the location and scale of any additional clay works and currently there is uncertainty as the stringency of criteria to identify a 'suitable site' or 'preferred location' is not specified. In the long term these sites may, through restoration, create a resource for flood storage.
17.	+	+	+	✓		✓		The baseline also acknowledges that the bricks made in North Yorkshire serve local building demand and therefore is directly contributes to the sub-objective for shortened supply chains and meeting local need, as well as contributing to ensuring sufficient supplies of minerals more generally.

Option 2
This option would support the principle of development of new reserves of clay (ether as extensions to existing sites or as new 'greenfield' sites) where there is demonstrable need to release further serves in order to maintain continuity of supply to existing or any new manufacturing facilities in the Plan area.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	? -	? -	? -	✓	✓	✓	✓	The baseline shows that there are some overlaps between areas that have identified clay deposits and areas designated for nature conservation. This option does not specify that in demonstrating the need to release sites, environmental aspects will be considered specifically. Presumably it would rely on other polices set out within the plan to understand this issue. Effects overall could be minor to major depending on the location and scale of any clay works. Effects are likely to be less where they are extensions to existing sites. Overall, the effects are considered uncertain to minor negative.
2.	? -	? -	? -	✓		✓	✓	The baseline shows that there are some overlaps between areas that have identified clay deposits and areas that are within nitrate vulnerable zones/ source protection zones. Any extraction would need to ensure that their identification would not conflict with the effective management of water supply/demand or quality and would rely on other policies in the plan to ensure this. Effects overall could be minor to major depending on the location and scale of any clay works. Effects are likely to be less where they are extensions to existing sites. Overall, the effects are considered uncertain to minor negative.
3.	+	+	+	✓		✓		Where proposals are for extensions to existing extraction sites, the effects are likely to be similar to option 1 which would be a continuation of current transportation methods and minimising transport mileage between manufacturing and extraction. The current baseline states that a large majority of the clay extracted is manufactured within North Yorkshire with only small export amounts going elsewhere. This option is therefore

	?	?	?					likely to reinforce shorter links between extraction and processing, although would continue to be reliant on road transportation. Any effects resulting from new locations would be location specific and depend upon the scale of extraction and associated transportation requirements.
4.	? -	? -	? -	✓	✓	✓	✓	There may be implications for air quality subject to the distance needed to travel between new sites /existing extraction sites and new manufacturing plants. Effects overall could be minor to major depending on the location and scale of any clay works. Effects are likely to be less where they are extensions to existing sites. Overall, the effects are considered uncertain to minor negative.
5.	? -	? -	? -	✓		✓		Areas of high quality agricultural land and clay deposits overlap and therefore could be effected through land identified for extraction. However, this option is likely to result in different effects on this objective overall between known areas adjacent to existing sites which may exacerbate any localised effects and the uncertain nature of other sites being identified through the plan period. Where these are greenfield, it would have more significant effects on land take commensurate to the scale of development. Both would be dependent upon the scale and specific location of extraction. Overall the effects are considered to be minor negative as well as uncertain.
6.	?	?	?					Due to the potential for this option to either reduce or possibly increase traffic (see objective 3) the assessment is uncertain.
7.	0	0	0					There is no clear link between the policy and the objective to adapt to climate change.
8.	-	-	-	✓		✓		Extracting clay is diminishing a finite resource and does little to create a circular economy for building materials. There may be some benefits from extending existing sites (reduced overburden, access etc.) but the net effect is negative.
9.	0	0	0					There is no clear link between the policy and objective to effective management of waste.
10.	?	?	?	✓		✓		Extraction of clay can be used to make locally sourced bricks which are often distinctive and add to the cultural heritage of an area. Similarly to option 1, identifying additional extraction in locations adjacent to existing sites is unlikely to have significant additional effects over and above the current baseline. Given that this policy would be more flexible in considering locations for clay extraction, any new sites/areas for extraction would need to be in line with other policies set out in the plan including those relating to heritage assets. The area identified for clay covers the City of York which may be more significantly affected by any proposed extraction. Here in particular, effects overall could be minor to major depending on the specific location and scale of any additional clay works. There is more uncertainty in comparison to option 1 as locations in this option could be considered away from current working or manufacturing sites.

11.	-	-	-	✓		✓		Clay extraction can have adverse impacts on the landscape. Identifying additional extraction at known locations is likely to minimise significant additional adverse effects though this will depend upon their specific location and scale and the cumulative impacts of increasing clay works. Given that this policy would be more flexible in considering locations for clay extraction any new sites/areas for extraction would need to be in line with other policies set out in the plan to take consideration for and minimise effects on the landscape. The area identified for clay covers the City of York which may more significant effected through any proposed mines. Similarly, there are deposits within protected landscapes which, if extracted, could cause significant harm to their landscape value. However, effects overall could be minor to major depending on the specific location and scale of any additional clay works. There is more uncertainty in comparison to option 1 as locations in this option could be considered away from current working or manufacturing sites. On balance, the overall effects of this option are likely to be more negative in comparison to the option 1.
12.	+	+ +	+ +	✓		✓		This option would help to support the economy by directly ensuring that extraction at existing clay pits can continue in locations which are most viable for their extraction rather that restricting their locations. It would also support locations which process / manufacture the clay into bricks. In comparison to option 1, this is also likely to allow development for longer than the plan period given that the wider clay resource could be drawn upon. On balance, the net effects on the economy are still likely to be significantly positive for the duration of the plan, particularly in the long term.
13.	+	+	+	✓		✓		This option is likely to be positive in supporting the local economy and functionality of existing clay sites. The baseline also acknowledges that the bricks made in North Yorkshire serve local building demand and therefore is directly contributes to the sub-objective for locally sourced materials.
14.	?	?	?	✓		✓		There may be impacts on recreation and leisure in locations specifically identified within the option in connection with any new proposals. This is location specific and therefore the effects are uncertain but would presumably be determined though assessment against other policies within the plan.
15.	?	?	?	✓		✓		Safety concerns would need to be assessed commensurate to the scale and commencement of additional extraction. Additional extraction and/or new sites may also increase noise and disturbance, which may have adverse effects for local communities. The scale of this would be dependent on the specific location and scale of additional workings.
16.	?	?	?	✓				Areas identified in this option overlap with areas which are vulnerable to flooding. Prior to any extraction at identified locations within this option, further understanding of the effects of increasing mining should be

	-	-	+					understood. Identification of suitable new sites in particular would have to consider where viable extraction can take place (i.e. where it does not negatively impact upon and /or is not susceptible to fluvial or pluvial flooding). Effects overall could be minor to major depending on the location and scale of any additional clay works and currently there is uncertainty as the stringency of criteria to identify a 'suitable site' or 'preferred location' is not specified. In the long term these sites may, through restoration, create a resource for flood storage.
17.	+	+	+	✓		✓		The baseline also acknowledges that the bricks made in North Yorkshire serve local building demand and therefore is directly contributes to the sub-objective for shortened supply chains and meeting local need.

Option 3

In addition, this option could support the principle of development of new sources of clay for other uses (i.e. uses which are not directly related to supporting existing or new manufacturing facilities in the Plan area) where it can be demonstrated that there is a need for the mineral and the requirement could not reasonably be met by secondary or recycled materials.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?	✓		✓		Similarly to option 2, the baseline shows that there are some overlaps between areas that have identified clay deposits and areas designated for nature conservation. Identifying areas of search for minerals would need to consider effects on biodiversity and geodiversity and this option does not specify that in demonstrating the need to release sites, environmental aspects will be considered specifically. They would however, be subject to other polices set out within the plan. Effects overall could be minor to major depending on the location and scale of any clay works. Effects are likely to be less where they are extensions to existing sites. Overall, the effects are considered to be greater than option 2 but still uncertain with potentially minor negative effects.
	-	-	-					
2.	?	?	?					Similarly to option 2, the baseline shows that there are some overlaps between areas that have identified clay deposits and areas that are within nitrate vulnerable zones / source protection zones. Any extraction would

								need to ensure that their identification would not conflict with the effective management of water supply/demand or quality. Effects would be dependent on the location and scale of additional development and the effects are therefore considered uncertain.
3.	-	-	-	✓		✓		Where proposals are for extensions to existing extraction sites, the effects are likely to be similar to option 2. However, the identification of sites for other uses may lead to more exportation of clay from the plan area given that the majority of the extraction is linked to local manufacturing and industrial uses. Transportation is likely to be by road indicating that cross-boundary effects may be experienced. The effects on transport are therefore considered uncertain to minor negative as additional extraction effects would depend upon the scale of extraction and associated transportation requirements.
	?	?	?					
4.	?	?	?					There may be implications for air quality subject to the distance needed to travel between sites, manufacturing plants and the minerals/products destination. Given that the majority of extraction is connected to manufacturing in the area, this is likely to be transported by road indicating that cross-boundary effects may be experienced in relation to air quality. Effects will be commensurate to the location and destination of any extraction and they are therefore uncertain to negative.
	-	-	-					
5.	-	-	-	✓		✓		Areas of high quality agricultural land and clay deposits overlap and therefore could be effected through land identified for extraction and clay extraction. Additional extraction of clay for other uses than manufacturing of building materials, may incur cumulative impacts on land take depending on where the resource is taken from. Effects overall could be minor to major depending on the location and scale of any clay works. Overall the effects are considered to be minor negative as well as uncertain.
	?	?	?					
6.	0	0	0	✓		✓		Because of the potential for traffic generated to increase there are negative effects on climate change.
7.	0	0	0					There is no clear link between the policy and the objective to adapt to climate change.
8.	-	-	-	✓		✓		Extracting clay is diminishing a finite resource and does little to create a circular economy for building materials. The requirement to demonstrate that no alternative secondary / recycled will moderate this in relation to the 'other uses' cited.
9.	0	0	0					There is no clear link between the option and objective to effective management of waste.
10.	?	?	?	✓		✓		Similarly to option 2, this policy would be flexible in considering the type of uses for clay and any new sites/areas for extraction would need to be in line with other policies set out in the plan to take consideration for and minimise effects on heritage assets. The area identified for clay covers the City of York which may be more significantly affected through any proposed clay works. However, effects overall could be minor to major depending on the specific location and scale of any clay works. There is more uncertainty in comparison to option 1 as locations in this option could be considered away from current working or manufacturing sites.

11.	-	-	-	✓		✓		Clay extraction can have adverse impacts on the landscape. Identifying additional extraction for other uses presents uncertainties similar to option 2. Effects overall could be minor to major depending on the specific location and scale of any additional clay works in combination with works associated with existing extraction or new facilities.
	?	?	?					
12.	+	+	+	✓		✓		This option would help to support the economy by allowing clay extraction for other purposes where it can be demonstrated that it is required.
13.	?	?	?	✓		✓		The effects are considered uncertain as it relies on understanding the other uses the clay would be used for.
14.	?	?	?	✓		✓		There may be impacts on recreation and leisure in in connection with any new proposals. This is location specific and therefore the effects are uncertain but would presumably be determined though assessment against other policies within the plan.
15.	?	?	?	✓		✓		Safety concerns would need to be assessed commensurate to the scale and commencement of additional extraction. Additional extraction and/or new sites may also increase noise, disturbance and traffic, which may have adverse effects for local communities. The scale of this would be dependent on the specific location and scale of additional workings.
16.	?	?	?	✓				Areas identified in this option overlap with areas which are vulnerable to flooding. Prior to any extraction at identified locations within this option, further understanding of the effects of increasing mining should be understood. Identification of suitable new sites in particular would have to consider where viable extraction can take place where it does not negatively impact upon and /or is not susceptible to fluvial or pluvial flooding. Effects overall could be minor to significant depending on the location and scale of any additional clay works. In the long term these sites may, through restoration, create a resource for flood storage.
	-	-	+					
17.	?	?	?	✓		✓		The effects are considered uncertain as it relies on understanding the other uses the clay would be used for.

Proposed alternative option 4: (Or) This option would support the development of clay extraction sites adjacent to former sites where the restoration of the site would contribute to improving habitat connectivity

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	+ +	✓	✓	✓	✓	This option could increase habitat connectivity when the time comes for the site to be restored. However, in the short and medium term the effects are uncertain, as it is not known whether the act of extraction would temporarily disrupt the connectivity of habitats, whether restoration would be phased, and whether restoration would be aimed at the former site and the new site, or just the new site. The extent of positive impacts would depend to a degree on the method of defining habitat connectivity. There are several ecological networks defined in the plan area for different purposes, and connectivity can also be an issue outside of formally defined ecological networks (for instance some species such as amphibians may be located in isolated patches which are increasingly vulnerable to external land management issues).
2.	0 ?	0 ?	+	✓		✓		In the long term (and earlier if restoration is phased and takes place in the former site as well as the new site) new wetlands could be created at clay extraction sites.
3.	0	0	0					No link between this option and this objective was noted.
4.	0	0	0					No link between this option and this objective was noted.
5.	0	0	0					No link between this option and this objective was noted.
6.	0	0	0					No link between this option and this objective was noted.
7.	0 ?	0 ?	+ +	✓	✓	✓	✓	This option could provide water storage in the long term and could also increase ecological connectivity (which is an important part of the response to climate change as it makes species more able to cope with the stresses that climate change can subject to ecosystems to). However, in the short and medium term the effects are uncertain, as it is not known whether the act of extraction would temporarily disrupt the connectivity of habitats, whether restoration would be phased, and whether restoration would be aimed at the former site and the new site, or just the new site.
8.	0	0	0					No link between this option and this objective was noted.
9.	0	0	0					No link between this option and this objective was noted.
10.	?	?	?					It is uncertain whether this option would have an impact on the historic environment as this depends on the location of sites that are developed.
11.	?	?	?					It is uncertain whether this option would have an impact on the landscape as this depends on the location of sites that are developed.

12.	0	0	0					No link between this option and this objective was noted.
13.	0	0	0					No link between this option and this objective was noted.
14.	0	0	+	✓		✓	✓	In the longer term this will result in the creation of new habitats, and would, through increasing habitat connectivity, work to enhance the species composition of habitats at a wider scale. This will, for many people, both directly and indirectly lead to more fulfilling recreational experience in the countryside.
15.	0	0	+	✓		✓	✓	Access to the enhanced habitats described in the objective above would increase the opportunities for access to the natural environment, which has strong links to improving wellbeing[15].
16.	0	0	0					No clear link
17.	0	0	0					No link between this option and this objective was noted.

[15] See for example Newton, D, 2007. Wellbeing and the Natural Environment: a brief overview of the evidence, Defra, London [URL: *archive.defra.gov.uk/.../Wellbeing_and_the_Natural_Environment_Report. D]; Natural England, 2009, Our Natural Health Service: the role of the natural environment in maintaining healthy lives [URL:* http://publications.naturalengland.org.uk/publication/31045?category=127020 *]*

Summary of assessment
Options 1 to 3 are likely to have uncertain or negative environmental impacts in relation to biodiversity, land take and landscape, given the nature of clay working. However, option 1 is likely to have fewer significant impacts by predominantly locating additional capacity near to existing extraction or processing locations thus reducing transport implications (minimising the number and length of trips) as well as impacts on new locations elsewhere. Although it is characterised by a number of uncertainties, option 2 offers more flexibility to maximise the use of clay in other locations where it could be viable and help to maximise economic benefits from extraction.

Option 3, when considered alongside the other options, would support the wider economy given that the extraction of clay would be for a broader range of uses not necessarily associated with current manufacturing facilities. However, adverse effects in relation to exportation and transportation outside of the plan area as well as cumulative negative environmental impacts as result of further extraction are identified. These are, however moderated by the support the option offers for secondary and recycled uses.

Option 4 offers the opportunity to support longer term restoration benefits for biodiversity, water, climate adaptation, recreation and wellbeing. However, most other impacts are uncertain as they would be dependent on location.

Recommendations
Assuming that any proposals would also be subject to alternative policies within the plan, it is considered that option 1 in relation to supporting existing production should be pursued. The long term restoration benefits of option 4 could also be captured by incorporating it into other policies, particularly option 1.

Incidental Working of Clay in Association with Other Minerals (id18)

Option 1
This option would support the incidental working of clay in association with production of other minerals, where the incidental extraction of clay would help secure the most sustainable use of resources and would not prejudice the overall environmental or amenity impacts of the primary working or the subsequent reclamation of the site.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0	✓		✓		This option would only support incidental clay extraction where overall environmental impacts are not prejudiced, which should include consideration for biodiversity. Some uncertainty is noted as the stringency in relation to environmental impacts resulting from the primary working is unknown. Therefore the effects from this are considered neutral as well as uncertain.
	?	?	?					
2.	0	0	0	✓		✓	✓	This option would only support incidental clay extraction where overall environmental impacts are not prejudiced, which should include consideration for water. Some uncertainty is noted as the stringency in relation to environmental impacts resulting from the primary working is unknown. Therefore the effects from this are considered neutral as well as uncertain.
	?	?	?					
3.	-	-	-	✓		✓		Whilst this option would only support incidental clay extraction where overall environmental and amenity impacts are not prejudice, there may be potential implications on transport. This would be in relation to additional trips generated by working with clay. The effects would be commensurate to scale of clay resources gained. This is considered to be a minor negative with some uncertainty attached to not knowing the volume of clay to be worked/generated through alternative mineral processing.
	?	?	?					
4.	0	0	0	✓		✓		This option would only support incidental clay extraction where overall environmental impacts are not prejudiced, which should include consideration for air quality. Some uncertainty is noted as the stringency in relation to environmental impacts resulting from the primary working is unknown. Also, there may be some impacts from increased trips from a site in relation to road transportation of the clay, which may affect air quality. Therefore the effects from this are considered neutral as well as uncertain.
	?	?	?					

5.	+	+	+	✓		✓		This would not take any more land in terms of extraction but may incur land take for processing. Positively, it would maximise the productivity of the land already in use and help to minimise additional land take elsewhere for primary extraction. In addition, depending on the type of processing, there may be impacts to consider from contamination. This is considered to have net positive effects.
6.	0 ?	0 ?	0 ?	✓		✓		This option would only support incidental clay extraction where overall environmental impacts are not prejudiced, which should include consideration for climate change. Some uncertainty is noted as the stringency in relation to environmental impacts resulting from the primary working is unknown. Also, there may be some impacts from increased trips from a site in relation to road transportation of the clay, which may incur emission and add to the causes of climate change. Therefore the effects from this are considered neutral as well as uncertain.
7.	0	0	0					There is no clear link between this objective and adapting to climate change.
8.	+ +	+ +	+ +	✓		✓		This would maximise the use of resources through supporting the extraction of clay through other mineral workings. This would support the objective by reducing the need for primary extraction as well as using minerals resources wisely.
9.	+ +	+ +	+ +	✓	✓	✓		This would minimise waste of minerals by processing the by-products from other mineral extraction into useful resources.
10.	0 ?	0 ?	0 ?	✓				This option would only support incidental clay extraction where overall environmental impacts are not prejudiced, which should include consideration for heritage assets. Some uncertainty is noted as the stringency in relation to environmental impacts resulting from the primary working is unknown. Any additional effects are likely to be in locations which re in close proximity to historic townscapes, such as York. Therefore the effects from this are considered neutral as well as uncertain.
11.	0 ?	0 ?	0 ?	✓		✓		This option would only support incidental clay extraction where overall environmental impacts are not prejudiced, which should include consideration for landscape and landscape designations. Some uncertainty is noted as the stringency in relation to environmental impacts resulting from the primary working is unknown. Any additional effects are likely to be in locations which are designated for their landscape value and have cumulative impacts on the value of the landscape. Therefore the effects from this are considered neutral as well as uncertain.
12.	+	+	+	✓	✓	✓	✓	This option is likely to have significantly positive economic effects given that it would maximise the productivity of a working mineral extraction location. This would enable the sites to feed into different markets and usefully use waste by-products of existing mineral extraction. This would not be suitable for all type of extraction however, and may incur additional costs to implement. On balance, this is likely to have positive effects.
13.	0 ?	0 ?	0 ?	✓				This option would only support incidental clay extraction where overall amenity is not prejudiced, which should include consideration for local communities. Some uncertainty is noted as the stringency in relation to understanding amenity impacts resulting from the primary working is unknown. Therefore the effects from this

								are considered neutral as well as uncertain.
14.	0 ?	0 ?	0 ?	✓		✓		This option would only support incidental clay extraction where overall amenity is not prejudiced, which should include consideration for local communities. Some uncertainty is noted as the stringency in relation to understanding amenity impacts resulting from the primary working is unknown. Therefore the effects from this are considered neutral as well as uncertain.
15.	0 ?	0 ?	0 ?	✓		✓		This option would only support incidental clay extraction where overall environmental impacts and amenity is not prejudiced, which should include consideration for health and well-being in relation to noise, lighting and contamination. Some uncertainty is noted as the stringency in relation to understanding environmental and amenity impacts resulting from the primary working is unknown. Therefore the effects from this are considered neutral as well as uncertain.
16.	0 ?	0 ?	0 ?	✓		✓		This option would only support incidental clay extraction where overall environmental impacts are not prejudiced, which should include consideration for flood risk. Some uncertainty is noted as the stringency in relation to environmental impacts resulting from the primary working is unknown. Therefore the effects from this are considered neutral as well as uncertain.
17.	+ +	+ +	+ +	✓		✓		There may be positive effects relating to helping to meet local demand for clays. This would be commensurate to the volume of clay produced.

Option 2
This option would not expressly support the incidental working of clay in association with production of other minerals.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0	0	0					Given that this option would not expressly support incidental clay extraction, the impacts are likely to be neutral. Where this is proposed, it would be subject to other policies within the plan.
2.	0	0	0					Given that this option would not expressly support incidental clay extraction, the impacts are likely to be

								neutral. Where this is proposed, it would be subject to other policies within the plan.
3.	0	0	0					Given that this option would not expressly support incidental clay extraction, the impacts are likely to be neutral. Where this is proposed, it would be subject to other policies within the plan.
4.	0	0	0					Given that this option would not expressly support incidental clay extraction, the impacts are likely to be neutral. Where this is proposed, it would be subject to other policies within the plan.
5.	0	0	0					Given that this option would not expressly support incidental clay extraction, the impacts are likely to be neutral. Where this is proposed, it would be subject to other policies within the plan.
6.	0	0	0					Given that this option would not expressly support incidental clay extraction, the impacts are likely to be neutral. Where this is proposed, it would be subject to other policies within the plan.
7.	0	0	0					Given that this option would not expressly support incidental clay extraction, the impacts are likely to be neutral. Where this is proposed, it would be subject to other policies within the plan.
8.	-	-	-	✓		✓		Whilst this would not impact on the primary mineral production, this option would not ensure that consideration to maximise the opportunity of extracting clay where it is a by-product from other extraction is undertaken, particularly where there are new extraction opportunities.
9.	-	-	-	✓		✓		Clay from other primary mineral extraction could be wasted as a result of this option. This would not maximise the opportunities to minimise waste from mineral extraction and therefore the impacts from this option suggest that there may be minor negatives in terms of waste.
10.	0	0	0					Given that this option would not expressly support incidental clay extraction, the impacts are likely to be neutral. Where this is proposed, it would be subject to other policies within the plan.
11.	0	0	0					Given that this option would not expressly support incidental clay extraction, the impacts are likely to be neutral. Where this is proposed, it would be subject to other policies within the plan.
12.	- ?	- ?	- ?	✓	✓	✓	✓	Whilst this would not impact on the primary mineral production, this option would not encourage maximising the opportunity of extracting clay where it is a by-product from other extraction is undertaken, particularly where there are new extraction opportunities and the processes can be aligned. The effects on the economy may be mixed as it could support other clay extraction methods elsewhere whilst also not maximising concurrent opportunities in association with production of other minerals. This approach would rely on the mineral industry to propose clay extraction which may have mixed effects also. Overall, there is some uncertainty as well as minor adverse effects anticipated.
13.	0	0	0					Given that this option would not expressly support incidental clay extraction, the impacts are likely to be neutral. Where this is proposed, it would be subject to other policies within the plan.
14.	0	0	0					Given that this option would not expressly support incidental clay extraction, the impacts are likely to be neutral. Where this is proposed, it would be subject to other policies within the plan.
15.	0	0	0					Given that this option would not expressly support incidental clay extraction, the impacts are likely to be

								neutral. Where this is proposed, it would be subject to other policies within the plan.
16.	0	0	0					Given that this option would not expressly support incidental clay extraction, the impacts are likely to be neutral. Where this is proposed, it would be subject to other policies within the plan.
17.	-	-	-					Given that this option would not expressly support incidental clay extraction, the impacts may be negative given that it would not directly support meeting the needs of communities or industry in the supply of materials. Where this is proposed, it would be subject to other policies within the plan.

Summary of assessment

The effects arising from Option 1 are predominantly neutral to uncertain. The option would support incidental clay extraction where overall sustainability and environmental / amenity impacts from the extraction of the primary mineral are not prejudiced. However, there is some uncertainty as to the scope of impacts that will be considered.

This option is likely to maximise opportunities for productivity from mineral extraction, minimising the generation of clay waste and providing positive benefits for the economy. In comparison to Option 1, Option 2 is likely to have predominantly neutral effects as it would be reliant on proposals coming forward to be assessed against other policies within the Plan. The impacts on the economy are considered to be mixed given that there is uncertainty in relation to missed opportunities and reliance on the market to determine incidental working of clay. Negative effects may be experienced in relation to effective management of site waste and the efficient use of resources.

Recommendation

It is considered that option 1 should be pursued.

Safeguarding Clay (id19)

Option 1.
This option could safeguard all known clay resources with a 250m buffer zone to ensure maximum protection of the resource from proximal sterilisation.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
	?	?	?					
2.	0	0	0	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
3.	0	0	0	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
4.	0	0	0	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
5.	0	+	+	✓		✓	✓	Safeguarding keeps open option of developing the optimum locations for clay extraction. This may help minimise land take when compared to extraction from a sub optimum location (which may require more land

	?	?	?					take). Positive effects would occur when minerals are extracted, which may be some years in the future. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
6.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
7.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
8.	++	++	++	✓		✓		Safeguarding clay resources would enable the option of future extraction and thus strongly contribute to the safeguarding and wise use of minerals sub objective.
9.	0	0	0					As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.
10.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
11.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
12.	+	++	++	✓		✓		Safeguarding clay will keep open the future option of extraction as this option will prevent sterilisation of the resource. This potentially retains a future economic opportunity.
13.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
14.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.

15.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
16.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
17.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.

Option 2
This option would safeguard all known clay resources without a buffer zone given the large geographical scale of the resource relative to the current and expected future extent of working.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	**Impact / timescale**			**Type of effect**				**Analysis**
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
2.	0	0	0	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted

	?	?	?					as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
3.	0	0	0	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
4.	0	0	0	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
5.	0	+	+	✓		✓	✓	Safeguarding keeps open option of developing the optimum locations for clay extraction. This may help minimise land take when compared to extraction from a sub optimum location (which may require more land take). Positive effects would occur when minerals are extracted, which may be some years in the future. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
6.	0	0	0	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
7.	0	0	0	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
8.	++	++	++	✓		✓		Safeguarding clay resources would enable the option of future extraction and thus strongly contribute to the safeguarding and wise use of minerals sub objective.
9.	0	0	0					As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.
10.	0	0	0	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					

11.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
12.	+	+ +	+ +	✓		✓		Safeguarding clay will keep open the future option of extraction as this option will prevent sterilisation of the resource. This potentially retains a future economic opportunity.
13.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
14.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
15.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
16.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
17.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.

Option 3
This option would only safeguard clay resources outside urban areas, National Park and AONB designations as working in these areas are less likely to be proposed or acceptable.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
	?	?	?					
2.	0	0	0	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
3.	0	0	0	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
4.	0	0	0	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
5.	0	+	+	✓		✓	✓	Safeguarding keeps open option of developing the optimum locations for clay extraction. This may help minimise land take when compared to extraction from a sub optimum location (which may require more land take). Positive effects would occur when minerals are extracted, which may be some years in the future. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					

6.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
7.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
8.	++	++	++	✓		✓		Safeguarding clay resources would enable the option of future extraction and thus strongly contribute to the safeguarding and wise use of minerals sub objective.
9.	0	0	0					As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.
10.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. This policy approach is likely to have more neutral effects on heritage assets and the historic environment, particularly around York, given that no development would be allowed within the urban area in close proximity to heritage assets. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
11.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Given that this option would not allow development in the National Park or AONB, this would have a neutral effect on these landscape designations. It may also have a neutral effect on the landscape setting of York given that it would preclude development in the urban area. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
12.	+	++	++	✓		✓		Safeguarding clay will keep open the future option of extraction as this option will prevent sterilisation of the resource. This potentially retains a future economic opportunity. Not allowing development in the National Park or AONB is not anticipated to significantly affect economic opportunity given that the main deposits are located outside of these areas. Extraction has taken place close to York previously but given the scale of the resource, not allowing urban extraction is not likely to significantly impact but may have positive benefit for York's wider economy through less impact on tourism.
13.	0	0	0	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted

	?	?	?					as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
14.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Not allowing development in the National Park or AONB is likely to have neutral effects on recreation given that it would not cause harm to enjoying the landscape designations, particularly in the future when new proposals may come forward. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
15.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
16.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
17.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.

Option 4
This option would operate in parallel with other options and would safeguard any additional resources of clay (not identified in current minerals resource evidence) proposed in site allocations and preferred areas, where supported by adequate resource information.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
2.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
3.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
4.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
5.	0 ?	?	?	✓		✓	✓	Safeguarding keeps open options of developing the optimum locations for clay extraction. This may help minimise land take when compared to extraction from a sub optimum location (which may require more land take). Positive effects would occur when minerals are extracted, which may be some years in the future. However, there is some uncertainty in safeguarding clay deposits where they are currently unknown its associated implications.
6.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
7.	0	0	0	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted

	?	?	?					as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
8.	+ +	+ +	+ +	✓		✓		Safeguarding clay resources would enable the option of future extraction and thus strongly contribute to the safeguarding and wise use of minerals sub objective. Should further resources identified using evidence would also have positive effects and should contribute positively to this objective.
9.	0	0	0					As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.
10.	0	0	0	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
11.	0	0	0	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
12.	+	+ +	+ +	✓		✓		Safeguarding clay will keep open the future option of extraction as this option will prevent sterilisation of the resource. This potentially retains a future economic opportunity. Where additional resources are identified through evidence, this is likely to add any economic benefits already identified in connection to working with clay, particularly in the long-term.
13.	0	0	0	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
14.	0	0	0	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
15.	0	0	0	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
16.	0	0	0	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted

	?	?	?					as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
17.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any clay development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.

Summary of assessment

As safeguarding does not infer clay extraction will take place there is generally no predicted direct effect. Were development to take place it would need to accord with other policies in the Plan.

Safeguarding contributes positively, however, to the SA objective to 'minimise the use of resources and encourage their re-use and safeguarding'. In other ways positive indirect effects are noted in relation to the soil/land, and economic objectives through maintaining optimum sites for extraction. Given that Option 4 would increase the amount of clay safeguarded, this is likely to increase economic benefits over the Plan period. Option 1 may result in minor positives for the National Park, AONBs and York should less harmful development sterilise the clay resources, but the likelihood of this is questionable.

Under each option, effects from displacement of development which would have taken place are uncertain as this will depend upon the stringency of any policy approach applied.

Recommendations

The SA indicates that Option 1 and Option 4 should be pursued.

Continuity of Supply of Building Stone (id20)

Option 1
Support the principle of continued production, including extensions to workings, at existing permitted building stone sites.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	-	✓	✓	✓	✓	The sites are mostly not in or close to statutorily designated sites (with the exception of the 2 quarries in the North York Moors National Park which are within both the National Park and the Important Bird Area and are close to an SAC and SPA) but any extension is still likely to have a negative effect on biodiversity local to the quarry. Negative effects are likely to be limited through only permitting working at existing sites and due to the relatively small scale nature of many building stone quarries.
2.	-	-	-	✓		✓	✓	Extensions may have negative effects where sites are within Nitrate Vulnerable Zones or Groundwater Source Protection Zones although most existing sites are outwith these. Negative effects are likely to be limited through only permitting working at existing sites.
3.	-	-	-		✓	✓	✓	Whilst more transport movements may be generated under this option these are likely to be limited in comparison with the other options.
4.	-	-	-		✓	✓		This option could result in air quality effects around existing sites but would protect air quality elsewhere in the Plan area. Negative effects are likely to be limited through only permitting working at existing sites.
5.	+	+	+	✓		✓		Although some land would be used under this option, supporting extensions only would limit the use of additional land and would enable use to be made of existing infrastructure such as access tracks.
6.	-	-	-		✓	✓	✓	Whilst more transport movements, and therefore greenhouse gases, may be generated under this option these are likely to be limited in comparison with the other options. Negative effects are likely to be limited through only permitting working at existing sites.
7.	-	-	-	✓			✓	This option is unlikely to generate new opportunities for flood storage and may limit the availability of existing sites for such purposes if these are extended rather than closed.
8.	+	+	+	✓		✓		This option would limit the use of minerals resources.

9.	+	+	+ +	✓			✓	Limiting the amount of extraction could result in more use of previously used building materials.
10.	+	+	+	✓		✓	✓	Given the importance of the building stone resource and the contribution which locally sourced building and roofing stone plays in delivering the objectives for conserving and enhancing the historic environment which are set out in numerous local plans in the north of Yorkshire, this option would be likely to contribute positively to SA objective 10 insofar as it helps to conserve the historic environment of the area and the character of its heritage assets. However, as this option only supports continued production at existing sites (rather than new sites or further extraction from former sites), this may limit the quantity and range of stone types available. The effect of building stone extraction from such sites, however, at this stage is unknown.
	?	?	?					
11.	+	+	+	✓		✓		Whilst there may be localised effects on the landscape, overall this option would protect the landscape by resisting new building stone quarries. However, as with objective 10, maintenance of buildings that contribute to landscape or townscape character may be deleteriously affected due to insufficient provision of an appropriate range of stone types.
	-	-	-					
12.	-	-	-	✓			✓	This option may have a negative impact on the building stone sector of the economy by restricting the amount of extraction which can take place.
13.	+	+	+	✓			✓	This option would support jobs at existing quarries and would also help to protect tourism elsewhere in the Plan area.
14.	-	-	-	✓			✓	Whilst there may be small scale effects on recreation opportunities close to existing quarries it is unlikely that effects would be significantly greater than existing.
	0	0	0					
15.	-	-	-		✓		✓	There may be minor effects should existing amenity problems become exacerbated through the extension of existing quarries. However communities elsewhere in the Plan area would be protected from the effects of building stone extraction.
	+	+	+					
16.	-	-	-	✓			✓	This option is unlikely to generate new opportunities for flood storage and may limit the availability of existing sites for such purposes if these are extended rather than closed[16].
17.	?	?	?	✓			✓	Under this option it may be that not all building stone requirements to meet the needs of the population are able to be met as the quantity and range of building stone types would be limited.

[16] It should however be noted that in most cases building stone quarries are of limited value for flood storage, particularly in comparison to other forms of quarry such as sand, gravel and clay.

Option 2
Support the principle of development of resources of building stone at new sites (including former building stone quarries without planning permission) as well as extensions to existing sites.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	-- +	✓	✓	✓	✓	Areas of building stone resources in the Plan area are covered by nature conservation designations, particularly within the North York Moors National Park, and therefore this policy could lead to harm to these sites. In the longer term there may be opportunities for enhancements for biodiversity through site reclamation.
2.	-	-	--	✓		✓	✓	Under this option there is potential for effects on Nitrate Vulnerable Zones and Groundwater Source Protection Zones as these coincide with building stone resources in many locations.
3.	-	-	--		✓	✓	✓	Under this option there are likely to be more transport movements, which may increase over time as more quarries become operational.
4.	-	-	-		✓	✓	✓	Under this option there are likely to be more localised effects on air quality across any areas where building stone could be extracted as well as air quality issues associated with transportation of stone.
5.	-	-	-	✓		✓		This option is likely to result in a greater amount of land take for building stone quarries including the loss of soil and the loss of agricultural land. In many places (particularly in the NYCC area) building stone resources are overlain by Grade 3 and Grade 2 agricultural land. This is considered to constitute a minor negative impact due to the generally small scale nature of building stone quarries.
6.	-	-	-		✓	✓	✓	Under this option there are likely to be more transport movements, and therefore greater emissions of greenhouse gases, which may increase over time as more quarries become operational. This is considered to constitute a minor negative impact due to the generally small scale nature of building stone quarries.
7.	0	0	+	✓		✓		In the longer term this option may provide more opportunities for water storage, due to a greater number of closed quarries, thus reducing the risk of flooding downstream[17].

[17] It should however be noted that in most cases building stone quarries are of limited value for flood storage, particularly in comparison to other forms of quarry such as sand, gravel and clay.

8.	--	--	--	✓		✓		This option would not represent the sustainable use of minerals through placing limited control over the extraction of building stone.
9.	--	--	--	✓			✓	By supporting the extraction of building stone this option would not help to encourage the re-use of previously used building stone.
10.	+ +	+ +	+ +	✓		✓		For the repair and restoration of some heritage assets, it will be essential that the material used comes from the original source of the building stone or, where they exist, from a compatible quarry source. Therefore, in some cases, the only option will be to re-open a face on a currently disused or dormant quarry. Option 2 will be likely to contribute positively against SA objective 10 insofar as it helps to conserve the historic environment of the area and the character of its heritage assets. A limited amount of stone is likely to be required for the repair of most heritage assets. The effect of building stone extraction, however, at this stage is unknown.
	?	?	?					
11.	-	-	--	✓		✓		There could be negative effects on the landscape resulting from the opening of new quarries, however there could also be positive effects through providing opportunities to enable the correct type of stone to be obtained to ensure that new buildings are appropriate in the landscape or townscape. Within protected landscapes i.e. the National Park and the AONBs, effects on the landscape may be particularly pronounced.
	+	+	+					
12.	+	+	+		✓		✓	Under this option it is likely that more jobs would be created in the building stone extraction sector.
13.	+	+	+		✓		✓	This option may support jobs and businesses in communities close to building stone quarries but may equally have a negative effect on tourism in the locality.
	-	-	-					
14.	-	-	--	✓		✓	✓	Under this option there may be negative effects through the diversion of recreation assets such as Public Rights of Way in addition to potentially more significant indirect effects on the experience of those using such assets. This may increase over time should more quarries become operational. In the longer term there may be opportunities for enhancements for recreation through site reclamation.
			+					
15.	-	-	--		✓	✓	✓	Under this option it is likely that the health and wellbeing of more communities would be affected by quarries as there is likely to be more noise, traffic and dust. This may increase over time as more quarries become operational.
16.	0	0	+	✓		✓		In the longer term this option may provide more opportunities for water storage, due to a greater number of closed quarries, thus reducing the risk of flooding downstream[18].
17.	+ +	+ +	+ +	✓		✓		This option would provide opportunities to enable a sufficient supply of building materials to come forward for new developments and would ensure that a wide range of building stone types can be extracted.

[18] It should however be noted that in most cases building stone quarries are of limited value for flood storage, particularly in comparison to other forms of quarry such as sand, gravel and clay.

Option 3

This option would not express support in principle for continued supply of building stone but would identify a range of criteria to be applied to any proposals which come forward for development of building stone resources. In addition to the general criteria included in the Development Management policies, indicative criteria for building stone development could include adequate demonstration of the nature, quality and quantity of resource, the market to be served and the availability of stone at alternative sites.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	- +	✓	✓	✓	✓	Under this option there are likely to be effects on biodiversity and geo-diversity although these may be limited due to the relatively restrictive nature of the option and the generally small scale nature of operations. In the longer term there may be opportunities for enhancements for biodiversity and geo-diversity through site reclamation.
2.	?	?	?	✓		✓	✓	There is the potential for effects on water quantity and supply although these may be limited due to the relatively restrictive nature of the option and the generally small scale nature of operations.
3.	+	+	+		✓	✓	✓	Whilst there will be transport movements associated with any quarries under this option, the option requires consideration to be given to the market to be served which may help to minimise transport movements.
4.	-	-	-		✓	✓	✓	There is the potential for small scale negative effects on air quality although these may be limited due to the relatively restrictive nature of the option and the generally small scale nature of operations.
5.	-	-	-	✓		✓		There is the potential for small scale effects on loss of soil and loss of agricultural land although these may be limited due to the relatively restrictive nature of the option and the generally small scale nature of operations.
6.	-	-	-	✓			✓	This option is likely to generate more traffic movements, and therefore more greenhouse gas emissions, although effects may be limited due to the relatively restrictive nature of the option.
7.	0	0	+	✓		✓		In the longer term this option may provide some limited opportunities for water storage, due to a greater number of closed quarries, thus reducing the risk of flooding downstream.
8.	+	+	+	✓		✓		This option makes wise use of resources by ensuring that the availability of stone at alternative sites is considered therefore ensuring that only those resources which are necessary and have a market are extracted.
9.	+	+	+	✓			✓	As this option includes a number of considerations and requires that the availability of stone from other

								locations is taken into consideration, it may encourage more use to be made of previously used stone.
10.	+ ?	+ ?	+ ?	✓		✓		The effect of this option would be likely to contribute positively against objective 10 insofar as it helps conserve the historic environment of the area and the character of its heritage assets. However, this option does not specifically express support for the extraction of building stone and therefore provides greater uncertainty, so the positive impact is likely to be less than under Option 1 or Option 2. There are uncertain effects associated with opening any individual new sites.
11.	-	-	-	✓		✓		Under this option there are likely to be effects on the landscape although these may be limited as the option places a number of considerations on development of new quarries suggesting that only a limited number may come forward.
12.	+	+	+		✓		✓	This option would help to support jobs at any new quarries but would have a limited effect overall due to the likely limited number of quarries coming forward.
13.	+ -	+ -	+ -		✓		✓	This option may support jobs and businesses in communities close to building stone quarries but may equally have a negative effect on tourism in the locality. These effects may be fairly limited and localised as it is likely that only a limited number of new quarries would come forward under this option.
14.	?	?	? +	✓		✓	✓	There could be effects on recreation assets such as through diversion of Public Rights of Way as well as indirect effects on the experience of those using such assets, although this would be limited to the areas around any new quarries coming forward, and is highly uncertain. In the longer term there may be opportunities for enhancements for biodiversity through site reclamation.
15.	-	-	-	✓		✓	✓	There may be effects on communities close to any new quarries opening or through which stone is transported.
16.	0	0	+	✓		✓		In the longer term this option may provide some opportunities for water storage, due to a greater number of closed quarries, thus reducing the risk of flooding downstream.
17.	+ ?	+ ?	+ ?	✓		✓		Although this option does not express support in principle for continued supply of building stone, it would allow supply to come forward where policy criteria are met. Due to the more restrictive nature of this option there would be an element of uncertainty regarding whether this policy would meet the needs of the population in terms of supply of building stone for new developments or the upkeep of existing buildings.

Proposed alternative option 4: (And) This option would, where appropriate, support the sourcing and provision of building stone from sites which are primarily extracting crushed rock.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1	+	+	+	✓	✓		✓	It is not anticipated that the addition of this option would lead to significant additional impacts at existing crushed rock quarries than those already existing due to crushed rock extraction (particularly as building stone extraction tends to be on a relatively small scale). However, there is an element of uncertainty here as the sourcing of building stone from crushed rock quarries may lead to extensions to the area worked or intensification of processes which are already occurring which have the potential to negatively impact upon biodiversity and geodiversity. The addition of this option may however reduce the need to develop new building stone quarries and their associated supporting infrastructure as a greater quantity and range of building stone types would be available from existing sites. This would have small scale benefits for biodiversity due to reduced land take and disturbance. To a certain degree wildlife will be 'habitualised' (or will already have gone) from existing sites.
	0	0	0					
	?	?	?					
2.	+	+	+	✓	✓		✓	It is not anticipated that the addition of this option would lead to significant additional impacts at existing crushed rock quarries than those already existing due to crushed rock extraction (particularly as building stone extraction tends to be on a relatively small scale). However, there is an element of uncertainty here as the sourcing of building stone from crushed rock quarries may lead to extensions to the area worked or intensification of processes which are already occurring which have the potential to negatively impact upon water quality/quantity. The addition of this option may reduce the need to develop new building stone quarries and their associated supporting infrastructure elsewhere as a greater quantity and range of building stone types would be available from existing sites. This would have small scale benefits in relation to water quality and supply
	0	0	0					
	?	?	?					

3.	+	+	+	✓	✓	✓		It is considered that this option would potentially allow more small scale extraction of building stone at crushed rock sites leading to a greater choice in locations to source building stone which may be closer to the market being served. An additional possible benefit is that some construction traffic impacts may be avoided if the provision of building stone from existing crushed rock quarries negates the need for new sites.
4.	+	+	+	✓	✓		✓	As outlined under objective 3 above, it is considered that this option may result in the opportunity for more local small scale building stone extraction which could offset some of the demand from more distant building stone quarries therefore reducing emissions and air quality impacts. Additionally, some construction impacts including traffic and dust may be avoided if the provision of building stone from existing crushed rock quarries negates the need for new sites.
5.	+	+	+	✓		✓		This option would consume less land as existing sites would be utilised.
6.	+	+	+	✓		✓		Should the addition of this option result in the need for less new sites to be developed, this is likely to result in positive effects in terms of reducing greenhouse gas emissions from construction.
7.	0	0	0					No clear link.
8.	+	+	+	✓		✓		Should the addition of this option result in the need for less new sites to be developed, use of resources would be minimised as less supporting infrastructure, access roads etc. would be required.
9.	+	+	+	✓		✓		The extraction of building stone and crushed rock at the same location may minimise waste generation as rock that is not suitable for sale as building stone could be processed as crushed rock.
10.	+	+	+	✓	✓	✓		It is not anticipated that the addition of this option would lead to significant additional impacts at existing crushed rock quarries than those already existing due to crushed rock extraction (particularly as building stone extraction tends to be on a relatively small scale). However, there is an element of uncertainty here as the sourcing of building stone from crushed rock quarries may lead to extensions to the area worked or intensification of processes which are already occurring which have the potential to negatively impact upon the historic environment. The addition of this option may also reduce the need to develop new building stone quarries and their
	0	0	0					

	?	?	?					associated supporting infrastructure elsewhere as a greater quantity and range of building stone types would be available from existing sites. This increased range of stone types and increase in local/incidental sources of supply may increase the chances that restoration works or new schemes that are trying to match the local vernacular would be able to obtain appropriate building materials. This may have small scale benefits in relation to the historic environment.
11.	+	+	+	✓	✓	✓		It is not anticipated that the addition of this option would lead to significant additional impacts at existing crushed rock quarries than those already existing due to crushed rock extraction (particularly as building stone extraction tends to be on a relatively small scale). However, there is an element of uncertainty here as the sourcing of building stone from crushed rock quarries may lead to extensions to the area worked or intensification of processes which are already occurring which have the potential to negatively impact upon landscape quality and character. The addition of this option may also reduce the need to develop new building stone quarries and their associated supporting infrastructure elsewhere as a greater quantity and range of building stone types would be available from existing sites. This would have small scale benefits in relation to landscape.
	0	0	0					
	?	?	?					
12.	0	0	0	✓		✓	✓	Diversifying production at existing crushed rock sites would help sustain existing jobs and may create new opportunities relating to building stone extraction/processing particularly as this is generally a higher value product than crushed rock. Should the addition of this option result in the need for less new sites to be developed then this would result in a lost opportunity in terms of job creation. It is however considered that the potential positive and negative effects are of a similar magnitude and therefore the overall effect is considered to be neutral.
13.	0	0	0	✓		✓	✓	In addition to effects relating to jobs outlined under objective 12, amenity impacts (dust, traffic etc.) from existing crushed rock sites may be increased should intensification or extension to current workings result. Conversely, should the addition of this option result in the need for less new sites to be developed then this would reduce amenity issues elsewhere. The effect on this objective is therefore considered to be neutral.
14.	+	+	+	✓		✓	✓	While less new sites could benefit recreation etc. as less land and rights of way will be disturbed, increasing operations at existing sites could also delay restoration at those existing sites, leading to delays in realising new recreational opportunities.
	-	-	-					
15.	-	-	-	✓		✓	✓	The addition of this option may lead to intensification or extension to existing crushed rock quarries which may have a range of negative effects on existing communities, including noise and vibration and loss of access, all

	+	+	+					of which could affect wellbeing. Due to the small scale nature of building stone extraction and considering the existing processes that would already be taking place at a crushed rock quarry, these impacts are considered to be very minor in magnitude. However, elsewhere this option may help to avoid the bringing into existence of some new quarries, which would also have negative effects (of a greater magnitude than those likely to arise from intensification of existing processes/ extension of existing sites). This would result in a minor positive impact in relation to this objective.
16.	0	0	0					No clear link
17.	+	+	+	✓		✓		The addition of this option would contribute towards providing the quantity and range of building stone types required to meet the needs of the construction industry and to restore historic buildings.

Proposed alternative option 5: (Or)

This option would not express support in principle for continued supply of building stone but would identify a range of criteria to be applied to any proposals which come forward for development of building stone resources. In addition to the general criteria included in the Development Management policies, indicative criteria for building stone development could include adequate demonstration of the nature, quality and quantity of resource and the market to be served.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	-	-	- +	✓	✓	✓	✓	Under this option there are likely to be effects on biodiversity and geo-diversity although these may be limited due to the relatively restrictive nature of the option and the generally small scale nature of operations. In the longer term there may be opportunities for enhancements for biodiversity and geo-diversity through site reclamation.
2.	?	?	?	✓		✓	✓	There is the potential for effects on water quantity and supply although these may be limited due to the relatively restrictive nature of the option and the generally small scale nature of operations.

3.	+	+	+		✓	✓	✓	Whilst there will be transport movements associated with any quarries under this option, the option requires consideration to be given to the market to be served which may help to minimise transport movements.
4.	-	-	-		✓	✓	✓	There is the potential for small scale negative effects on air quality although these may be limited due to the relatively restrictive nature of the option and the generally small scale nature of operations.
5.	-	-	-	✓		✓		There is the potential for small scale effects on loss of soil and loss of agricultural land although these may be limited due to the relatively restrictive nature of the option and the generally small scale nature of operations.
6.	-	-	-	✓			✓	This option is likely to generate more traffic movements, and therefore more greenhouse gas emissions, although effects may be limited due to the relatively restrictive nature of the option.
7.	0	0	+	✓		✓		In the longer term this option may provide some limited opportunities for water storage, due to a greater number of closed quarries, thus reducing the risk of flooding downstream.
8.	+	+	+	✓		✓		This option ensures that there is a market for the stone to be extracted and considers the quality and quantity of stone available therefore contributing towards efficient use of resources. Unlike Option 3, however, this option would not require that the availability of stone at alternative sites is considered and could therefore result in new sites that are not necessarily required should the resource already be available at an existing site.
	-	-	-					
9.	-	-	-	✓			✓	Unlike Option 3, this option would not require that the availability of stone at alternative sites is considered which may not contribute towards the sub-objectives of re-using and using fewer materials.
10.	+	+	+	✓		✓		The effect of this option would be likely to contribute positively against objective 10 insofar as it helps conserve the historic environment of the area and the character of its heritage assets. However, this option does not specifically express support for the extraction of building stone and therefore provides greater uncertainty of supply, so the positive impact is likely to be less than under Option 1 or Option 2. There are uncertain effects associated with opening any individual new sites.
	?	?	?					
11.	-	-	-	✓		✓		Under this option there are likely to be effects on the landscape although these may be limited as the option places a number of considerations on development of new quarries suggesting that only a limited number may come forward.
12.	+	+	+		✓		✓	This option would help to support jobs at any new quarries but would have a limited effect overall due to the likely limited number of quarries coming forward. Unlike Option 3, however, this option would not require that the availability of stone at alternative sites is considered and could therefore lead to an increase in competition and an element of job insecurity should supply outstrip demand. Therefore uncertainty has also been recorded in this assessment.
	?	?	?					
13.	+	+	+		✓		✓	This option may support jobs and businesses in communities close to building stone quarries but may equally

	-	-	-					have a negative effect on tourism in the locality. These effects may be fairly limited and localised as it is likely that only a limited number of new quarries would come forward under this option.
14.	?	?	? +	✓		✓	✓	There could be effects on recreation assets such as through diversion of Public Rights of Way as well as indirect effects on the experience of those using such assets, although this would be limited to the areas around any new quarries coming forward, and is highly uncertain. In the longer term there may be some small scale opportunities for enhancements for recreation through site reclamation.
15.	-	-	-	✓		✓	✓	There may be negative effects on communities close to any new quarries opening or through which stone is transported.
16.	0	0	+	✓		✓		In the longer term this option may provide some limited opportunities for water storage, due to a greater number of closed quarries, thus reducing the risk of flooding elsewhere in the catchment. However, it should be recognised that many building stone sites are relatively small scale and removed from the floodplain, so they may not be optimal locations for flood prevention.
17.	+ ?	+ ?	+ ?	✓		✓		Although this option does not express support in principle for continued supply of building stone, it would allow supply to come forward where policy criteria are met. Due to the more restrictive nature of this option there would be an element of uncertainty regarding whether this policy would meet the needs of the population in terms of supply of building stone for new developments or the upkeep of existing buildings.

Summary of assessment

The assessment has revealed that all options are likely to result in mostly minor negative effects on the environment to some degree although Option 2 could in particular have potentially more significant negative effects on landscape, biodiversity, recreation, the historic environment, water, soil, air and amenity. Whilst Option 1 would have some positive impact on the environment, particularly in relation to land use and minimising use of resources, it could also fail to deliver a sufficient supply of the right types of building stone to support development consistent with landscape / townscape character and the historic environment.

Although Option 3 does not provide specific support for the continuation of supply of building stone, it is considered that this criteria based approach would allow new sites to come forward where required. Option 3 is considered more favourable in terms of sustainability effects than Option 5 as it results in more positive effects in relation to minimising the use of resources.

The addition of Option 4 where appropriate is considered to result in a number of positive effects, particularly should it result in the need for less

new building stone quarries and the associated impacts that these would have upon biodiversity, water, cultural heritage, landscape, air quality and amenity.

Recommendations
It is recommended that Option 3 would enable new sites to come forward where required whilst having minimal detrimental effects on the environment. As a number of positive effects were also recorded in relation to Option 4, it is considered that Option 3 should be adopted alongside Option 4 recognising that in most cases extracting building stone from an existing crushed rock quarry is likely to have a lower order impact than developing a new quarry.

Use of Building Stone (id21)

Assumptions – This assessment assumes that some level of building stone extraction, in accordance with one or a combination of the options under 'Continuity of Supply of Building Stone', would come forward and these options are controlling where this is used. By implication, these options may have an effect on the amount which comes forward but the principles of extraction are not considered here.

Option 1
This option would support applications for extraction of building stone from within the National Park and AONBs only where the stone would be used within the designated area it is extracted from, unless for repair of important designated or undesignated structures elsewhere which rely on this stone. Elsewhere in the Joint Plan area there would be no restriction placed on the use of the stone extracted.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓		✓	✓	This option would have positive effects as it is likely to restrict development in the National Park and AONBs where there are larger concentrations of internationally and nationally protected habitats and species than elsewhere in the Joint Plan area.
2.	-	-	-	✓		✓	✓	Under this option extraction may be directed to outside of the National Park and AONBs where there is a greater presence of Nitrate Vulnerable Zones and Groundwater Source Protection Zones.
3.	+ 0	+ 0	+ 0		✓		✓	This option would reduce the amount of transportation for transporting building stone out of the National Park to elsewhere. However if more building stone is extracted from locations elsewhere to compensate, to a degree positive effects could be lessened. Overall impacts will range from neutral to positive. Any positive effect is likely to increase over time as currently operating quarries become replaced with new ones which are subject to the use requirements.
4.	+ -	+ -	+ -	✓		✓	✓	This option would have positive effects on air quality in the National Park and the AONBs but if it displaces extraction to elsewhere in the Plan area could have negative effects elsewhere.
5.	-	-	-	✓		✓		Agricultural land quality is generally lower in the National Park and the AONBs than elsewhere in the Plan area and this option may therefore direct extraction to areas of higher quality.

6.	+ 0	+ 0	+ 0	✓			✓	This option would reduce the amount of transportation, and therefore greenhouse gases, related to transporting building stone out of the National Park to elsewhere. . However if more building stone is extracted from locations elsewhere to compensate, to a degree positive effects could be lessened. Overall impacts will range from neutral to positive. Any positive effect is likely to increase over time as currently operating quarries become replaced with new ones which are subject to the use requirements.
7.	0	0	-	✓			✓	Should fewer quarries come forward in the National Park and AONBs there would be fewer opportunities in the long run for rainwater storage in closed quarries, although it is likely that effects on this objective would be minimal.
8.	0	+ 0	 0	✓		✓		Resources in the National Park and AONBs would be better safeguarded although the option may simply lead to more resources being extracted across the rest of the Plan area. Overall neutral effect.
9.	0	0	0					No significant effect.
10.	? +	? +	? +	✓		✓		Under this option building stone would still come forward for buildings within these designated areas and for other important buildings however there may be instances where stone for other buildings would then need to be obtained from elsewhere. This option would afford a level of protection to historic assets in the National Park and AONBs from the effects of quarrying by limiting the development which can take place.
11.	+ + -	+ + -	+ + -	✓		✓		This option would provide greater protection for protected landscapes from the effects of building stone extraction. Landscapes elsewhere may be negatively impacted but it is likely that this would be of lesser significance (as not nationally protected).
12.	? +	? +	? +		✓		✓	Under this option there may be fewer job opportunities in the building stone sector within the National Park and AONBs although these may be provided elsewhere in the Plan area instead. This option could limit any effects on the tourism economy in the National Park and AONBs from quarrying by limiting the amount of extraction that takes place, bearing in mind the types of recreation undertaken in these areas.
13.	? +	? +	? +		✓		✓	There may be fewer job opportunities in communities in the National Park and the AONBs but these may instead be provided elsewhere in the Plan area. Whilst effects on communities relating to tourism impacts may be positive in the National Park and AONBs, there may be negative impacts elsewhere in the Plan area if extraction takes place outside of these areas instead.
14.	+ ?	+ ?	+ ?	✓		✓		This option would help to maintain recreational assets in the National Park and AONBs. This is particularly positive for the National Park where the second statutory purpose is to provide opportunities for understanding and enjoyment of the Park. However, elsewhere recreational assets may be affected (depending on location), such as public rights of way.
15.	+ ?	+ ?	+ ?	✓		✓	✓	There may be positive effects on communities in the National Park and the AONBs should the option result in lower levels of extraction activity in these areas, however there may be negative effects on communities outside of these areas depending on whether extraction is displaced to other locations.

16.	0	0	0	✓			✓	This option will limit the number of new extraction sites as there are a limited number of sites and structures that depend on building stone being extracted from the Plan area and overall the effects on flood risk and reducing the impact of flooding will be marginal.
17.	-	-	-	✓		✓		Under this option there is potential for needs beyond the National Park and AONBs to not be supplied although there may be potential for these needs to be met from elsewhere.

Option 2
This option would support applications for extraction of building stone from within the Joint Plan area for use only within the Joint Plan area unless for repair of designated or undesignated structures elsewhere which rely on this stone. Stone extracted in the National Parks and AONBs would only be used within the designated area from which is it extracted.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	+	+	+	✓		✓	✓	This option is likely to limit the amount of stone extracted in the Joint Plan area (including the National Park) and therefore reduce any potential effects on habitats and wildlife.
2.	+	+	+	✓		✓	✓	This option is likely to limit the amount of stone extracted in the Joint Plan area (including the National Park) and therefore reduce any potential effects on water quality and supply.
3.	+	+	+ +		✓	✓	✓	This option would reduce the amount of transportation of building stone away from the Joint Plan area and would therefore have positive effects which are likely to increase over time as currently operating quarries become replaced with new ones which are subject to the use requirements.
4.	+	+	+	✓		✓	✓	This option is likely to limit the amount of stone extracted in the Joint Plan area (including the National Park) and therefore reduce any potential effects on air quality.
5.	+	+	+	✓		✓	✓	This option is likely to limit the amount of stone extracted in the Joint Plan area (including the National Park) and therefore reduce any potential effects on soils and agricultural land.
6.	+	+	+ +		✓	✓	✓	This option would reduce the amount of transportation of building stone away from the Joint Plan area, and therefore reduce greenhouse gas emissions, and would therefore have positive effects which are likely to

								increase over time as currently operating quarries become replaced with new ones which are subject to the use requirements.
7.	0	0	-	✓			✓	Should fewer quarries come forward in the Plan area there would be fewer opportunities in the long run for rainwater storage in closed quarries, although it is likely that effects on this objective would be minimal.
8.	+ -	+ -	+ -	✓		✓		This option would enable more sustainable use of building stone across the Plan area by ensuring that those which are extracted are for use in the area. The option could also limit supply if building stone to parts of the Plan area outside the AoNBs/NPs even if assets outside these areas originally used stone from within them which could be a negative
9.	+	+	+	✓			✓	By potentially limiting the amount of primary extraction, this may encourage use of previously used building materials, particularly outside of the Plan area, and this may increase over time as existing quarries become replaced by new ones which include a use restriction.
10.	+ -	+ -	+ -	✓		✓		Under this option building stone would still come forward for buildings within the Joint Plan area and for other important buildings however there may be instances where stone for other buildings would then need to be obtained from elsewhere. This option would afford a level of protection to historic assets in the National Park and AONBs from the effects of quarrying by limiting the development which can take place.
11.	+ +	+ +	+ +	✓		✓		This option would afford protection to landscapes across the Joint Plan area including designated and undesignated landscapes, by potentially reducing the amount of extraction which would take place.
12.	-	-	-		✓		✓	Under this option there could be fewer jobs in the building stone sector if there are lower levels of extraction, and this could become more so over the longer term as if the level of extraction gradually decreases.
13.	? +	? +	? +		✓		✓	There may be fewer job opportunities in communities in the building stone sector in the Plan area. However effects on communities relating to tourism impacts are likely to be positive.
14.	+	+	+	✓		✓		This option would help to maintain recreational assets in the Plan area. This is particularly positive for the National Park where the second statutory purpose is to provide opportunities for understanding and enjoyment of the Park.
15.	+	+	+	✓		✓	✓	This is likely to be positive as there is likely to be less extraction, the positive effects are likely to increase over time as current quarries cease to operate.
16.	0	0	-	✓			✓	Should fewer quarries come forward in the Plan area there would be fewer opportunities in the long run for rainwater storage in closed quarries, although it is likely that effects on this objective would be minimal.
17.	-	-	-	✓		✓		Under this option there is potential for needs beyond the Plan area to not be supplied although there may be potential for these needs to be met from elsewhere.

Option 3

No restrictions to be placed on the use of building stone – planning applications would be considered against other building stone policies in the Plan, national policy and any relevant Development Management policies only. The NPPF does not place any restrictions on the use of building stone but does require planning authorities to consider how to meet any demand for small-scale extraction of building stone at, or close to, relic quarries needed for the repair of heritage assets, taking account of the need to protect designated sites.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					This option would result in no effects additional to those identified under 'Continuity of Supply of Building Stone' (ID20).
2.	0	0	0					As above
3.	0	0	0					As above
4.	0	0	0					As above
5.	0	0	0					As above
6.	0	0	0					As above
7.	0	0	0					As above
8.	0	0	0					As above
9.	0	0	0					As above
10.	0	0	0					As above
11.	0	0	0					As above
12.	0	0	0					As above
13.	0	0	0					As above
14.	0	0	0					As above
15.	0	0	0					As above
16.	0	0	0					As above
17.	0	0	0					As above

Option 4
Alongside any of options 1, 2 or 3, this option would support the limited extraction of stone for use in building projects on the same site, acknowledging that in some instances this may in fact be Permitted Development and not require planning permission.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	-		✓	✓	✓	This option could have negative effects although as the area of extraction is likely to be limited and only take place over a short timescale these would be limited.
2.	-	-	-		✓	✓	✓	This option could have negative effects although as the area of extraction is likely to be limited and only take place over a short timescale these would be limited.
3.	+ +	+ +	+ +		✓		✓	This option would reduce the need to transport materials in for new development.
4.	- +	- +	- +	✓		✓	✓	There may be effects on air quality but these would be localised around the extraction site. Effects on air quality caused by transportation would be reduced through enabling stone to be extracted on-site.
5.	-	-	-		✓	✓		There may be effects in terms of loss of soil and loss of agricultural land but these are likely to be minor as only a relatively small area of land is likely to be used.
6.	+	+	+		✓		✓	This option would reduce the need to transport materials in for new development, and would therefore also reduce any associated greenhouse gas emissions, though the scale of this effect would be limited.
7.	0	0	0	✓			✓	There may be opportunities for rain water storage although the extraction sites are likely to be very small and this does therefore not warrant a positive score
8.	-	-	-	✓			✓	The option could discourage the use of previously used stone by enabling extraction on site.
9.	-	-	-	✓			✓	The option could discourage the use of previously used stone by enabling extraction on site.
10.	+	+	+	✓		✓		It is likely under this option that the most appropriate type of stone could be sourced to enable development to be appropriate in the context of other buildings.
11.	+	+	+	✓		✓		It is likely under this option that the most appropriate type of stone could be sourced to enable development to be appropriate in the context of the landscape and townscape.
12.	0	0	0					As extraction would be for individual developments there would be unlikely to be any significant effects on the

								economy.
13.	0 -	0 -	0 -		✓		✓	As extraction would be for individual developments there would be unlikely to be any significant effects on jobs. However there may be negative effects on local tourism businesses if extraction took place close to these, although these affects are likely to be temporary in nature.
14.	-	-			✓	✓	✓	There may be minor effects on Public Rights of Way and other recreation assets should extraction take place close to these although effects may be minor and very short term.
15.	-	-	-		✓	✓	✓	There may be negative effects on communities close to extraction but these effects are likely to be very short term.
16.	0	0	0	✓			✓	There may be opportunities for rain water storage although the extraction sites are likely to be very small and this does therefore not warrant a positive score
17.	+ +	+ +	+ +	✓		✓		This option would provide another way to ensure there is a supply of building stone for new development, thus helping to meet the needs of the population.

Proposed alternative option 5: (Or) This option would support applications for the extraction of building stone within the Joint Plan area for use only within the Joint Plan area and building stone extracted within the National Park and AONB would only be used in the designated area from which it is extracted unless, In both cases, the building stone is to be used for the repair of important designated or undesignated structures which rely on this stone.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	+	+	+	✓			✓	This option will limit the number of new extraction sites as there are a limited number of sites and structures that depend on building stone being extracted from the Plan area. Impacts on habitats and wildlife will depend on the location of sites but overall is likely to be minimal given the small scale of sites.
2.	+	+	+	✓			✓	This option will limit the number of new extraction sites as there are a limited number of sites and structures that depend on building stone being extracted from the Plan area. The impact on water quality and supply will depend on the location of sites but is likely to be minimal.

3.	+	+	+ +	✓		✓		This option would reduce the transportation of stone away from the Plan area and this option would therefore have positive effects on this objective which are likely to increase over time as quarries currently operating are replaced with new ones which will be subject to the use requirements.
4.	+	+	+	✓		✓		This option will limit the number of new extraction sites as there are a limited number of sites and structures that depend on building stone being extracted from the Plan area and the overall effects on soils and agricultural land will be minimal.
5.	+	+	+	✓		✓		This option will limit the number of new extraction sites as there are a limited number of sites and structures that depend on building stone being extracted from the Plan area and the overall effects on air quality will be minimal.
6.	+	+	+ +	✓		✓		This option would reduce the transportation of stone away from the Plan area and this option would therefore have positive effects on greenhouse gas emissions which are likely to increase over time as quarries currently operating are replaced with new ones which will be subject to the use requirements.
7.	+	+	+	✓			✓	This option will limit the number of new extraction sites as there are a limited number of sites and structures that depend on building stone being extracted from the Plan area. The effects on adapting to the effects of climate change are likely to be marginal.
8.	+	+	+	✓		✓		This option would have minor positive effects on this objective by limiting extraction for sites outside the Plan area.
9.	+	+	+	✓			✓	This option will limit the number of new extraction sites as there are a limited number of sites and structures that depend on building stone being extracted from the Plan area and overall this option may indirectly encourage the use of previously used materials, particularly outside the Plan area. This option may increase over time as existing quarries become replaced by new ones which include a use restriction, though as ultimately this option directly supports extraction positive effects are always at the lower end of the scale.
10.	+ +	+ +	+ +	✓		✓		This option would have a positive effect on this objective by securing a supply of building stone for repairing and restoring historic assets in the Plan area.
11.	+ +	+ +	+ +	✓		✓		This option would have a positive effect on this objective by securing a supply of building stone for repairing and restoring structures and buildings in the Plan area which would be beneficial to both landscape and townscapes both within and outside the Plan area.
12.	0	0	0	✓			✓	This option a will limit the number of new extraction sites but the effects on the creation of new jobs is likely to be minimal,
13.	0	0	0	✓			✓	This option will limit the number of new extraction sites but the effects on the creation of new jobs to maintain the viability and vitality of local communities will be minimal,
14.	+	+	+	✓		✓		This option would have positive impacts within the National Park by helping to maintain historic assets that are important to people's enjoyment and understanding of the Park. There would also be positive benefits in the rest of the Plan area outside the National Park.

15.	0	0	0	✓			✓	This option will limit the number of new extraction sites as there are a limited number of sites and structures that depend on building stone being extracted from the Plan area but overall the effects on the health and well-being of local communities are considered to be marginal.
16.	0	0	0	✓			✓	This option will limit the number of new extraction sites as there are a limited number of sites and structures that depend on building stone being extracted from the Plan area and overall the effects on flood risk and reducing the impact of flooding will be marginal.
17.	0	0	0	✓			✓	This option could result in more extraction to meet the needs of the population in a sustainable way, however the number of additional extraction sites will be limited as there are a limited number of structures and buildings that depend on stone from the Plan area for their repair and restoration.

Proposed alternative option 6: (Or) **This option would support the extraction of building stone from within the National Park and AONBs only where the stone would be used within the designated area it is extracted from, unless for repair of important designated or undesignated structures elsewhere which rely on this stone and where the quarry is the original source of stone and the scale of extraction is commensurate with the expected requirements of the development. Elsewhere in the Joint Plan area there would be no restriction placed on the use of the stone extracted.**

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	+	+	+	✓			✓	The impacts on habitats and wildlife will depend on the location of sites but overall the option places more restrictions on extraction in National Park and AONBs where there are larger concentrations of internationally and nationally protected habitats and species than elsewhere in the Joint Plan area which will have positive effects on protecting habitats and wildlife. Elsewhere there are no restrictions placed on the use of building stone extracted, which may have small scale negative implications, though these are expected to be at a scale that would not override the overall positive

								effect of this option.
2.	-	-	-	✓			✓	The impact on water quality and supply will depend on the location of sites but overall the option places more restrictions on extraction in National Parks and AONBs compared with option 1 which will have positive effects on protecting water quality and supply in that area, though outside protected landscapes, where there is a greater presence of Nitrate Vulnerable Zones and Groundwater Source Protection Zones, the negative effect may be greater
3.	+	+	+	✓		✓		This option would reduce the transportation of stone out of National Park and AONBs and this option would therefore have positive effects on this objective compared with option 1 which are likely to increase over time as quarries currently operating are replaced with new ones which will be subject to the use requirements. Elsewhere there are no restrictions placed on the use of building stone extracted, which may have small scale negative implications, though these are expected to be at a scale that would not override the overall positive effect of this option.
4.	+	+	+	✓		✓		This option would have positive effects on air quality in the National Park and AONBs compared with option 1. Elsewhere there are no restrictions placed on the use of building stone extracted, which may have small scale negative implications, though these are expected to be at a scale that would not override the overall positive effect of this option.
5.	0 -	0 -	0 -	✓		✓		This option would place more restrictions on extraction in National Parks and AONBs compared with option 1 but as agricultural land in the National Park and AONBs is generally of lower quality, there will be minimal impact on this objective.

								Elsewhere there are no restrictions placed on the use of building stone extracted, which may have small scale negative implications, especially if demand is picked up from these areas.
6.	+	+	+	✓		✓		This option would reduce the transportation of stone out of National Park and AONBs and this option would therefore have positive effects on the emission of greenhouse gases compared with option 1 which are likely to increase over time as quarries currently operating are replaced with new ones which will be subject to the use requirements. Elsewhere there are no restrictions placed on the use of building stone extracted, which may have small scale negative implications though these are expected to be at a scale that would not override the overall positive effect of this option.
7.	0	0	0	✓			✓	This option places more restrictions on extraction in National Parks and AONBs compared with option 1 which may reduce the opportunities for rainwater storage from the restoration of extraction sites, although it is likely that effects on this objective would be minimal.
8.	0	0	0	✓			✓	Resources in the National Park and AONBs would be better safeguarded compared with option 1. Elsewhere there are no restrictions placed on the use of building stone extracted, which may have small scale negative implications. Overall neutral implications.
9.	0	0	0	✓			✓	No significant effect.
10.	+ + -	+ + -	+ + -	✓		✓		This option would place more restrictions on extraction in National Parks and AONBs (important areas for heritage) compared with option 1 and there may be occasions where stone for other buildings would need to be obtained from elsewhere. This option would afford a greater level of protection to historic assets in the National Park and AONBs from the effects of quarrying compared with option 1. Elsewhere there are no restrictions placed on the use of building stone extracted, which may have small scale

								negative implications.
11.	+ + -	+ + -	+ + -	✓		✓		This option would provide protection for 'highest level' protected landscapes from the effects of building stone quarrying. Elsewhere there are no restrictions placed on the use of building stone extracted, which may have small scale negative implications.
12.	0	0	0	✓			✓	Under this option there would be fewer job opportunities in the building stone sector in the National Park and AONBs compared with option 1 however the effect is likely to be marginal and this option would limit any adverse effects on the tourism economy in the National Parks and AONBs. Elsewhere there are no restrictions placed on the use of building stone extracted, which may have small scale positive implications on jobs. Overall the effect is neutral.
13.	0	0	0	✓			✓	Under this option there would be fewer job opportunities in protected landscapes, though more outside of protected landscapes to support the viability and vitality of local communities however the impact is likely to be relatively insignificant overall.
14.	+	+	+	✓			✓	This option would place more restrictions on extraction in National Park and AONBs compared with option 1 and this would help to maintain recreational assets in the National Park and AONBs. Although the opposite effect may occur outside the National Parks and AONBs, because of the recreational importance of protected landscapes the effect is broadly positive.
15.	-	-	-	✓			✓	This option would place more restrictions on extraction in the National Park and the AONBs which could have positive effects on the health and wellbeing of local communities, however if extraction is displaced to other locations there could be adverse effects on other communities. The net effect is likely to be at a low level but we have scored it minor negative as several low level impacts on wellbeing could combine to register a low level significant effect (e.g. traffic, dust, noise)
16.	-	-	-	✓			✓	This option would place more restrictions on extraction in the National Park and the AONBs which could reduce opportunities for rainwater storage in closed quarries, although it is likely that the effects on this

	0	0	0					objective would be neutral to minimal negative.
17.	-	-	-	✓			✓	This option could mean that needs within the Plan area but outside the National Park and AONBs may not be met but there may be potential for these needs to be met from elsewhere.

Summary of assessment

The assessment has revealed that Options 1 and 2 would in the main be beneficial in terms of protecting the environment. While there are a number of small scale negative effects noted under both options a key difference is that Option 2 may result in negative effects on the local economy should there be less extraction across the area (though this is uncertain).

Option 3 would result in no additional effects from building stone extraction.

Option 4 is likely to have positive effects in terms of supply of building stone and reducing the effects of transportation, and while there are a number of negative effects, many of these effects are likely to be minor and often very temporary.

Option 5 would have positive effects on the landscape and historic environment but gives less support to new jobs.

The limiting qualities of Option 6 will have positive effects on the historic environment and landscape within designated landscapes (and to a lesser degree other environmental objectives) in the Plan area, and would limit some impacts, though would also limit job creation.

Recommendations

It is recommended that a combination of Options 1 and 4, with appropriate development management to control negative effects, would be the most sustainable approach

Safeguarding Building Stone (id22)

Assumptions – Minerals safeguarding does not create any presumption that the mineral would be extracted and any proposals for extraction in a safeguarded area would still need to meet the same policy requirements as proposals for extraction in an area which is not safeguarded. Equally the presence of a safeguarding area would not preclude any other developments but would enable the presence of potentially important minerals to be considered as part of the usual planning process.

Option 1
Safeguard all known resources with potential for use as building stone.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0	✓	✓	✓	✓	Extraction would still need to accord with other policies relating to biodiversity, habitats and wildlife. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
	?	?	?					
2.	0	0	0	✓	✓	✓	✓	Extraction would still need to accord with other policies relating to water quality and supply. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
	?	?	?					
3.	0	0	0	✓		✓	✓	Extraction would still need to accord with other policies relating to transport. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
	?	?	?					
4.	0	0	0		✓	✓		Extraction would still need to accord with other policies relating to air quality. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
	?	?	?					
5.	+	+	+	✓		✓		Safeguarding could ensure that the best use is made of land in extracting building stone and in terms of other developments. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore
	?	?	?					

								the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
6.	0 ?	0 ?	0 ?	✓		✓	✓	Whilst there is no clear direct link between the objective and the option some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
7.	0 ?	0 ?	0 ?	✓		✓	✓	Whilst there is no clear direct link between the objective and the option some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
8.	++	++	++	✓		✓		This option would very strongly contribute to the aim of safeguarding minerals resources.
9.	0	0	0					No clear link
10.	++ ?	++ ?	++ ?	✓		✓	✓	Extraction would still need to accord with other policies relating to conserving and enhancing the historic environment. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. The option would however have strong positive effects in terms of ensuring a sufficient supply of building stone for the repair of historic buildings and for ensuring new development is appropriate in its context.
11.	+ ?	+ ?	+ ?	✓		✓	✓	Extraction would still need to accord with other policies relating to protecting and enhancing the landscape. The option would however have positive effects in terms of ensuring a sufficient supply of building stone for the repair of buildings which contribute to landscape character. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
12.	+ ?	+ ?	+ ?	✓		✓	✓	Safeguarding building stone will help to ensure that minerals are available for economic growth. This positive effect will increase over time as minerals which may have been sterilised over time are safeguarded. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement and the effects of this on the economy is not known.
13.	0 ?	0 ?	0 ?	✓			✓	There may be a very minor link between safeguarding minerals and job creation overall there is no link. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement and the effects of this on the vitality and viability of communities are not known.
14.	0 ?	0 ?	0 ?	✓	✓	✓	✓	Whilst there is no clear direct link between the objective and the option some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
15.	0	0	0	✓			✓	Extraction would still need to accord with other policies relating to protecting communities and amenity. Some

	?	?	?					uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
16.	0 ?	0 ?	0 ?	✓		✓	✓	Whilst there is no clear direct link between the objective and the option some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
17.	+ + ?	+ + ?	+ + ?	✓		✓		This option would help to ensure that sufficient building stone resources are available locally for new development. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.

Option 2
Safeguard all the scarcer resources with potential for use as building stone.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0 ?	0 ?	0 ?	✓	✓	✓	✓	Extraction would still need to accord with other policies relating to biodiversity, habitats and wildlife. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
2.	0 ?	0 ?	0 ?	✓	✓	✓	✓	Extraction would still need to accord with other policies relating to water quality and supply. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
3.	0 ?	0 ?	0 ?	✓		✓	✓	Extraction would still need to accord with other policies relating to transport. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
4.	0 ?	0 ?	0 ?		✓	✓		Extraction would still need to accord with other policies relating to air quality. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the

								nature, location or consequences of any displaced development is not known.
5.	+ ?	+ ?	+ ?	✓		✓		Safeguarding only the scarcer resources could ensure that the best use is made of land in extracting building stone and in terms of other developments. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
6.	0 ?	0 ?	0 ?	✓		✓	✓	Whilst there is no clear direct link between the objective and the option some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
7.	0 ?	0 ?	0 ?	✓		✓	✓	Whilst there is no clear direct link between the objective and the option some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
8.	+	+	+	✓		✓		This option would very strongly contribute to the aim of safeguarding minerals resources but not to the same extent as option 1.
9.	0	0	0					No clear link
10.	+ + ?	+ + ?	+ + ?	✓		✓	✓	Extraction would still need to accord with other policies relating to conserving and enhancing the historic environment. The option would however have strong positive effects in terms of ensuring a sufficient supply of building for the repair of historic buildings and for ensuring new development is appropriate in its context. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
11.	+ ?	+ ?	+ ?	✓		✓	✓	Extraction would still need to accord with other policies relating to protecting and enhancing the landscape. The option would however have positive effects in terms of ensuring a sufficient supply of building stone for the repair of buildings which contribute to landscape character. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
12.	+ ?	+ ?	+ ?	✓			✓	Safeguarding building stone will help to ensure that minerals are available for economic growth. This positive effect will increase over time as minerals which may have been sterilised over time are safeguarded. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement and effects of this on the economy is not known.
13.	0 ?	0 ?	0 ?	✓			✓	There may be a very minor link between safeguarding minerals and job creation although overall there is no link. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement and effects of this on the vitality and viability of communities is not known.
14.	0 ?	0 ?	0 ?	✓	✓	✓	✓	Whilst there is no clear direct link between the objective and the option some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.

15.	0 ?	0 ?	0 ?	✓			✓	Extraction would still need to accord with other policies relating to protecting communities and amenity. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
16.	0 ?	0 ?	0 ?	✓		✓	✓	Whilst there is no clear direct link between the objective and the option some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
17.	+ ?	+ ?	+ ?	✓		✓		Whilst this option would help to ensure that sufficient building stone resources are available locally for new development, the availability of stone may become more limited over time as only scarcer resources would be safeguarded. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.

Option 3
Safeguard both active and known important former building stone quarries.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	**Impact / timescale**			**Type of effect**				**Analysis**
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0 ?	0 ?	0 ?	✓	✓	✓	✓	Extraction would still need to accord with other policies relating to biodiversity, habitats and wildlife. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known, although any effects are likely to be less than under options 1 and 2 as this option presents a less comprehensive approach to safeguarding.
2.	0	0	0	✓	✓	✓	✓	Extraction would still need to accord with other policies relating to water quality and supply. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement

	?	?	?					along with the nature, location or consequences of any displaced development is not known, although any effects are likely to be less than under options 1 and 2 as this option presents a less comprehensive approach to safeguarding.
3.	0	0	0	✓		✓	✓	Extraction would still need to accord with other policies relating to transport. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known, although any effects are likely to be less than under options 1 and 2 as this option presents a less comprehensive approach to safeguarding.
	?	?	?					
4.	0	0	0		✓	✓		Extraction would still need to accord with other policies relating to air quality. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known, although any effects are likely to be less than under options 1 and 2 as this option presents a less comprehensive approach to safeguarding.
	?	?	?					
5.	+	+	+	✓		✓		Safeguarding only quarries would help to direct extraction away from the majority of existing agricultural land, should this result in extraction taking place mainly at former quarries. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known, although any effects are likely to be less than under options 1 and 2 as this option presents a less comprehensive approach to safeguarding.
	?	?	?					
6.	0	0	0	✓		✓	✓	Whilst there is no clear direct link between the objective and the option some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known, although any effects are likely to be less than under options 1 and 2 as this option presents a less comprehensive approach to safeguarding.
	?	?	?					
7.	0	0	0	✓		✓	✓	Whilst there is no clear direct link between the objective and the option some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known, although any effects are likely to be less than under options 1 and 2 as this option presents a less comprehensive approach to safeguarding.
	?	?	?					
8.	+ +	+ +	+ +	✓		✓		This option would contribute to the aim of safeguarding minerals resources, although would only safeguard a limited amount of the resource.
9.	0	0	0					No clear link
10.	+ +	+ +	+ +	✓		✓	✓	Extraction would still need to accord with other policies relating to conserving and enhancing the historic environment. The option would however have strong positive effects in terms of ensuring a sufficient supply of building stone for the repair of historic buildings and for ensuring new development is appropriate in its context. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the
	?	?	?					

								likelihood of displacement along with the nature, location or consequences of any displaced development is not known, although any effects are likely to be less than under options 1 and 2 as this option presents a less comprehensive approach to safeguarding.
11.	+	+	+	✓		✓	✓	Extraction would still need to accord with other policies relating to protecting and enhancing the landscape. The option would however have positive effects in terms of ensuring a sufficient supply of building stone for the repair of buildings which contribute to landscape character. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known, although any effects are likely to be less than under options 1 and 2 as this option presents a less comprehensive approach to safeguarding.
	?	?	?					
12.	+	+	+	✓			✓	Safeguarding building stone will help to ensure that minerals are available for economic growth. This positive effect will increase over time as minerals which may have been sterilised over time are safeguarded. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement and effects of this on the economy is not known, although any effects are likely to be less than under options 1 and 2 as this option presents a less comprehensive approach to safeguarding.
	?	?	?					
13.	0	0	0	✓			✓	There may be a very minor link between safeguarding minerals and job creation overall there is no link. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement and effects of this on the viability and vitality of communities is not known, although any effects are likely to be less than under options 1 and 2 as this option presents a less comprehensive approach to safeguarding.
	?	?	?					
14.	0	0	0	✓	✓	✓	✓	Whilst there is no clear direct link between the objective and the option some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known, although any effects are likely to be less than under options 1 and 2 as this option presents a less comprehensive approach to safeguarding.
	?	?	?					
15.	0	0	0	✓			✓	Extraction would still need to accord with other policies relating to protecting communities and amenity. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known, although any effects are likely to be less than under options 1 and 2 as this option presents a less comprehensive approach to safeguarding.
	?	?	?					
16.	0	0	0	✓		✓	✓	Whilst there is no clear direct link between the objective and the option some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the

	?	?	?					nature, location or consequences of any displaced development is not known, although any effects are likely to be less than under options 1 and 2 as this option presents a less comprehensive approach to safeguarding.
17.	+	+	+	✓		✓		Whilst this option would help to ensure that sufficient building stone resources are available locally for new development, the availability of stone may become more limited over time as only quarries and former quarries would be safeguarded. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known, although any effects are likely to be less than under options 1 and 2 as this option presents a less comprehensive approach to safeguarding.
	?	?	?					

Option 4

This option would operate in parallel with the other options and would safeguard any additional resources of building stone (not identified in current BGS minerals resource information) proposed in the site allocations and preferred areas, where supported by adequate resource information.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0	✓	✓	✓	✓	Extraction would still need to accord with other policies relating to biodiversity, habitats and wildlife. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
	?	?	?					
2.	0	0	0	✓	✓	✓	✓	Extraction would still need to accord with other policies relating to water quality and supply. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
	?	?	?					
3.	0	0	0	✓		✓	✓	Extraction would still need to accord with other policies relating to transport. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the

	?	?	?					nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
4.	0 ?	0 ?	0 ?		✓	✓		Extraction would still need to accord with other policies relating to air quality. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
5.	+ ?	+ ?	+ ?	✓		✓		Safeguarding could ensure that the best use is made of land in extracting building stone and in terms of other developments. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
6.	0 ?	0 ?	0 ?	✓		✓	✓	Whilst there is no clear direct link between the objective and the option some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
7.	0 ?	0 ?	0 ?	✓		✓	✓	Whilst there is no clear direct link between the objective and the option some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
8.	++	++	++	✓		✓		This option would contribute to the aim of safeguarding minerals resources, by safeguarding additional resources.
9.	0	0	0					No clear link
10.	+ ?	+ ?	+ ?	✓		✓	✓	Extraction would still need to accord with other policies relating to conserving and enhancing the historic environment. The option would however have positive effects in terms of ensuring a sufficient supply of building stone for the repair of historic buildings and for ensuring new development is appropriate in its context. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to

								sites which have been put forward for minerals extraction.
11.	+	+	+	✓		✓	✓	Extraction would still need to accord with other policies relating to protecting and enhancing the landscape. The option would however have positive effects in terms of ensuring a sufficient supply of building stone for the repair of historic buildings and for new development and for ensuring new development is appropriate in its context, thus conserving and enhancing the wider landscape. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
	?	?	?					
12.	+	+	+	✓			✓	Safeguarding building stone will help to ensure that minerals are available for economic growth. This positive effect will increase over time as minerals which may have been sterilised over time are safeguarded. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement and effects of this on the economy is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
	?	?	?					
13.	0	0	0	✓			✓	There may be a very minor link between safeguarding minerals and job creation overall there is no link. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement and effects of this on the viability and vitality of communities is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
	?	?	?					
14.	0	0	0	✓	✓	✓	✓	Whilst there is no clear direct link between the objective and the option some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
	?	?	?					
15.	0	0	0	✓			✓	Extraction would still need to accord with other policies relating to protecting communities and amenity. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
	?	?	?					
16.	0	0	0	✓		✓	✓	Whilst there is no clear direct link between the objective and the option some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the

	?	?	?					nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
17.	+	+	+	✓		✓		This option would help to ensure that sufficient building stone resources are available locally for new development, especially as the additional resources to be safeguarded are those that have been identified as part of the site allocations process and are therefore likely to be commercially viable. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. The likelihood of displacement of development under this option is however slim as it relates to sites which have been put forward for minerals extraction.
	?	?	?					

Summary of assessment
As safeguarding does not infer building stone extraction will take place there is generally no predicted direct effect. Were development to take place it would need to accord with other policies in the Plan.

All options would contribute positively to safeguarding minerals and providing minerals to meet the needs of the population, although Option 1 would perform better than Option 2 in this respect. In other ways positive indirect effects are noted, such as in terms of contributing to the future supply of building stone for new build and for the repair of historic assets or buildings which contribute to landscape character.

Under each option, effects from displacement of development which would have taken place are uncertain as this will depend upon the stringency of any policy approach applied.

Recommendations
A combination of Option 1 and Option 4 is likely to be most beneficial in sustainability terms as the greatest area of building stone resource would be safeguarded.

Overall Spatial Options for Oil and Gas (id23)

Assumptions – It is assumed under these options that the overall amount of gas extraction and processing would be the same under all three options. Whilst reference is made to areas currently licensed for gas exploration and production, no assumption is made that these will be the only licensed areas for the duration of the Plan. Consideration has instead been given to the location of potential gas reserves. Climate change considerations relate only to the climate change implications of the development itself – it is not possible to predict the climate change implications related to possible subsequent uses of the gas in the same way as future uses of other minerals once extracted are not considered.

Option 1
Aim to direct all gas developments (including production and processing) to locations outside of the National Park and AONBs, where viable alternatives to these locations exist.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓		✓	✓	Positive effects would be experienced in relation to habitats and wildlife in the National Park and AONBs and whilst there may be increased negative effects elsewhere, depending on the location of the development, there would be opportunities to locate away from important sites (many of which are designated at the highest level). As part of the statutory purpose of National Parks is to conserve and enhance wildlife it is considered that overall this option is positive, becoming more so in the long term should the number of gas related developments in the National Park reduce from current levels. In other parts of the Plan area gas developments may have negative effects on biodiversity.
	-	-	-					
2.	-	-	-	✓		✓	✓	There is potential for harm to water quality and supply from gas developments and parts of the areas which contain gas resources which are outside of National Parks and AONBs are also within Nitrate Vulnerable Zones or Source Protection Zones and this option could therefore increase the potential to harm these areas.
3.	+	+	+		✓		✓	Under this option there could be minor positive effects on minimising travel as developments are more likely to be located closer to centres of population (workforce).

4.	0	0	0					No clear link
5.	-	-	-	✓		✓		The lowest quality agricultural land is generally found in the National Park and AONBs and this option would therefore direct gas developments to areas which have higher quality agricultural land.
6.	+	+	+		✓		✓	Under this option there could be minor positive effects on minimising travel and therefore greenhouse gas emissions as developments are likely to be located closer to centres of population (workforce). However there may be effects on climate change through fugitive emissions of greenhouse gases.
	-	-	-					
7.	0	0	0					No clear link
8.	-	-	-	✓		✓		The option supports gas development in principle and therefore does not support reducing the use of resources.
9.	0	0	0					No clear link
10.	+	+	+	✓		✓		Positive effects would be experienced in relation to the historic environment in the National Park and AONBs and whilst there may be increased negative effects elsewhere depending on the location of the development, there would be opportunities to locate away from important sites. As part of the statutory purpose of National Parks is to conserve and enhance cultural heritage it is considered that overall this option is positive. This option also is likely to reduce the amount of pipeline required to link to wider gas networks thus minimising any potential impacts on archaeology. In other parts of the Plan area gas developments may have negative effects on the historic environment.
	-	-	-					
11.	+ +	+ +	+ +	✓		✓		This option would protect the highest level of landscape designations in the Joint Plan area and would therefore be strongly positive against this objective. In the longer term, the positive effects may increase further should the number of gas related developments in the National Park reduce from current levels. In other parts of the Plan area gas developments may have negative effects on landscape.
	-	-	-					
12.	+	+	+	✓			✓	Under this option gas developments could be directed to areas closer to centres of population (as National Parks and AONBs are comparatively sparsely populated) and therefore would support these economies and potentially provide jobs for local populations.
13.	+	+	+	✓			✓	Under this option gas developments could be directed to areas closer to centres of population (as National Parks and AONBs are comparatively sparsely populated) and therefore would support these economies and potentially provide jobs for local populations. Whilst at the local level impacts on tourism would be uncertain as tourism assets outside of the National Park and AONBs could be affected, at the strategic level this option would be in line with the second statutory National Park purpose (to provide opportunities to understand and enjoy the National Park) and would therefore have positive effects overall as tourism is a relatively large sector of the National Park's economy. Over time this may increase should the number of gas related development in the National Park reduce from current levels. Effects on tourism outside of the National Park may, on the whole, be less significant.

14.	+	+	+ +	✓			✓	Whilst at the local level impacts on recreation would be uncertain as tourism assets outside of the National Park and AONBs could be affected, at the strategic level this option would be in line with the second statutory National Park purpose (to provide opportunities to understand and enjoy the National Park) and would therefore have positive effects overall. Over time this may increase should the number of gas related development in the National Park reduce from current levels. Effects on recreation outside of the National Park may, on the whole, be less significant.
15.	?	?	?	✓	✓		✓	Effects would depend upon the precise location of gas related development and could be the same either within or outside of the National Park and AONBs.
16.	0	0	0					No clear link
17.	0	-	-	✓			✓	This option may potentially restrict gas developments from coming forward, as parts of the National Park and the Howardian Hills AONB are PEDL licensed, which would have a negative effect on providing minerals for the population during the medium and longer term bearing in mind that there are existing gas developments that will provide for the shorter term.

Option 2

Support the principle of gas developments (including production and processing) across the whole of the Joint Plan area provided that, within the National Park and AONBs, and in locations which may impact on the townscape and setting of the historic City of York, particularly high standards of siting, design and mitigation are applied.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	-	-	-	✓		✓	✓	Whilst effects on biodiversity, wildlife and habitats are on the whole uncertain, the principle of locating within the National Park could be contrary to the first statutory National Park purpose which includes conserving and enhancing the Park's wildlife. Effects are minor as particularly high standards of siting, design and mitigation are applied.
2.	?	?	?	✓		✓	✓	Under this option, whilst there are more options to develop in areas away from Nitrate Vulnerable Zones and

								Groundwater Source Protection Zones there are still potential for impacts on water quality.
3.	-	-	-		✓		✓	Under this option, there is more potential for development to take place in areas which are away from main roads and centres of population which may result in more travel movements especially in relation to construction and processing.
4.	0	0	0					No clear link
5.	+	+	+	✓		✓		This option provides opportunities to use lower quality agricultural land which is generally located in the National Parks and AONBs.
6.	-	-	-		✓		✓	Under this option, there is potential for development to take place in areas which are away from main roads and centres of population which may result in more travel movements and therefore more greenhouse gas emissions, especially in relation to construction and processing. There may also be effects on climate change through fugitive emissions of greenhouse gases.
7.	0	0	0					No clear link
8.	-	-	-	✓		✓		The option supports gas development in principle and therefore does not support reducing the use of resources.
9.	0	0	0					No clear link
10.	- -	-	-	✓		✓		The option could have negative effects on the historic landscape of National Parks and AONBs by supporting gas developments in these areas. Effects are minor as particularly high standards of siting, design and mitigation are applied.
11.	-	-	-	✓		✓		The option could have negative effects on the landscape of National Parks and AONBs by supporting gas developments in these areas. Effects are minor as particularly high standards of siting, design and mitigation are applied.
12.	+	+	+	✓		✓		The option would support the economy and job creation although positive effects may be slightly less than under option 1 as these may be more dispersed and therefore benefits may not be felt in communities in the Plan area.
13.	+ -	+ -	+ -		✓		✓	The option would support the economy and job creation although positive effects may be slightly less than under option 1 as these may be more dispersed and therefore benefits may not be felt in communities in the Plan area. Effects on tourism would be uncertain as this depends on the location but there could be negative effects in the National Park where gas related development could have a more significant effect on tourism which is a relatively large part of the Park's economy. Effects are minor as particularly high standards of siting, design

								and mitigation are applied.
14.	-	-	-		✓		✓	Under this option there is potential for harm to the second National Park statutory purpose through the development of gas related developments which could undermine opportunities for understanding and enjoying the National Park. Effects are minor as particularly high standards of siting, design and mitigation are applied.
15.	?	?	?	✓	✓		✓	Effects would depend upon the precise location of gas related development.
16.	0	0	0					No clear link
17.	+ +	+ +	+ +	✓		✓		This option would have strong positive effects in terms of ensuring sufficient minerals are provided by generally not restricting gas developments across the Plan area.

Option 3

Support the principle of exploration and appraisal for gas development across the whole of the Joint Plan area, but aim to direct the siting of any processing or electricity generating facilities to locations outside National Parks and AONBs, where viable alternatives to these locations exist.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	-	-	-	✓		✓	✓	Small scale negative effects may be experienced in relation to habitats and wildlife in the National Park and AONBs as gas development is supported, though in many cases alternative locations for energy processing or generation would be sought. There would also be the potential for increased negative effects elsewhere depending on the location of the development, though it is more likely that there would be opportunities to locate away from important sites (as there is less of a concentration of the most important sites outside of the National Park / AONBs).

2.	?	?	?	✓		✓	✓	Under this option, whilst there are more options to develop in areas away from Nitrate Vulnerable Zones and Groundwater Source Protection Zones there is still potential for impacts on water quality.
3.	+	+	+		✓		✓	Under this option there could be minor positive effects on minimising travel as processing is more likely to be located closer to centres of population (workforce). The effects would not be as positive as option 1 as some development could take place in National Parks and AONBs (which are located away from the strategic road network) and in particular there would be construction traffic associated with exploration, appraisal and extraction.
4.	0	0	0					No clear link
5.	+	+	+	✓		✓		Whilst exploration, appraisal and production could take place on lower quality agricultural land, processing may be more likely to be directed to areas of higher quality agricultural land.
	-	-	-					
6.	+	+	+		✓		✓	Under this option there could be minor positive effects on minimising travel, and therefore greenhouse gas emissions, as processing is more likely to be located closer to centres of population (workforce). The effects would not be as positive as option 1 as some development could take place in National Parks and AONBs and in particular there would be construction traffic associated with exploration, appraisal and extraction. However there may also be effects on climate change through fugitive emissions of greenhouse gases.
	-	-	-					
7.	0	0	0					No clear link
8.	-	-	-	✓		✓		The option supports gas development in principle and therefore does not support reducing the use of resources.
9.	0	0	0					No clear link
10.	?	?	?	✓		✓		Any effects would depend upon the location of development. Supporting exploration, appraisal and extraction across the Plan area could result in the need for long pipelines which could harm archaeological assets.
11.	-	-	-	✓		✓		This option would enable exploration, appraisal and extraction in National Parks and AONBs which could harm the landscape, although harm is thought to be less than under option 2 due to processing facilities not being supported in these locations.
12.	+	+	+		✓		✓	Under this option processing could be directed to areas closer to centres of population (as National Parks and AONBs are comparatively sparsely populated) and therefore would support these economies and potentially provide jobs for local populations. The effects would not be as positive as under option 1.
13.	+	+	+		✓		✓	Under this option processing could be directed to areas closer to centres of population (as National Parks and AONBs are comparatively sparsely populated) and therefore would support these economies and potentially provide jobs for local populations. The effects would not be as positive as under option 1. There may be potential for effects on tourism in the National Park which may be relatively more significant than effects elsewhere due to the importance of tourism to the National Park's economy and the type of activity people
	-	-	-					

								visit the Park for.
14.	-	-	-		✓		✓	Under this option there is potential for harm to the second National Park statutory purpose through the development of gas related developments which could undermine opportunities for understanding and enjoying the National Park. Effects would be less than under option 2 as only exploration, appraisal and extraction would take place in the Park. Effects of processing may also affect recreation outside of the plan area.
15.	?	?	?	✓	✓		✓	Effects would depend upon the precise location of gas related development.
16.	0	0	0					No clear link
17.	+	+	+	✓		✓		This option would have positive effects in terms of ensuring sufficient minerals are provided.

Proposed alternative option 4: (Or) This option supports the principle of gas developments (including production and processing) across the whole of the Joint Plan area provided that, within the National Park and AONBs, and in locations which may impact on the townscape and setting of the historic City of York, particularly high standards of siting, design and mitigation are applied, but aim to direct the siting of any processing or electricity generating facilities to locations outside the National Park and AONBs where viable alternatives to these exist.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0 -	0 -	0 -	✓		✓	✓	Whilst effects on biodiversity, wildlife and habitats are on the whole uncertain, the principle of locating within the National Park could be contrary to the first statutory National Park purpose which includes conserving and enhancing the Park's wildlife. Effects are minor as particularly high standards of siting, design and mitigation are applied. That said, the option directs the siting of processing or electricity generating facilities away from the National Park where possible. This could moderate any negative effects in the National Park to a degree. Outside the National Park negative effects may also occur (albeit less likely than in the National Park), depending on the

								location of gas development and processing / electricity generation displaced from the Park / AONBs. The overall effect is thought to range from non-significant to negative in the National Park / AONBs to negative outside of the National Park / AONBs.
2.	?	?	?	✓		✓	✓	Under this option, whilst there are more options to develop in areas away from Nitrate Vulnerable Zones and Groundwater Source Protection Zones there is still potential for impacts on water quality.
3.	+	+	+		✓		✓	Under this option there could be minor positive effects on minimising travel as processing is more likely to be located closer to centres of population (workforce). The effects would not be as positive as Option 1 as some development could take place in National Parks and AONBs and in particular there would be construction traffic associated with exploration, appraisal and extraction.
4.	0	0	0					No clear link
5.	+	+	+	✓		✓		Whilst exploration, appraisal and production could take place on lower quality agricultural land, processing would be directed to areas of higher quality agricultural land.
	-	-	-					
6.	+	+	+		✓		✓	Under this option there could be minor positive effects on minimising travel, and therefore greenhouse gas emissions, as processing is more likely to be located closer to centres of population (workforce). The effects would not be as positive as Option 1 as some development could take place in National Parks and AONBs and in particular there would be construction traffic associated with exploration, appraisal and extraction. However there may be effects on climate change through fugitive emissions of greenhouse gases.
	-	-	-					
7.	0	0	0					No clear link
8.	-	-	-	✓		✓		The option supports gas development in principle and therefore does not support reducing the use of resources.
9.	0	0	0					No clear link
10.	?	?	?	✓		✓		Any effects would depend upon the location of development, however the requirement for high standards of siting, design and mitigation would help to minimise any effects. Supporting exploration, appraisal and extraction across the Plan area could result in the need for long pipelines which could harm archaeological assets. High design standards would lessen any impacts on the setting of York.
11.	-	-	-	✓		✓		This option would enable exploration, appraisal and extraction in National Parks and AONBs which could harm the landscape, although the requirement for high standards of siting, design and mitigation would help to minimise these effects. There may also be negative effects on the landscape in other parts of the Plan area.
12.	+	+	+		✓		✓	Under this option processing could be directed to areas closer to centres of population (as National Parks and

								AONBs are comparatively sparsely populated) and therefore would support these economies and potentially provide jobs for local populations. The effects would not be as positive as under option 1.
13.	+	+	+		✓		✓	Under this option processing could be directed to areas closer to centres of population (as National Parks and AONBs are comparatively sparsely populated) and therefore would support these economies and potentially provide jobs for local populations. The effects would not be as positive as under option 1. There may be potential for effects on tourism in the National Park which may be relatively more significant than effects elsewhere due to the importance of tourism to the National Park's economy and the type of activity people visit the Park for.
	-	-	-					
14.	-	-	-		✓		✓	Under this option there is potential for harm to the second National Park statutory purpose through the development of gas related developments which could undermine opportunities for understanding and enjoying the National Park. Effects would be less than under option 2 as only exploration, appraisal and extraction would take place in the Park, and less than option 3 as, particularly high standards of siting, design and mitigation are also required for National Parks and AONBs. Effects of processing may also affect recreation outside of the plan area.
15.	?	?	?	✓	✓		✓	Effects would depend upon the precise location of gas related development.
16.	0	0	0					No clear link
17.	+	+	+	✓		✓		This option would have positive effects in terms of ensuring sufficient minerals are provided.

Proposed alternative option 5: (Or) This option supports the principles of gas developments (including production and processing) across the whole of the Joint Plan area.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	--	--	--	✓		✓	✓	Whilst the potential for effects on biodiversity and geo-diversity is dependent upon the precise location of any gas development, this option would support gas development in principle in locations which are designated for

	-	-	-					nature conservation purposes. Effects may range from major negative (for instance in a designated landscape containing European designated sites) to minor negative (e.g. in a landscape with biodiversity / geo-diversity limited / local biodiversity / geo-diversity interest).
2.	?	?	?	✓		✓	✓	Whilst there is potential for harm to water quality and supply from gas developments this option would provide potential for developments to be located away from Nitrate Vulnerable Zones and Groundwater Source Protection Zones.
3.	-	-	-		✓		✓	Under this option, there is more potential for development to take place in areas which are away from main roads and centres of population which may result in more travel movements especially in relation to construction and processing.
4.	0	0	0					No clear link
5.	?	?	?	✓		✓		Whilst there is potential for harm to land and soils resulting from gas developments, this option provides opportunities to locate these in areas of lower quality agricultural land.
6.	-	-	-		✓		✓	Under this option, there is more potential for development to take place in areas which are away from main roads and centres of population which may result in more travel movements and therefore more greenhouse gas emissions, especially in relation to construction and processing. As with other options fugitive emissions are also a possibility.
7.	0	0	0					No clear link
8.	-	-	-	✓		✓		The option supports gas developments in principle and therefore does not support reducing the use of resources.
9.	0	0	0					No clear link
10.	-	-	-	✓		✓		Whilst the potential for effects on the historic environment is dependent upon the precise location of any gas development, this option would support gas development in principle in locations which may result in harm to the historic environment (particularly protected landscapes or near to important townscapes which have a high proportion of heritage assets).
11.	---	---	--	✓		✓		This option could have negative effects on the landscape by supporting the principle of gas developments across the Plan area, including in National Parks and AONBs (which may be more significantly affected). This could become significant in the longer term through cumulative effects.
12.	+	+	+	✓		✓	✓	This option could have positive effects on the economy and job creation, potentially across the Joint Plan

	-	-	-					area, although depending on the scale, location and number of developments could lead to negative effects on the tourism economy in areas that are highly dependent on that sector.
13.	+	+	+		✓		✓	This option could have positive effects on the vitality and viability of communities and job creation, potentially across the Joint Plan area, although depending on the scale, location and number of developments could lead to negative effects on communities whose vitality is dependent on tourism.
	-	-	-					
14.	- --	- --	- --		✓		✓	Whilst the potential for impacts on recreation assets would be dependent upon the location of any gas development, under this option, there is potential for gas development to have a particularly negative effect on parts of the Plan area which are particularly important for recreation such as the National Park and the AONBs.
15.	?	?	?	✓	✓		✓	Effects would depend upon the precise location of gas related development, but there is potential for gas developments to affect the health, safety and wellbeing of communities especially during the construction phase.
16.	0	0	0					No clear link
17.	+ +	+ +	+ +	✓		✓		This option would have strong positive effects in terms of ensuring sufficient minerals are provided by generally not restricting gas developments across the Plan area.

Proposed alternative option 6: (Or)

Under this option planning permission will be granted for exploration, appraisal or production of oil and gas and unconventional hydrocarbons provided they do not result in any significant adverse impacts on local communities or the environment.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	?	?	?	✓		✓	✓	This option would have some negative effects in relation to protecting biodiversity and geo-diversity, but below the level of significance, although this is dependent upon the definition of 'significant' within the option.

2.	?	?	?	✓		✓	✓	This option would have some negative effects in relation to protecting water, but below the level of significance, although this is dependent upon the definition of 'significant' within the option.
3.	?	?	?	✓		✓	✓	Whilst the option requires developments to not have significant adverse impacts on the environment there is uncertainty over whether this would specifically include moving towards more sustainable forms of transportation, and the option does not specify transportation method.
4.	?	?	?	✓		✓	✓	This option would have some negative effects in relation to protecting air quality but below the level of significance although this is dependent upon the definition of 'significant' within the option.
5.	-	-	-	✓		✓		This option supports gas / unconventional hydrocarbon developments in principle, suggesting that in principle the loss of soils and land would be supported as this would be necessary for any gas development (though the significance of the land take would depend on location).
6.	- ?	- ?	- ?	✓		✓	✓	Whilst the option requires developments to not have significant adverse impacts on the environment there is uncertainty over whether this would specifically include reducing the causes of climate change. The principle of supporting hydrocarbon extraction opens up the prospect of fugitive emissions being released.
7.	?	?	?	✓		✓	✓	Whilst the option requires developments to not have significant adverse impacts on the environment there is uncertainty over whether this would specifically include considering measures to adapt to climate change.
8.	--	--	--	✓		✓		The option supports hydrocarbon developments in principle and therefore does not support reducing the use of resources. As this option allows the full range of hydrocarbons to be extracted (none of which are renewable) this could potentially be a higher magnitude impact than other options.
9.	0	0	0					No clear link
10.	?	?	?	✓		✓	✓	This option would have some negative effects in relation to the historic environment, but below the level of significance, although this is dependent upon the definition of 'significant' within the option.
11.	- ?	- ?	- ?	✓		✓		Whilst this option requires developments to not have a significant adverse impact on the environment, in principle it would support gas developments in the National Park and AONBs. Across the rest of the Plan area there is also uncertainty over the definition of 'significant' in the option.
12.	+ ?	+ ?	+ ?	✓	✓	✓	✓	The option supports hydrocarbon developments in principle which would therefore contribute positively to this sustainability objective, however depending upon the definition of 'significant' this could be hampered by

								consideration of environmental constraints.
13.	+ ?	+ ?	+ ?	✓	✓	✓	✓	The option supports hydrocarbon developments in principle which would therefore contribute positively to this sustainability objective through supporting/creating jobs which support the vitality and viability of communities, however depending upon the definition of 'significant' this could be hampered by consideration of environmental constraints.
14.	+ -	+ -	+ -	✓		✓	✓	Protecting the environment and communities may indirectly lead to protection opportunities for recreation, leisure and learning. However, there is also the potential for hydrocarbon developments to harm such opportunities (as illustrated elsewhere in this assessment).
15.	+ ?	+ ?	+ ?	✓	✓	✓	✓	This option would have positive effects in relation to protecting the health and safety of communities, and also protecting some environmental features that contribute to the wellbeing of communities. However the degree to which wellbeing is successfully protected would be dependent upon the definition of 'significant' within the option.
16.	0	0	0					No clear link
17.	+ ?	+ ?	+ ?	✓		✓		The option supports hydrocarbons developments in principle which would contribute positively towards this objective, however depending upon the definition of 'significant' this could be hampered by consideration of environmental constraints.

Summary of assessment

The assessment has revealed that Option 1 is likely to provide the most benefits in terms of both protecting the natural environment and landscapes and also supporting local economies, although this option could potentially direct gas developments to areas of highest agricultural land quality and areas where water sources are protected as well as having negative effects in terms of meeting the energy needs of the population. Under Options 2, 3, 4 and 5 there may be negative effects on the landscape, natural and historic environment and recreation, with Option 2 also predicted to have uncertain to positive effects for the historic environment, whilst Option 5 would potentially have negative effects on a range of environmental objectives. Effects under Option 6 often show positive aspects due to the requirement that they do not result in any significant adverse impacts on local communities or the environment. However, there is significant uncertainty in this assessment as factors such as the threshold of significant impacts is not known.

All options are considered to be negative in relation to minimising resource use due to the support they offer to the extraction of a non-renewable resource. Option 6 performs the worst in this respect as its support the extraction of a wider range of hydrocarbons,

Recommendations

It is acknowledged that whilst Option 1 performs best overall, Options 2 and 3 would provide a better framework for ensuing sufficient gas

developments can come forward. A combination of options whereby license holders, whose license(s) cover land both within and outside National Parks and AONBs, must investigate possibilities outside of these areas first and all operators must aim to locate processing facilities outside of these areas and apply particularly high standards of siting, design and mitigation within these areas is recommended, though option 6's requirement for avoidance of 'significant adverse impacts on local communities or the environment' provides a broader scope for mitigation (provided it is coupled with the 'particularly high standard' mentioned in some of the options).

Co-ordination of Gas Extraction and Processing (id24)

Assumptions – Whilst reference is made to areas currently licensed for gas exploration and production, no assumption is made that these will be the only licensed areas for the duration of the plan. Consideration has been given to the location of potential gas resources.

Option 1
Support a co-ordinated approach to gas extraction and processing through supporting, where viable, the preferential use and/or adaptation of existing permitted processing infrastructure for the processing of any new gas finds and, in relation to any development of new gas resources not accessible to existing processing infrastructure, support coordination between licence operators and encourage the development of shared processing infrastructure where this would help reduce overall environmental impacts.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+					This option refers to reducing the overall environmental impact, which includes biodiversity and geodiversity. A coordinated approach to dealing with infrastructure in relation to gas extraction and processing is likely to minimise the amount of surface construction causing disturbance for wildlife. It is also likely to enable the cumulative impacts of any new development to be understood across the plan area. Overall this is likely to be positive.
2.	+	+	+					This option refers to reducing the overall environmental impact, which includes adverse effects on water quality and supply. Should new infrastructure be required for extraction or processing then consideration for the nitrate vulnerable zones and source protection zones would need to be considered. A co-ordinated approach is likely to reduce likely impacts through minimising the need for development and help to identify cumulative impacts from any new development.
3.	0	+	+					Given that gas is usually transported by pipeline, it is considered that a co-ordinated approach to gas extraction and processing where existing infrastructure is used is likely to have a neutral effect on this

			?					objective. However, where new development would not be able to link into the existing system or is not in close proximity, the transportation of gas may have additional impacts on transport and associated emissions. On balance, it is likely to have a neural effect in the short term becoming more uncertain in the long-term as new areas for processing or extraction are identified.
4.	+	+	+					The option refers to reducing overall environmental impact, which would include air quality. This approach may result in fewer additional impacts from extraction and processing through the use of existing infrastructure and minimising locations for atmospheric or fugitive emissions. This could have a minor positive effect.
5.	-	-	-		✓	✓		The aim of this option is to reduce the infrastructure required to extract and process gas through co-ordination which is therefore likely to have a neutral effect on soil and land use efficiency. Temporary effects may be experienced where new pipeline/infrastructure or connections to existing infrastructure are required or where soils loss occurs as a result of new infrastructure.
6.	0	0	0					There is no clear link between this policy and the objective for climate change.
7.	0	0	0					There is no clear link between this policy and the objective for adapting to climate change.
8.	-	-	-	✓		✓		In principle, this option is supporting the extraction of gas and does not therefore support reducing the use of resources. However, through co-ordinating the use of materials this option would help to minimise the resources used in helping to extract and process gas. The net effects however from gas extraction are likely to outweigh these positives.
9.	0	0	0					There is no clear link between this policy and the objective for minimising waste.
10.	0	0	?					The infrastructure required for extraction and processing waste and pipelines can have adverse effects on heritage assets such as archaeological deposits. This option would help to minimise additional adverse impacts through using existing infrastructure for extraction and processing. There is the potential for effects where new infrastructure is required but this policy would help to minimise environmental effects, including on the historic environment and would be subject to more specific policy relating to the historic environment. On balance, it is likely that the effects are neutral in the short term but may be uncertain in the long-term taking into consideration the impacts of any new infrastructure.
11.	+	+	?	✓		✓		The infrastructure required for extraction and processing waste can have adverse effects on the landscape. This option would help to minimise additional adverse impacts through using existing infrastructure for extraction and processing. There is the potential for effects where new infrastructure is required but this policy would help to minimise environmental effects, including landscape considerations and would be subject to other environmental policy.
12.	+	+	+	✓			✓	An indirect consequence of a co-ordinated approach could be in the reduction of additional costs in setting up new gas processing sites improving their viability if they are in proximity to connect. In addition, a co-ordinated approach to processing is likely to ensure continuity of investment by ensuring that facilities can work to capacity to gain maximum economic benefit.

13.	0	0	0					There is no clear link between this option and the objective for local communities.
14.	0	0	0					There is no clear link between this options and the objective for recreation and leisure.
15.	0	0	0					The use of existing processing infrastructure is unlikely to significant effects upon health and well-being.
16.	0	0	0					Support for a co-ordinated approach which advocates the use of existing infrastructure is not likely to have significant effects on flood risk. New infrastructure would need to ensure no additional impacts as a result of any development.
17.	0	0	0					There is no clear link between this policy and objective for meeting the needs of the population.

Option 2
Do not express specific support for a co-ordinated approach to gas extraction and processing.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?					This option would rely on other policies in the plan to make decisions on the suitability of gas extraction and processing. The effects are therefore considered uncertain in comparison to option 1.
2.	?	?	?					This option would rely on other policies in the plan to make decisions on the suitability of gas extraction and processing. The effects are therefore considered uncertain in comparison to option 1.
3.	?	?	?					Gas is usually transported via pipeline. Delivering and processing this effectively requires the use of this infrastructure which may already be available for connection between different sites. This option however, would rely on the developer/gas extractor to liaise effectively to utilise this infrastructure. The effects could be positive or negative depending on the outcome of this and the opportunities taken to minimise additional transportation infrastructure, particularly by road.
4.	?	?	?					This option would rely on other policies in the plan to make decisions on the suitability of gas extraction and processing. The effects are therefore considered uncertain in comparison to option 1.
5.	- ?	- ?	- ?	✓	✓	✓		This option would not explicitly support specific co-ordination for gas processing using the existing infrastructure which may lead to alternative facilities being use, which may have a negative impact on land use efficiency, particularly where existing facilities are not working to capacity. This option would leave the decision-making to other policies in the plan and rely on the developers/gas extractors to liaise to maximise effectiveness. The effects are also therefore considered uncertain in comparison to option 1.
6.	0	0	0					There is no clear link between this policy and the objective for climate change.
7.	0	0	0					There is no clear link between this policy and the objective for adapting to climate change.
8.	-	-	-	✓		✓		In principle, this option is supporting the extraction of gas and does not therefore support reducing the use of resources. In comparison to option 1, it may also allow new infrastructure development as opposed to co-ordinating the use of existing facilities.
9.	0	0	0					There is no clear link between this policy and the objective for minimising waste.

10.	?	?	?					This option would rely on other policies in the plan to make decisions on the suitability of gas extraction and processing. The effects are therefore considered uncertain in comparison to option 1.
11.	?	?	?					This option would rely on other policies in the plan to make decisions on the suitability of gas extraction and processing. The effects are therefore considered uncertain in comparison to option 1.
12.	+	+	+	✓			✓	In comparison to option 1, this would allow alternative locations with the potential for gas processing to be considered which may link better to markets or connecting to extraction locations in the future outside of those areas already identified. This may have positive benefits for the economy by allowing extraction in locations with identified resources. However, this may lead to existing processing plants not being used to their full capacity should alternative locations be identified. This may cause some conflict with existing processing infrastructure and schemes already in place.
	-	-	-					
13.	0	0	0					There is no clear link between this option and the objective for local communities.
14.	0	0	0					There is no clear link between this option and the objective for recreation and leisure.
15.	0	0	0					The use of existing processing infrastructure is unlikely to have significant effects upon health and well-being.
16.	?	?	?					This option would rely on other policies in the plan to make decisions on the suitability of gas extraction and processing. New infrastructure would need to ensure no additional impacts as a result of any development. The effects are therefore considered uncertain in comparison to option 1.
17.	0	0	0					There is no clear link between this policy and objective for meeting the needs of the population as it is considered that sufficient amounts of gas would be extracted under either option.

Summary of assessment

The approach outlined in Option1 is likely to have more positive effects than option 2 in relation to making use of existing infrastructure and supporting shared infrastructure where environmental impacts can be minimised. This is likely to reduce the need for additional land, reduce disturbance to wildlife and any additional impacts on the landscape/historic environment as well as reduce the cumulative impacts of processing across the plan area. The majority of effects from Option 2 are uncertain given that they would predominantly rely on other policies in the plan as well as developers to co-ordinate gas processing. In terms of the economy, both options have mixed effects given that option 1 is likely to reduce costs through use of existing facilities but may reduce the flexibility of processing in certain areas or proximity to markets; whilst Option 2 is likely to allow more flexibility but may require new facilities which are costly and effect viability.

Recommendations

Supporting a co-ordinated approach such as option 1 is more likely to positively contribute to sustainable development and the consideration of cumulative effects as opposed to relying on other policies in the plan to make decisions on gas extraction and processing.

Gas Developments (Exploration and Appraisal) (id25)

Option 1
This option would support development for the purposes of exploration and appraisal for gas (where such development would be consistent with other strategic policies in the Plan) where the site has been selected to minimise any adverse impacts on the environment, amenity and on transport considerations resulting from the exploration and appraisal activity, so far as practicable taking into account the geological target being explored or appraised, and subject to particularly high standards of siting, design and mitigation where any development is proposed within or in close proximity to the National Park or AONBs and in locations which may impact on the townscape and setting of the historic City of York.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓		✓	✓	The option includes reference to minimising adverse impacts on the environment which would include biodiversity, which is positive. However, the impacts to be considered would include disturbance to wildlife through exploration activity such as vibration from seismic testing and drilling exploratory wells. In addition, water usage in connection with exploratory gas development such as through hydraulic fracturing ('fracking') may also have an impact on biodiversity where sites are reliant on good quality or supply of water. Links between biodiversity and other environmental factors would need to be considered. The significance of these impacts may be minor to major depending on the location, type of exploratory function and threshold for harm. Therefore, the impacts are also uncertain.
	?	?	?					
2.	-	-	-	✓		✓	✓	This option includes reference to minimising adverse impacts on the environment, which would include water quality and supply, which is positive. Should exploration be required then consideration should be given to aquifers, nitrate vulnerable zones and source protection zones. However, exploration and appraisal for gas can have a significantly negative effect on water supply and quality depending on the type of gas. Exploration and appraisal for coal bed methane and shale gas may incur significantly harmful effects due to the volume of water that can be used and the contamination as a result of any test hydraulic fracturing ('fracking') The contamination can also impact on aquifers / groundwater sources and needs to be treated after use prior to discharge. Where water is required or may be impacted upon, it is also assumed that this approach would work in tandem with the permitting and licensing regime, and would take account of possible residual effects

								on water quality and quantity. The significance of these impacts may be minor to major depending on the location, type of exploratory function and threshold for harm. This option is likely to identify and minimise these effects but on balance, the net effects on water are considered to be potentially significantly negative.
3.	?	?	?					Exploration and appraisal of gas can give rise to peaks in transport movements to and from exploratory sites. In addition, where large volumes of water have been used, this may incur lorry movements where it needs to be taken off-site for treatment and discharge. The effects of this will be commensurate to the location and type of the exploration for gas, which is currently uncertain through this option.
4.	+ ?	+ ?	+ ?	✓		✓		The option includes reference to minimising adverse impacts on the environment which would include air quality. However, where exploration and appraisal occurs there may be an issue with fugitive emissions, exacerbated where contaminated water sources may contain dissolved methane which is subsequently released. In addition, underground gasification can have significant effects relating to atmospheric emissions
5.	- --	- --	- --	✓	✓	✓		This option includes reference to minimising adverse impacts on the environment, which would include consideration for soils and agricultural land. However, the nature of exploration and appraisal is such that it is likely to conflict with this objective. Exploratory boreholes are common with gas exploration which will incur land take and removal/changing composition of layers of soils/rock. In addition, different extraction types following seismic reflection surveys may result in adverse impacts relating to instability or subsidence through the use of hydraulic fracturing ('fracking') (which leads to fracturing within the ground to release gas and the injection of water and sand. The significance of these impacts may be minor to major depending on the location, type of exploratory function and threshold for harm. This would be determined alongside any proposals brought forward but on balance has the potential to have negative effects, the scale of which would be commensurate with the size of the exploratory location.
6.	-	-	-	✓			✓	This option refers to minimising adverse effects on the environment, which would include any effects on climate change. While most of the activity involved in the exploration and appraisal for gas is not likely to significantly impact on climate change, there may be some potential for release of fugitive methane exacerbated where contaminated water sources may contain dissolved methane which is subsequently released. In addition, underground gasification can have significant effects relating to atmospheric emissions due to the process of injecting different gases into the coal seam to release the gas. While regulatory controls should control this, residual effects may persist. While the effects of the process of gas exploration are considered here, the subsequent use of gas (if exploration results in a viable resource being extracted and ultimately used) is not considered. As a fossil fuel this would have significant climate change effects.
7.	0	0	0					There is no clear link between the policy and objective of adapting to climate change.
8.	--	--	--	✓		✓		This option supports the exploration and appraisal for gas which in principle conflict with this objective by

								aiming to find fossil fuel for extraction.
9.	+	+	+					Different gas exploration and appraisal techniques can cause a significant volume of contaminated waste water. In the majority of cases, this can be treated and recycled in the processing of extraction or exploration. In relation to recycling of this water, it is therefore likely to have a positive effect.
10.	+	+	+	✓		✓		The option would protect townscape and the setting of the City of York as well as protecting the environment as a whole which should include the historic environment. Likely effects to be mitigated from exploration and appraisal would be any visual impacts as a result of drilling. However, there may be indirect effects as a result of some processes on vulnerable historic assets in relation to vibrations caused from seismic surveying or hydraulic fracturing ('fracking'). The significance of these impacts may be minor to major depending on the location and proximity to the heritage assets as well as on the type of exploratory activity. The impact on York is likely to be minor given its consideration within this option. However, other townscapes or heritage assets would need to also be carefully considered. This would be determined alongside any proposals brought forward. The effects of this have the potential to be positive but also currently uncertain.
	-	-	-					
11.	+	+	+	✓		✓		The option contains protection for the environment which would include landscape as well as requiring high design standards close to or in the National Park and the AONBs and protection of York's townscape. However, the nature of exploration and appraisal is such that it may be required in locations which conflict with this objective as it would need to be in locations with a high probability for the natural resource. Across the plan area, there are extensive areas that have the potential for gas, particularly from shale gas. The significance of these impacts may be minor to major depending on the location and the type of exploratory function. The effects would be determined alongside any proposals brought forward but has the potential to have negative effects, the scale of which would be commensurate with the size of the exploratory location and consideration of the landscape.
	-	-	-					
12.	0	+	+		✓		✓	The exploration and appraisal for gas is likely to have positive impacts in the long-term subject to gas deposits being found. The potential for gas has been identified and therefore the exploration for this would enable the actual deposits to be located.
		?	?					
13.	?	?	?		✓		✓	Indirectly, exploration may have short term minor negative impacts on tourism due to the associated effects as a result of exploration and appraisal, particularly where it involves seismic reflection surveying and hydraulic fracturing ('fracking'). The significance of this impact may be minor to major depending on the location and proximity to tourist destinations and are currently considered to the be uncertain.
14.	?	?	?		✓		✓	The option contains protection for the environment and amenity which would include landscapes important for recreation such as the National Park and the AONBs as well as other recreational opportunities. Where exploration and appraisal is allowed to take place, there may be some temporary effects whilst the potential for gas is explored, particularly where it involves seismic reflection surveying and hydraulic fracturing ('fracking') given that they can cause negative effects and may make an area less desirable to visit.

15.	- ?	- ?	- ?		✓	✓		This option is not explicit about safety but would clearly need to ensure that public safety is maintained throughout exploratory activities. Furthermore, vibrations and noise through this activity may cause temporary negative effects on peoples' well-being subject to it being in close proximity to local communities. The significance of this impact may be minor to major depending on the location and proximity to local communities as well as the type of exploratory method being used.
16.	+	+	+	✓			✓	This option includes reference to minimising adverse impacts on the environment, which would include flood risk. It is unlikely that gas exploration and appraisal would contribute to flood risk in the short term.
17.	0	+	+					The exploration for gas is likely to have positive impacts in the long-term in terms of addressing the needs of a changing population (i.e. addressing the greater demand for energy) subject to gas deposits being found.

Proposed alternative option 2: (Or) This option would not set out specific support for exploration and appraisal for oil and gas but would instead rely on policy contained in the NPPF[19].

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	

[19] Whilst there is no specific policy relating to exploration and appraisal for gas developments in the NPPF, the general minerals policies in the NPPF and the Planning Practice Guidance relating to planning for hydrocarbon extraction (DCLG, 2014) have been referred to in this assessment.

1.	-	?	?	✓		✓	✓	Under this approach no specific support would be given in favour of exploration and appraisal for gas development although the NPPF does currently provide a level of support for mineral exploration and extraction by stressing the importance of maintaining an adequate supply of minerals to support economic growth and quality of life. It is considered that under this option the absence of a specific framework within the plan for assessing the effects relating to gas exploration and appraisal and guiding the location of such development may lead to a minor negative impact (although greater weight may be attached to protecting biodiversity through development management policies in the Plan and national policy). . Effects in the medium to longer term may be more uncertain as they would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.
2.	-	?	?	✓		✓	✓	Under this approach no specific support would be given in favour of exploration and appraisal for gas development although the NPPF does currently provide a level of support for mineral exploration and extraction by stressing the importance of maintaining an adequate supply of minerals to support economic growth and quality of life. It is considered that under this option the absence of a specific framework within the plan for assessing the effects relating to gas exploration and appraisal and guiding the location of such development may lead to a minor negative impact (although greater weight may be attached to protecting the water environment through development management policies in the Plan and national policy). Effects in the medium to longer term may be more uncertain as they would depend on national policy at the time which in this area would appear to be evolving fairly rapidly. Where water is used in the method of exploration/drilling it will also be subject to regulatory control outside of the planning system and it is assumed that this will operate effectively.
3.	-	?	?	✓		✓	✓	Under this approach no specific support would be given in favour of exploration and appraisal for gas development although the NPPF does currently provide a level of support for mineral exploration and extraction by stressing the importance of maintaining an adequate supply of minerals to support economic growth and quality of life. It is considered that under this option the absence of a specific framework within the plan for assessing the effects relating to gas exploration and appraisal and guiding the location of such development may lead to a minor negative impact (although greater weight may be attached to reducing transport miles and emissions through development management policies in the Plan and national policy).

								Effects in the medium to longer term may be more uncertain as they would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.
4.	-	?	?	✓		✓	✓	Under this approach no specific support would be given in favour of exploration and appraisal for gas development although the NPPF does currently provide a level of support for mineral exploration and extraction by stressing the importance of maintaining an adequate supply of minerals to support economic growth and quality of life. It is considered that under this option the absence of a specific framework within the plan for assessing the effects relating to gas exploration and appraisal and guiding the location of such development may lead to a minor negative impact (although greater weight may be attached to protecting air quality through development management policies in the Plan and national policy). Effects in the medium to longer term may be more uncertain as they would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.
5.	-	?	?	✓		✓	✓	Under this approach no specific support would be given in favour of exploration and appraisal for gas development although the NPPF does currently provide a level of support for mineral exploration and extraction by stressing the importance of maintaining an adequate supply of minerals to support economic growth and quality of life. It is considered that under this option the absence of a specific framework within the plan for assessing the effects relating to gas exploration and appraisal and guiding the location of such development may lead to a minor negative impact (although greater weight may be attached to the efficient use of soil and land through development management policies in the Plan and national policy). Effects in the medium to longer term may be more uncertain as they would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.

6.	-	?	?	✓		✓	✓	Under this approach no specific support would be given in favour of exploration and appraisal for gas development although the NPPF does currently provide a level of support for mineral exploration and extraction by stressing the importance of maintaining an adequate supply of minerals to support economic growth and quality of life. It is considered that under this option the absence of a specific framework within the plan for assessing the effects relating to gas exploration and appraisal and guiding the location of such development may lead to a minor negative impact (although greater weight may be attached to reducing the causes of climate change through development management policies in the Plan and national policy). Effects in the medium to longer term may be more uncertain as they would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.
7.	0 -	?	?					No specific link to this type of development, which would depend on location, though the NPPF does state that "Local Plans should take account of climate change over the longer term, including factors such as flood risk, coastal change, water supply and changes to biodiversity and landscape. New development should be planned to avoid increased vulnerability to the range of impacts arising from climate change". As the Plan does not have any influence under this option there remains the risk that oil and gas development may be less climate resilient. The impact is less certain in the longer term due to uncertainties over future planning regimes.
8.	--	?	?	✓		✓		National Policy states that great weight should be attached to the benefits of mineral extraction and that planning authorities should not consider alternatives to gas when considering planning applications, suggesting a broad approach in favour of gas extraction, thus resulting in use of resources. Effects in the medium to longer term may be more uncertain as they would depend on national policy at the time which in this area would appear to be evolving fairly rapidly. As oil and gas are non –renewable and effectively lost forever once extracted the negative effects recorded are major negative.
9.	-	?	?	✓		✓		Under this approach no specific support would be given in favour of gas exploration and appraisal, meaning that greater weight may be attached to consideration of wastes generated (particularly relevant for shale gas exploration and appraisal). However, there would be a lack of a framework for assessing the specific effects of these forms of gas exploration and appraisal. Effects in the medium to longer term may be more uncertain as would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.

10.	-	?	?	✓		✓	✓	Under this approach no specific support would be given in favour of exploration and appraisal for gas development although the NPPF does currently provide a level of support for mineral exploration and extraction by stressing the importance of maintaining an adequate supply of minerals to support economic growth and quality of life. It is considered that under this option the absence of a specific framework within the plan for assessing the effects relating to gas exploration and appraisal and guiding the location of such development may lead to a minor negative impact (although greater weight may be attached to conserving the historic environment through development management policies in the Plan and national policy). Effects in the medium to longer term may be more uncertain as they would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.
11.	-	?	?	✓		✓	✓	Under this approach no specific support would be given in favour of exploration and appraisal for gas development although the NPPF does currently provide a level of support for mineral exploration and extraction by stressing the importance of maintaining an adequate supply of minerals to support economic growth and quality of life. It is considered that under this option the absence of a specific framework within the plan for assessing the effects relating to gas exploration and appraisal and guiding the location of such development may lead to a minor negative impact (although greater weight may be attached to protecting landscape and townscapes through development management policies in the Plan and national policy). Effects in the medium to longer term may be more uncertain as they would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.
12.	- +	?	?		✓	✓	✓	As this option may provide less weight in favour of these developments, there may be fewer opportunities for job creation, and associated economic benefits, under this option compared to option 1, although national policy would require great weight to be given to economic benefits which means that it is likely there would be some level of economic benefit. Effects in the medium to longer term may be more uncertain as would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.
13.	- +	?	?		✓	✓	✓	As this option may provide less weight in favour of these developments, there may be fewer opportunities for job creation, and associated economic benefits, under this option compared to option 1. It may however, provide benefits in terms of protecting the tourism economy. Effects in the medium to longer term may be more uncertain as would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.
14.	-	?	?	✓		✓	✓	Under this approach no specific support would be given in favour of exploration and appraisal for gas development although the NPPF does currently provide a level of support for mineral exploration and extraction by stressing the importance of maintaining an adequate supply of minerals to support economic growth and quality of life. It is considered that under this option the absence of a specific framework within the plan for assessing the effects relating to gas exploration and appraisal and guiding the location of such development may lead to a minor negative impact (although greater weight may be attached to providing

								opportunities for recreation, leisure and learning through development management policies in the Plan and national policy). Effects in the medium to longer term may be more uncertain as would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.
15.	-	?	?	✓		✓	✓	Under this approach no specific support would be given in favour of exploration and appraisal for gas development although the NPPF does currently provide a level of support for mineral exploration and extraction by stressing the importance of maintaining an adequate supply of minerals to support economic growth and quality of life. It is considered that under this option the absence of a specific framework within the plan for assessing the effects relating to gas exploration and appraisal and guiding the location of such development may lead to a minor negative impact (although greater weight may be attached to protecting and improving the wellbeing, health and safety of local communities through development management policies in the Plan and national policy). Effects in the medium to longer term may be more uncertain as they would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.
16.	0	0	0					No clear link
17.	+	?	?	✓			✓	Whilst national policy does not specifically support gas exploration and appraisal, it does seem to provide a positive stance towards such developments, meaning that a fairly favourable approach would be in place for supply of gas to support the population. Effects in the medium to longer term may be more uncertain as would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.

Summary of assessment

Option 1 requires the consideration of environmental, amenity and transport effects in relation to gas exploration and appraisal. This, when considered alongside the regulatory regime, is likely to have predominantly positive effects in ensuring that any adverse impacts as a result of this are minimised and locations are chosen which are not significantly affected, though some residual effects may remain. However, due to the nature of exploration, development may be proposed in locations which conflict with landscape or other designations. This would need to be balanced against the potential economic benefits from exploration as well as other social and environmental effects.

Option 2 would result in the absence of a specific framework within the plan for assessing the effects relating to gas exploration and appraisal and guiding the location of such development and it is considered that this may result in negative impacts on a number of the SA objectives. In the medium and longer term there is much uncertainty in relation to Option 2 as national policy in relation to gas exploration and appraisal is evolving fairly rapidly and effects would depend upon the national policy that is in place at the time.

Recommendations

Option 1 should be pursued as this criteria based approach provides guidance and standards specific to gas exploration and appraisal and provides greater certainty in the medium to long term. It is recommended that Option 1 is extended to include more detail as to social factors to be considered, such as effects on safety and local economy.

Gas Developments (Production and Processing) (id26)

Option 1
This option would support the development of new gas production and processing facilities (where such development would be consistent with other strategic policies in the Plan including any policy seeking the coordinated use of gas processing infrastructure) where the site has been selected to minimise any adverse impacts on the environment, amenity and public safety and on transport considerations, and would give preference to the siting of any significant new processing facilities on brownfield, industrial or employment land, particularly at locations where any opportunities for use of combined heat and power can be utilised.
Particularly high standards of siting, design and mitigation would be required where any development is proposed within or in close proximity to the National Park or AONBs and in locations which may impact on the townscape and setting of the historic City of York.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓		✓	✓	The option includes reference to minimising adverse impacts on the environment which would include biodiversity.
2.	?	?	?	✓		✓	✓	Whilst effects are uncertain, there is more possibility that on a brownfield site there may be less risk to water quality and supply as development has existed in the past and water infrastructure may still be in place. It is assumed that this approach would work in tandem with the permitting regime, and would take account of possible residual effects on water quality.
3.	+	+	+		✓		✓	There could be minor positive effects as brownfield sites are more likely to be located close to a potential workforce and supporting industries thus reducing travel miles.
4.	+	+	+	✓		✓		The option includes reference to minimising adverse impacts on the environment which would include air quality. It is assumed that this approach would work in tandem with the permitting regime, and would take

								account of possible residual effects on air.
5.	+ +	+ +	+ +	✓		✓		This option would prefer brownfield land thus protecting soils and avoiding the use of good quality agricultural land.
6.	+	+	+	✓			✓	This option may help retain greenfield land as a carbon store (storing carbon in trees, other plants or soil) thus helping to reduce emissions of greenhouse gases into the atmosphere. Encouragement of the use of combined heat and power would help to reduce reliance on conventional forms of energy generation which generally have higher emissions of greenhouse gases.
7.	+	+	+	✓			✓	By being less likely to use permeable, greenfield land this option protects land which helps to reduce run-off and minimise flood risk.
8.	+ +	+ +	+ +	✓		✓		This option would safeguard land as a resource and would also provide an opportunity to make use of existing infrastructure at brownfield sites such as access road thus reducing the need for materials in the development itself.
9.	0	0	0					No clear link
10.	+	+	+	✓		✓		The option would protect townscape and the setting of the City of York as well as protecting the environment as a whole which would include the historic environment.
11.	+	+	+	✓		✓		The option contains protection for the environment which would include landscape as well as requiring high design standards close to or in the National Park and the AONBs and protection of York's townscape. Preferring development on brownfield sites is also likely to have positive effects on the landscape as these are more likely to be located close to existing developments or be in locations where there would be minimal landscape impact.
12.	+	+	+		✓		✓	Preferring brownfield sites may offer opportunities for knock-on benefits for the local economy and it is more likely that a workforce would be available locally as brownfield sites are likely to be located close to existing communities.
13.	+ ?	+ ?	+ ?		✓		✓	Preferring brownfield sites may offer job opportunities for local communities as brownfield sites are likely to be within existing communities. Effects on tourism are less certain as this would depend upon the location of the development in relation to any tourism assets and the nature of those assets.
14.	0	0	0					No clear link.
15.	+	+	+		✓	✓		The option requires any adverse effects on amenity and public safety to be minimised and would therefore have positive effects on this objective.
16.	0	0	0					No clear link
17.	+	+	+	✓		✓	✓	Encouragement for the use of combined heat and power will have positive effects on meeting the needs of the population.

Option 2
This option would be the same as Option 1 but would also support gas production and processing on greenfield sites and at locations away from existing industrial and employment land.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓		✓	✓	The option includes reference to minimising adverse impacts on the environment which would include biodiversity, although the effects are likely to be slightly less positive than for option 1 as greenfield land is likely to be more beneficial to wildlife than greenfield land.
2.	?	?	?	✓		✓	✓	Effects would be dependent on the location of the development, although on greenfield land there is more potential for development to have effects on water quality where effects did not exist previously.
3.	?	?	?		✓		✓	Under this option should development take place on greenfield land this is less likely to be close to communities with potential workforce and supporting uses and could therefore lead to longer travel than under option 1.
4.	+	+	+	✓		✓		The option includes reference to minimising adverse impacts on the environment which would include air quality.
5.	-	-	-	✓		✓		This option would support the loss of greenfield land, leading to a disturbance of soil and, most likely, agricultural land which covers a large proportion of the greenfield area of the Joint Plan area.
6.	-	-	-	✓		✓		The loss of greenfield sites, supported by the option, could also lead to the loss of a carbon sink if it affected either woodland, grassland and/or soil.
7.	-	-	-	✓			✓	Development on greenfield land would lead to the loss of a permeable surface thus increase run-off and flood risk.
8.	-	-	-	✓		✓		The use of greenfield land under this option would not represent sustainable use of resources and would miss the potential opportunity provided by use of brownfield land to re-use existing infrastructure such as access roads.
9.	0	0	0					No clear link
10.	+	+	+	✓		✓		The option would protect townscape and the setting of the City of York as well as protecting the environment

								as a whole which would include the historic environment.
11.	+	+	+	✓		✓		Whilst the option contains protection for the environment which would include landscape as well as requiring high design standards close to or in the National Park and the AONBs and protection of York's townscape, supporting development on greenfield sites is likely to lead to more landscape impacts than development on brownfield land which is usually better related to existing development.
12.	+	+	+		✓		✓	Whilst development under this option may offer opportunities for knock-on benefits for the local economy this is likely to be less so than under option 1. Supporting greenfield developments provides more opportunities for developments to be located away from communities thus reducing potential knock-on benefits.
13.	+ ?	+ ?	+ ?		✓		✓	The redevelopment of greenfield sites may offer fewer job opportunities for local communities as these are more likely to be away from communities. Effects on tourism are less certain as this would depend upon the location of the development in relation to any tourism assets and the nature of those assets.
14.	-	-	-		✓		✓	Under this option there could be potential for effects on recreation assets, such as rights of way, on greenfield land. These effects may increase over time should further land be developed.
15.	+	+	+		✓	✓		The option requires any adverse effects on amenity and public safety to be minimised and would therefore have positive effects on this objective.
16.	-	-	-	✓			✓	Development on greenfield land would lead to the loss of a permeable surface thus increase run-off and flood risk.
17.	0	0	0					No clear link

Summary of assessment
The assessment reveals that Option 1 would score more positively than Option 2 in a range of areas due to the preference for use of brownfield land over greenfield land. In particular, Option 2 would lead to the loss of soils and, potentially, high quality agricultural land. It may also exacerbate rainwater run-off through loss of permeable land and, in some circumstances, the loss of the areas of habitat that provide a climate regulation function. Some uncertainties, but no negative effects, are identified under Option 1.

Recommendations
It is recommended that Option 1 be pursued.

Coal Mine Methane (id27)

Assumptions – It is assumed that relevant permitting and regulatory processes outside of the planning system will operate effectively.

Option 1 This option would support the on-going extraction and utilisation of CMM at existing sites, including the utilisation of additional generating equipment.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0 -	0 -	0 -	✓		✓		There would be some small scale land take from CMM activity. While this is likely to be on previously developed land, this is not certain. This is likely to have a neutral to minor negative effect on the biodiversity / geo-diversity objective, particularly if development takes place on non previously developed land (though it is accepted that previously developed land can also sometimes be rich in biodiversity).
2.	0	0	0					The effect on water quality is uncertain as much will depend on the technology utilised for CMM extraction. Assuming extraction of CMM takes place during or after mining activity techniques, gas extraction may involve drawing gas from gob[20], using techniques such as cross measure[21] or superjacent[22] processes, which are not hydraulic, so water impacts may be insignificant.
3.	0 +	0 +	0 +					There are no significant effects anticipated on the transport objective although it is acknowledged that there may be very few additional transport movements associated with construction, maintenance and decommissioning. It is possible that a potential use for coal mine methane would be as a fuel for vehicles. This could impact positively on this objective by making freight or other transport more sustainable (by utilising what effectively

[20] Gob gas is gas derived from fractured material that has settled into mined out areas
[21] Cross measure techniques allow gas from gob to migrate to a pipeline before utilistation
[22] Superjacent processes utilise galleries to store gas as it migrates. It may be combined with cross measure boreholes.

								would have been a 'bi- product' and using it as fuel
4.	+	+	+	✓		✓		Although methane is not generally considered a local air pollutant, fugitive methane can present a local hazard where allowed to escape to the air. So this option is expected to positively affect air quality as the active gas methane will be transformed to more inert gases when utilised in energy production. Any significant hazard would be dealt with by the regulatory regime. So this option will positively affect air quality.
5.	0	0 ?	0 ?	✓		✓		This option is unlikely to have a significant effect as future plant at existing sites would be likely to be positioned on previously developed land, though there remains a future possibility under this option that CMM may be derived from further reaches of underground permissions and future extensions (though this would be dependent on a local use or grid connection). Any uncertainty could be significantly reduced by adopting the approach to brownfield / industrial / employment land listed at option 2.
6.	+ +	+ +	+ +	✓		✓		CMM (CH4), if unmanaged, is likely to eventually migrate to the atmosphere where it will act as a potent greenhouse gas[23]. Therefore this option, which effectively converts methane to C02 and water, will reduce the global warming potential of the gas. It will also produce useful energy, meaning that energy generation elsewhere (which would probably be derived from fossil fuels generating more CO2) will be saved. Due to the global warming potential of methane this option is considered to have a major positive effect on climate change.
7.	0	0	0					There is no clear link between this option and adaptation to climate change
8.	+	+	+	✓		✓		This option effectively converts an unutilised resource (methane) into a useful product (energy), thereby reducing resources consumption.
9.	+	+	+	✓		✓		This option promotes energy recovery from a waste (methane), thus supporting the 'recovery of residual resources….through energy recovery' sub objective.
10.	0 -	0 -	0 -	✓		✓		Effects on the historic environment are unlikely to be of large significance (given the small scale nature of facilities), though small scale effects cannot be ruled out, depending on location, without reference to other development management policies.
11.	0	0	0	✓		✓		Effects on the landscape / townscape are unlikely to be of large significance (given the small scale nature of facilities), though small scale effects cannot be ruled out, depending on location / design / orientation, without

[23] According to the International Panel on Climate change, methane has a global warming potential (GWP) 72 times that of CO2 at a 20 year time horizon (dropping to a factor of 25 at the 100 year time horizon) if indirect effects resulting from its chemical transformation are included (methane's atmospheric lifetime as CH4 is 12 years). Artaxo, P et al, 2007. Changes in Atmospheric Constituents and in Radiative Forcing (in IPCC Fourth Assessment Report) URL: http://www.ipcc.ch/111F4D5B-27FA-4111-A221-5485C7799D86/FinalDownload/DownloadId-2866D274EEC57529603DE7561443B2CA/111F4D5B-27FA-4111-A221-5485C7799D86/pdf/assessment-report/ar4/wg1/ar4-wg1-chapter2.pdf]

	-	-	-					reference to other development management policies. As these facilities would be located at existing sites, they are unlikely to significantly change the local landscape character.
12.	+	+	+	✓		✓	✓	This option helps create value from what would otherwise be a waste stream, and will also support a small number of jobs in construction and operation. In addition it supports the low carbon economy for the reasons detailed under SA objective 6.
13.	0	0	0					There is no clear link between this option and the vitality / viability of local communities
14.	0	0	0					There is no clear link between this option and opportunities for recreation, leisure and learning
15.	+	+	+	✓		✓		Extracting methane from coal mines and utilising it for energy production effectively removes a significant safety hazard and helps prevent fugitive emissions of methane posing a hazard, although this would be regulated
16.	0	0	0					There is no clear link between this option and flooding
17.	0	0	0					There is no clear link between this option and the needs of a changing population objective.

Option 2 This option would support the extraction and utilisation of CMM at other locations as well as existing sites, with a preference that any new plant and equipment is located on brownfield, industrial or employment land and operational coal mining sites where practicable and where the choice of location would enable the efficient utilisation of the energy produced.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0 -	0 -	0 -	✓		✓		As with option 1, there would be some small scale land take from CMM activity, though this is likely to be on previously developed land. As this would be at a potentially greater scale than option 1 this is likely to have a more definite minor negative effect on the biodiversity / geo-diversity objective.
2.	0	0	0					The effect on water quality is uncertain as much will depend on the technology utilised for CMM extraction. Assuming extraction of CMM takes place during or after mining activity techniques, gas extraction may involve drawing gas from gob[24], using techniques such as cross measure[25] or superjacent[26] processes, which are not hydraulic, so water impacts may be insignificant.
3.	0 +	0 +	0 +					There is no clear link between this option and the transport SA objective. It is possible that a potential use for coal mine methane would be as a fuel for vehicles. This could impact positively on this objective by making freight or other transport more sustainable (by utilising what effectively would have been a 'bi- product' and using it as fuel)
4.	+	+ +	+ +	✓		✓		Although methane is not generally considered a local air pollutant, fugitive methane can present a local hazard where allowed to escape to the air (however, in practice this is highly regulated). So this option will positively affect air quality (more so than option 1 over time as new projects are set up at new locations).
5.	+	+	+	✓		✓		This option steers CMM activity towards brownfield, industrial or employment land and operational coal mining sites, so it will offer a positive future use for brownfield land and take future pressure off agricultural land.

[24] Gob gas is gas derived from fractured material that has settled into mined our areas

[25] Cross measure techniques allow gas from gob to migrate to a pipeline before utilistation

[26] Superjacent processes utilise galleries to store gas as it migrates. It may be combined with cross measure boreholes.

6.	+ +	+ +	+ +	✓		✓		CMM (CH4), if unmanaged, is likely to eventually migrate to the atmosphere where it will act as a potent greenhouse gas. Therefore this option, which effectively converts methane to C02 and water, will reduce the global warming potential of the gas. It will also produce useful energy, meaning that energy generation elsewhere (which would probably be derived from fossil fuels generating more CO2) will be prevented. This will occur on a larger scale than option 1, so the benefit will be greater, though can still only occur on previously developed land The requirement to locate according to the efficient use of energy would enhance this effect as it may open up opportunities to use gas more directly or locally (rather than converting to electricity and losing some of its energy potential e.g. through the conversion process and transmission losses), such as in vehicle fuel or in a CHP process.
7.	0	0	0					There is no clear link between this option and adaptation to climate change
8.	+	+ +	+ +	✓		✓		This option effectively converts a waste (methane) into a useful product (energy), thereby reducing resources consumption.
9.	+	+ +	+ +	✓		✓		This option promotes energy recovery from a waste (methane), thus supporting the 'recover residual resources….through energy recovery' sub objective.
10.	0 -	0 -	0 -	✓		✓		Effects on the historic environment are unlikely to be large scale (given the small scale nature of facilities), though small scale effects cannot be ruled out, depending on location, without reference to other development management policies (these effects may be at a greater magnitude than option 1).
11.	0 -	0 -	0 -	✓		✓		Effects on the landscape / townscape are unlikely to be large scale (given the small scale nature of facilities), though small scale effects cannot be ruled out, depending on location, without reference to other development management policies (these effects may be at a greater magnitude than option 1).
12.	+	+	+	✓		✓		This option helps create value from what would otherwise be a waste stream, and will also support a small number of jobs in construction and operation
13.	0	0	0					There is no clear link between this option and the vitality / viability of local communities
14.	0	0	0					There is no clear link between this option and opportunities for recreation, leisure and learning

15.	+ ?	+ + ?	+ + ?	✓		✓		Extracting methane from coal mines and utilising it for energy production effectively removes a significant safety hazard and helps prevent fugitive emissions of methane posing a hazard. As this option potentially increases the scale of activity, the benefit will be correspondingly better. However, as choice of location is also dictated by the user of energy this might mean that other land may be considered for some elements of plant (e.g. to bring plant closer to a grid connection or to a CHP (combined heat and power) / district heating or fuelling station). This adds an element of uncertainty to the assessment, as although burning methane increases safety, moving it about in pipelines may carry a small scale risk factor or its own (though this is expected to be tightly regulated).
16.	0	0	0					There is no clear link between this option and flooding
17.	0	0	0					There is no clear link between this option and the needs of a changing population objective.

Proposed alternative option 3: (Or) This option would support the extraction and utilisation of CMM at other locations as well as existing sites, with a preference that any new plant and equipment is located where the choice of location would enable the efficient utilisation of the energy produced.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0 -	0 -	0 -	✓		✓		There would be some small scale land take from CMM activity. While this is likely to be on previously developed land, this is not certain. This is likely to have a neutral to minor negative effect on the biodiversity / geo-diversity objective, particularly if development takes place on non-previously developed land (though it is

								accepted that previously developed land can also sometimes be rich in biodiversity).
2.	0	0	0					The effect on water quality is uncertain as much will depend on the technology utilised for CMM extraction. Assuming extraction of CMM takes place during or after mining activity techniques, gas extraction may involve drawing gas from gob, using techniques such as cross measure or superjacent processes, which are not hydraulic, so, as with options 1 and 2, water impacts may be insignificant.
3.	0 +	0 +	0 +		✓	✓		There are no significant effects anticipated on the transport objective although it is acknowledged that there may be very few additional transport movements associated with construction, maintenance and decommissioning. It is possible that a potential use for coal mine methane would be as a fuel for vehicles. This could impact positively on this objective by making freight or other transport more sustainable (by utilising what effectively would have been a 'waste product' and using it as fuel)
4.	+	+ +	+ +		✓	✓		As with option 1 and 2, although methane is not generally considered a local air pollutant, fugitive methane can present a local hazard where allowed to escape to the air. So this option is expected to positively affect air quality as the active gas methane will be transformed to more inert gases when utilised in energy production.
5.	0 ?	0 ?	0 ?	✓		✓		In many cases plant would be close to the source of CMM, which is likely to be brownfield land. However, as choice of location is also dictated by the user of energy this might mean that other land may be considered for some elements of plant (e.g. to bring plant closer to a grid connection or to a CHP (combined heat and power) / district heating or fuelling station).
6.	+ +	+ +	+ +	✓		✓		As with options 1 and 2 this option, through converting damaging methane to useful fuel, will have very positive effects on climate change. The requirement to locate according to the efficient use of energy would enhance this effect as it may open up opportunities to use gas more directly or locally (rather than converting to electricity and losing some of its energy potential e.g. through the conversion process and transmission

								losses), such as in vehicle fuel or in a CHP process. This is a more positive effect than option 2 as there is more flexibility over location.
7.	0	0	0					There is no clear link between this option and adaptation to climate change
8.	+	+ +	+ +	✓		✓		This option effectively converts a bi-product resource (methane) into a useful product (energy), thereby reducing resources consumption. It also potentially allows for more efficient us of that energy (e.g., through vehicles or CHP)
9.	+	+ +	+ +	✓		✓		This option promotes energy recovery from a waste (methane), thus supporting the 'recover residual resources….through energy recovery' sub objective.
10.	0 -	0 -	0 -	✓		✓		Effects on the historic environment are unlikely to be of large significance (given the small scale nature of facilities), though small scale effects cannot be ruled out, depending on location, without reference to other development management policies.
11.	0 - ?	0 - ?	0 - ?	✓		✓		Effects on the landscape / townscape are unlikely to be of large significance (given the small scale nature of facilities), though small scale effects cannot be ruled out, depending on location / design / orientation, without reference to other development management policies. As these facilities would probably be located at existing sites, they are unlikely to significantly change the local landscape character. However, as choice of location is also dictated by the user of energy this might mean that other non brownfield land may be considered for some elements of plant (e.g. to bring plant closer to a grid connection or to a CHP (combined heat and power) / district heating or fuelling station). This adds an element of uncertainty to the assessment, though effects are still considered to be low due to the sale of this type of development.
12.	+	+	+	✓		✓	✓	This option helps create value from what would otherwise be a waste stream, and will also support a small number of jobs in construction and operation. In addition it supports the low carbon economy for the reasons detailed under SA objective 6. It is considered to contribute more positively to the economic objective than other options due to added flexibility over location.

13.	0	0	0					There is no clear link between this option and the vitality / viability of local communities
14.	0 ? 	0 ? 	0 ? 	✓	✓	✓	✓	There is no clear link between this option and opportunities for recreation, leisure and learning. However, the increased flexibility of location under this option might increase the prospect of some element of plant being on greenfield land and thus possibly in conflict with the rights of way or leisure network (though the level of risk of this happening is low),
15.	+ ? 	+ + ? 	+ + ? 	✓		✓		Extracting methane from coal mines and utilising it for energy production effectively removes a significant safety hazard and helps prevent fugitive emissions of methane posing a hazard. As this option potentially increases the scale of activity, the benefit will be correspondingly better. However, as choice of location is also dictated by the user of energy this might mean that other land may be considered for some elements of plant (e.g. to bring plant closer to a grid connection or to a CHP (combined heat and power) / district heating or fuelling station). This adds an element of uncertainty to the assessment, as although burning methane increases safety, moving it about in pipelines may carry a small scale risk factor or its own (though this is expected to be tightly regulated)
16.	0	0	0					There is no clear link between this option and flooding
17.	0	0	0					There is no clear link between this option and the needs of a changing population objective.

Summary of assessment

All options exhibit broadly positive effects on the sustainability objectives, though there remains some potential for minor negative effects on biodiversity / geodiversity, historic environment, landscape / townscape in all cases. Some limited uncertainty with effects on land / soil is observed under Options 1 and 3 as it is not clear whether the option would result in a preference for brownfield land.

However, notwithstanding these issues, both options, and especially Options 2 and 3, will result in benefits for air quality, climate change, resource use, waste minimisation, jobs and safety. There is a greater degree of flexibility with option 3.

Recommendations
Due to the magnitude of positive effects, and the positive utilisation of brownfield land, the SA notes a preference for Option 2.

Coal Bed Methane, Underground Coal Gasification, Shale Gas and Carbon and Gas Storage (id28)

Assumptions – The assessment is based upon information available at the time of writing, but it is acknowledged that these technologies are largely emerging in the UK and therefore actual effects are not widely understood and/or may be mitigated through changes in technology that come forward later in the Plan period.

Option 1

This option would support the principle of development of CBM, UCG and shale gas resources subject, where relevant, to the other gas policies in the Joint Plan but would also in particular require robust assessment of, and the prevention of potential impacts on, a range of other matters including in relation to the integrity of geological or hydrogeological resources and processes (including groundwater and land stability), availability of water resources and local amenity and public safety issues. Transport of gas would be expected to be via pipeline, with the routing of pipelines selected to give rise to the least environmental or amenity impact.

This option would involve a precautionary approach, with support to specific proposals only being provided where a high level of assurance in relation to impacts and benefits, including community benefits, can be demonstrated.

Particularly high standards of siting, design and mitigation would be required where any development is proposed within or in close proximity to the National Park or AONBs and in locations which may impact on the townscape and setting of the historic City of York.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	-	✓		✓	✓	There is likely to be some degree of effect on biodiversity although the extent of this would depend upon the precise location of any development. Gas fields and coal beds overlap with internationally and nationally protected sites in a number of locations, particularly around the North York Moors, Nidderdale and River Derwent areas. These effects would increase over time should more developments under this option take place.
2.	-	-	-	✓		✓	✓	The gas fields and coal beds are, in many places, in areas identified as Nitrate Vulnerable Zones, and additional development in these areas may have effects on these through such factors as run-off from new

								areas of hardstanding. These effects would increase over time should more developments under this option take place. There is possibility for effects on groundwater although the option seeks to mitigate these through requiring a robust assessment of any such effects. The option does, however, require hydrogeology, groundwater and water availability impacts to be prevented, thus leaving effects of run-off from any surface development as a potential issue. Where water is used in the method of extraction it will also be subject to regulatory control outside of the planning system and it is assumed that this will operate effectively.
3.	+	+	+		✓	✓	✓	The option requires transportation via pipeline and would therefore have positive effects in terms of reducing any impacts from transportation. However there would be likely to be impacts associated with production and more minor impacts associated with maintenance and operation.
	-	-	-					
4.	-	-	-	✓		✓	✓	There may be emissions of greenhouse gases, particularly methane, through the processes of extracting coal bed methane and shale gas which could have effects on air quality wider than the Plan area.
5.	-	-	-	✓		✓		Many of the gas field and coal bed areas are in areas of Grade 2 or 3 agricultural land and therefore this option may lead to the loss of some high quality agricultural land. These effects would increase over time should more developments under this option take place.
6.	+	+	+	✓			✓	Supporting the use of alternative forms of power generation to coal fired power stations may result in lower levels of greenhouse gases being released at a wider level. However, there is potential for the release of methane which would have negative effects on levels of greenhouse gases and the potential for these developments to take place in place of renewable energy developments.
	-	-	-					
7.	0	0	0					No clear link
8.	--	--	--	✓		✓		This option encourages the use of resources.
9.	-	-	-	✓		✓		The process of shale gas extraction would result in the production of large quantities of waste water.
10.	+	+	+	✓		✓		Whilst the option contains protection for the setting of the City of York and for the cultural heritage of the National Park and the AONBs, it may also lead to some impact on other heritage assets in the Joint Plan area. In particular, transportation via pipeline could have effects on archaeological assets.
	-	-	-					
11.	+	+	+	✓		✓		The option would have positive effects on protecting the nationally protected landscapes in the area by mitigating any potential impacts but may result in effects on the landscape elsewhere in the Plan area.
	-	-	-					
12.	+ +	+ +	+ +		✓	✓	✓	This option would support job creation in these sectors of the minerals industry, with associated knock on benefits in locations close to where extraction may take place. Depending on the location and nature of any development coming forward, there may however be negative effects on the tourism industry close to the location of the development.
	-	-	-					
13.	+	+	+		✓	✓	✓	This option would support jobs directly and indirectly in communities close to where the development takes place. Depending on the location and nature of any development coming forward, there may however be
	-	-	-					

								negative effects on the tourism industry close to the location of the development.
14.	-	-	-	✓		✓	✓	Depending on the location of the development, there may be direct effects on recreation assets such as the loss or diversion of rights of way or there may be indirect effects through harm to the experience of those using these assets. In the National Park effects may be particularly significant as it is likely that such developments would undermine the second statutory National Park purpose of providing opportunities for the enjoyment and understanding of the Park.
15.	-	-	-	✓	✓	✓	✓	The option requires the prevention of any impacts on local amenity and public safety and would therefore appear to have no effects against this objective. However, it is questioned whether in reality such impacts could be prevented or just minimised / mitigated. It is likely that there would be an element, albeit possibly minor, of negative effects on the amenity, safety and wellbeing of communities close to such developments through in particular, construction traffic, noise and vibration. The significance of these effects would depend upon the location of the development in relation to communities.
16.	0	0	0					No clear link
17.	+ +	+ +	+ +	✓		✓		The option supports the provision of gas which supports the population and would therefore have a positive effect on this objective.

Option 2

This option would not express support in principle for the development of coal bed methane, underground coal gasification and shale gas resources due to the uncertain nature of the impacts and risks involved within the Plan area. Any proposals would be assessed against national policy[27] and other relevant policies in the Plan.

Note: the assessment of Option 2 has considered national planning policy on these technologies only and has not taken into account any recent Government announcements or statements.

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SA objective	Impact / timescale	Type of effect	Analysis

[27] Whilst there is no specific policy relating to Underground Coal Gasification, Shale Gas and Coal Bed Methane, the general minerals policies in the NPPF and the Planning Practice Guidance for Onshore Oil and Gas (DCLG, 2013) have been referred to in this assessment.

	S	M	L	P	T	D	I	
1.	-	?	?	✓		✓	✓	Under this approach no specific support would be given in favour of the development meaning that greater weight may be attached to protecting biodiversity through policies in the Plan. However, there would be a lack of a framework for assessing the specific effects of these forms of gas extraction. Effects in the medium to longer term may be more uncertain as would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.
2.	-	?	?	✓		✓	✓	Under this approach no specific support would be given in favour of the development meaning that greater weight may be attached to protecting water quality and supply through policies in the Plan. However, there would be a lack of a framework for assessing the specific effects of these forms of gas extraction. Effects in the longer term may be more uncertain as would depend on national policy at the time. Effects in the medium to longer term may be more uncertain as would depend on national policy at the time which in this area would appear to be evolving fairly rapidly. Where water is used in the method of extraction it will also be subject to regulatory control outside of the planning system and it is assumed that this will operate effectively.
3.	-	?	?	✓		✓	✓	Under this approach no specific support would be given in favour of the development meaning that greater weight may be attached to the potential transport related effects through policies in the Plan. However, there would be a lack of a framework for assessing the specific effects of these forms of gas extraction. Effects in the longer term may be more uncertain as would depend on national policy at the time. Effects in the medium to longer term may be more uncertain as would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.
4.	-	?	?	✓		✓	✓	Under this approach no specific support would be given in favour of the development meaning that greater weight may be attached to protecting air quality through policies in the Plan. However, there would be a lack of a framework for assessing the specific effects of these forms of gas extraction. Effects in the longer term may be more uncertain as would depend on national policy at the time. Effects in the medium to longer term may be more uncertain as would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.
5.	-	?	?	✓		✓	✓	Under this approach no specific support would be given in favour of the development (other than for underground storage), meaning that greater weight may be attached to protecting soils through policies in the Plan. However, there would be a lack of a framework for assessing the specific effects of these forms of gas extraction. Effects in the medium to longer term may be more uncertain as would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.
6.	+	?	?	✓			✓	The option could result in the emission of greenhouse gases associated with the extraction process but could equally result in less reliance on coal fired power stations thus reducing CO_2 emissions. Effects in the longer term may be uncertain as would depend on national policy at the time which in this area would appear to be

	-							evolving fairly rapidly.
7.	0	0	0					No clear link
8.	-	?	?	✓		✓		Whilst the national policy does not specifically support the extraction process covered by this option, it does state that great weight should be attached to the benefits of mineral extraction and that planning authorities should not consider alternatives to gas when considering planning applications, suggesting a broad approach in favour of these developments, thus resulting in use of resources. Effects in the medium to longer term may be more uncertain as would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.
9.	-	?	?	✓		✓		Under this approach no specific support would be given in favour of the development meaning that greater weight may be attached to consideration of wastes generated (particularly relevant for shale gas extraction). However, there would be a lack of a framework for assessing the specific effects of these forms of gas extraction. Effects in the medium to longer term may be more uncertain as would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.
10.	-	?	?	✓		✓	✓	Under this approach no specific support would be given in favour of the development meaning that greater weight may be attached to consideration of protecting the historic environment through policies in the Plan. Effects in the medium to longer term may be more uncertain as would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.
11.	-	?	?	✓		✓	✓	Under this approach no specific support would be given in favour of the development meaning that greater weight may be attached to consideration of protecting the landscape through policies in the Plan. However, there would be a lack of a framework for assessing the specific effects of these forms of gas extraction. Effects in the medium to longer term may be more uncertain as would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.
12.	+	?	?		✓	✓	✓	As this option may provide less weight in favour of these developments, there may be fewer opportunities for job creation, and associated economic benefits, under this option compared to option 1, although national policy would require great weight to be given to economic benefits which means that it is likely there would be some level of economic benefit. Effects in the medium to longer term may be more uncertain as would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.
13.	- +	?	?		✓	✓	✓	As this option may provide less weight in favour of these developments, there may be fewer opportunities for job creation, and associated economic benefits, under this option compared to option 1. It may however, provide benefits in terms of protecting the tourism economy. Effects in the medium to longer term may be more uncertain as would depend on national policy at the time which in this area would appear to be evolving

								fairly rapidly.
14.	-	?	?	✓		✓	✓	Under this approach no specific support would be given in favour of the development meaning that greater weight may be attached to consideration of impacts on recreation through policies in the Plan. Effects in the medium to longer term may be more uncertain as would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.
15.	-	?	?	✓		✓	✓	Under this approach no specific support would be given in favour of the development meaning that greater weight may be attached to consideration of impacts on communities through policies in the Plan. However, there would be a lack of a framework for assessing the specific effects of these forms of gas extraction. Effects in the medium to longer term may be more uncertain as would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.
16.	0	0	0					No clear link
17.	+	?	?	✓			✓	Whilst national policy does not specifically support these forms of development, it does seem to provide a positive stance towards such developments, meaning that a fairly favourable approach would be in place for supply of gas to support the population. Effects in the medium to longer term may be more uncertain as would depend on national policy at the time which in this area would appear to be evolving fairly rapidly.

Option 3

This option would represent an extension to the precautionary principle in Option 1 or Option 4 by requiring applications for permission for the development of CBM, UCG and shale gas resources to demonstrate that the proposed site has been identified so as to avoid sensitive locations and designations including residential areas, important environmental designations and other important assets which require protection under the planning system.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	

1.	+	+	+	✓		✓	✓	Under this approach designated biodiversity and geodiversity sites would be protected, although there may be some negative effects outside of designated areas that are important for biodiversity or geodiversity and on assets or species which are not protected.
	-	-	-					
2.	+	+	+	✓		✓	✓	Under this option Nitrate Vulnerable Zones and Groundwater Source Protection Zones would be protected from these forms of development although impacts may still occur on water sources outside of these areas.
3.	0	0	0					No clear link.
4.	0	0	0					No clear link.
5.	0	0	0					No clear link.
6.	0	0	0					No clear link.
7.	0	0	0					No clear link
8.	+	+	+	✓		✓		This approach may lead to safeguarding the gas resource in the Plan area should it result in fewer acceptable locations for these developments to take place.
9.	+	+	+	✓		✓		Less waste may be generated through these processes should the option result in fewer acceptable locations for these developments to take place.
10.	+ +	+ +	+ +	✓		✓	✓	Under this approach, which would act in combination with Option 1, important historic assets would be protected. A strong positive score is considered appropriate as many historic assets have specific protection through the planning system.
11.	+	+	+	✓		✓	✓	Under this approach, which would act in combination with Option 1, all designated landscapes would be protected, although there may still be negative effects outside of designated areas which are not protected.
	-	-	-					
12.	0	0	0		✓	✓	✓	This option may result in fewer of these developments coming forward which may have a less positive effect on the economy and job creation, although may have a positive effect in protected landscapes where tourism makes up a significant part of the economy.
	+	+	+					
13.	0	0	0		✓	✓	✓	The option may have a positive effect on the viability and vitality of communities by protecting these areas from any negative effects related to these developments. However there may be lost opportunities for job creation and associated knock-on benefits for communities which may have a less positive effect.
	-	-	-					
14.	+	+	+	✓		✓	✓	Under this approach there are likely to be benefits for recreation in protected areas (this is particularly the case for the National Park where the second statutory purpose is to provide opportunities for the public to understand and enjoy the special qualities of the Park), although there may still be impacts on recreation assets elsewhere.
	-	-	-					
15.	+ +	+ +	+ +	✓		✓	✓	This option would provide strong protection to community health, safety and wellbeing by locating these developments away from residential areas.
16.	0	0	0					No clear link

17.	-	--	--	✓		✓	✓	This option may be particularly restrictive, depending upon how terms such as 'avoid' and 'residential areas' are defined, and could potentially mean there are very few locations where such development would be supported, thus having a negative effect on the provision of minerals to meet the needs of the population.

Proposed alternative option 4: (Or)

This option would support the principle of development of CBM, UCG and shale gas resources subject, where relevant, to the other gas policies in the Joint Plan but would also in particular require robust assessment of, and the prevention of potential impacts on, a range of other matters including in relation to the integrity of geological or hydrogeological resources and processes (including groundwater and land stability), availability of water resources and local amenity and public safety issues. Transport of gas would be expected to be via pipeline, with the routing of pipelines selected to give rise to the least environmental or amenity impact.

This option would involve a precautionary approach, with support to specific proposals only being provided where a high level of assurance in relation to impacts and benefits, including community benefits, can be demonstrated. Particularly high standards of siting, design and mitigation would be required where any development is proposed within the National Park or AONBs and in locations which may impact on the townscape and setting of the historic City of York.

(Note: this is the same as Option 1 but with the removal of 'or in close proximity to' from the 2nd paragraph.)

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	- ?	- ?	- ?	✓		✓	✓	There is likely to be some degree of effect on biodiversity although the extent of this would depend upon the precise location of any development. Gas fields and coal beds overlap with internationally and nationally protected sites in a number of locations, particularly around the North York Moors, Nidderdale and River Derwent areas. These effects would increase over time should more developments under this option take place.
2.	-	-	-	✓		✓	✓	The gas fields and coal beds are, in many places, in areas identified as Nitrate Vulnerable Zones, and additional development in these areas may have effects on these through such factors as run-off from new areas of hardstanding. These effects would increase over time should more developments under this option take place. There is possibility for effects on groundwater although the option seeks to mitigate these through

								requiring a robust assessment of any such effects. The option does, however, require hydrogeology, groundwater and water availability impacts to be prevented, thus leaving effects of run-off from any surface development as a potential issue. The process of shale gas extraction would result in the production of large quantities of waste water. Where water is used in the method of extraction it will also be subject to regulatory control outside of the planning system and it is assumed that this will operate effectively.
3.	+ -	+ -	+ -		✓	✓	✓	The option requires transportation via pipeline and would therefore have positive effects in terms of reducing any impacts from transportation. However there would be likely to be impacts associated with production and more minor impacts associated with maintenance and operation.
4.	-	-	-	✓		✓	✓	There may be emissions of polluting gases, particularly methane, through the processes of extracting coal bed methane and shale gas which could have effects on air quality wider than the Plan area.
5.	-	-	-	✓		✓		Many of the gas field and coal bed areas are in areas of Grade 2 or 3 agricultural land and therefore this option may lead to the loss of some high quality agricultural land. These effects would increase over time should more developments under this option take place.
6.	+ -	+ -	+ -	✓			✓	Supporting the use of alternative forms of power generation to coal fired power stations may result in lower levels of greenhouse gases being released at a wider level. However, there is potential for the release of methane which would have negative effects on levels of greenhouse gases and the potential for these developments to take place in place of renewable energy developments.
7.	0	0	0					No clear link
8.	--	--	--	✓		✓		This option encourages the use of non-renewable resources.
9.	-	-	-	✓		✓		The process of shale gas extraction would result in the production of large quantities of waste water with negative effects, though extracting CBM is in a sense effectively turning a waste into a resource. Overall negative effect.
10.	+ -	+ -	+ -	✓		✓		Whilst the option contains protection for the setting of the City of York and for the cultural heritage of the National Park and the AONBs, it may also lead to some impact on other heritage assets in the Joint Plan area. In particular, transportation via pipeline could have effects on archaeological assets.
11.	+ -	+ -	+ -	✓		✓		The option would have positive effects on protecting the nationally protected landscapes in the area by mitigating any potential impacts but may result in effects on the landscape elsewhere in the Plan area. Positive effects would be less than under Option 1 as there may be effects on protected landscapes from developments close to them.
12.	++ -	++ -	++ -		✓	✓	✓	This option would support job creation in these sectors of the minerals industry, with associated knock on benefits in locations close to where extraction may take place. Depending on the location and nature of any development coming forward, there may however be negative effects on the tourism industry close to the location of the development.

13.	+ -	+ -	+ -		✓	✓	✓	This option would support jobs directly and indirectly in communities close to where the development takes place. Depending on the location and nature of any development coming forward, there may however be negative effects on the tourism industry close to the location of the development.
14.	-	-	-	✓		✓	✓	Depending on the location of the development, there may be direct effects on recreation assets such as the loss or diversion of rights of way or there may be indirect effects through harm to the experience of those using these assets. In the National Park effects may be particularly significant as it is likely that such developments would undermine the second statutory National Park purpose of providing opportunities for the enjoyment and understanding of the Park.
15.	-	-	-	✓	✓	✓	✓	The option requires the prevention of any impacts on local amenity and public safety and would therefore appear to have no effects against this objective. However, it is questioned whether in reality such impacts could be prevented or just minimised / mitigated. It is likely that there would be an element, albeit possibly minor, of negative effects on the amenity, safety and wellbeing of communities close to such developments through in particular, construction traffic, noise and vibration. The significance of these effects would depend upon the location of the development in relation to communities.
16.	0	0	0					No clear link
17.	+ +	+ +	+ +	✓		✓		The option supports the provision of gas which supports the population and would therefore have a positive effect on this objective.

Proposed alternative option 5: (Or) **[add option text]**

This option would support the principle of development for CBM, UCG and shale gas provided proposals comply with other policies in the Plan.

Note: It is assumed that this implies having no separate policy for CBM, UCG and shale gas

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	

1.	?	?	?	✓	✓	✓	✓	At this stage it is uncertain what other policies in the Plan would require and therefore effects are uncertain.
2.	? -	? -	? -	✓	✓	✓	✓	At this stage it is uncertain what other policies in the Plan would require and therefore effects are uncertain, although leaning towards the negative as unconventional gas extraction may have potential for effects on water resources that are unique to this form of development and therefore would not be expected to be covered in detail by other policies in the Plan.
3.	?	?	?	✓	✓		✓	At this stage it is uncertain what other policies in the Plan would require and therefore effects are uncertain.
4.	?	?	?	✓	✓	✓	✓	At this stage it is uncertain what other policies in the Plan would require and therefore effects are uncertain.
5.	?	?	?	✓		✓		At this stage it is uncertain what other policies in the Plan would require and therefore effects are uncertain.
6.	?	?	?	✓			✓	At this stage it is uncertain what other policies in the Plan would require and therefore effects are uncertain.
7.	?	?	?	✓			✓	At this stage it is uncertain what other policies in the Plan would require and therefore effects are uncertain.
8.	?	?	?	✓		✓		The option contains support for the extraction of gas and therefore promotes the use of resources. At this stage it is uncertain what other policies in the Plan would require and therefore effects are also uncertain.
9.	?	?	?	✓		✓		At this stage it is uncertain what other policies in the Plan would require and therefore effects are uncertain, although leaning towards the negative as shale gas extraction results in the production of waste water which would have negative effects against this objective.
10.	?	?	?	✓		✓		At this stage it is uncertain what other policies in the Plan would require and therefore effects are uncertain.
11.	?	?	?	✓		✓		At this stage it is uncertain what other policies in the Plan would require and therefore effects are uncertain.
12.	+ ?	+ ?	+ ?	✓	✓	✓	✓	The option could have positive effects for the economy as it supports the development of unconventional gas extraction which would support the economy through job creation (particularly at construction stage) and through the provision of energy. At this stage it is uncertain what other policies in the Plan would require however and therefore effects are mainly uncertain.
13.	?	?	?	✓	✓	✓	✓	The option could have positive effects for the vitality and viability of communities as it supports the development of unconventional gas extraction which would support communities through job creation (particularly at construction stage) and through the provision of energy. There may be negative effects should gas developments harm the vitality of communities that are dependent on tourism which may be hampered by the presence of gas developments. At this stage it is uncertain what other policies in the Plan would require however and therefore effects are uncertain
14.	?	?	?	✓	✓	✓	✓	At this stage it is uncertain what other policies in the Plan would require and therefore effects are uncertain.
15.	?	?	?	✓	✓	✓	✓	At this stage it is uncertain what other policies in the Plan would require and therefore effects are uncertain.
16.	?	?	?	✓	✓	✓	✓	At this stage it is uncertain what other policies in the Plan would require and therefore effects are uncertain.

17.	?	?	?	✓		✓		The option supports the supply of gas and therefore could have significant positive effects on the provision of minerals to meet the needs of the population. At this stage it is uncertain what other policies in the Plan would require however and therefore effects are mainly uncertain

Summary of assessment
The assessment has revealed that under Options 1 and 4 there is potential for negative effects on the environment, and communities of the Joint Plan area yet more potential for wider gains including reduced CO2 emissions. Option 1 performs slightly better than Option 4 in terms of protection of the landscape. Option 2 would create greater uncertainties in the medium and long term as the approach would largely be controlled by national policy rather than a local approach.

The assessment of Option 5 also revealed uncertainties although this could be resolved through the inclusion of relevant policies elsewhere in the Plan, albeit that this may not address effects specific to unconventional gas extraction. Option 5 does however have positive effects on the economy and minerals supply. In combination with Option 1 or 4, Option 3 would lead to positive effects on the environment and communities but may have negative effects in relation to the provision of minerals to meet the needs of the population.

Recommendations
It is recommended that Option 1 would provide a more certain approach for the Joint Plan area provided that the precautionary approach underlies the support in principle. It is considered that incorporating Option 3 may be beneficial but careful consideration would need to be given to defining the terms used.

NEW ID28a Coal Bed Methane, Underground Coal Gasification, Shale Gas and Carbon and Gas Storage (id28)

Proposed alternative option 1: (And) This option would support the principle of development of the underground storage of carbon and gas subject, where relevant, to the other gas policies in the Joint Plan but would also in particular require robust assessment of, and the prevention of potential impacts on, a range of other matters including in relation to the integrity of geological or hydrogeological resources and processes (including groundwater and land stability), local amenity and public safety issues. Transport of gas or carbon would be expected to be via pipeline, with the routing of pipelines selected to give rise to the least environmental or amenity impact.

This option would involve a precautionary approach, with support to specific proposals only being provided where a high level of assurance in relation to impacts and benefits, including community benefits, can be demonstrated. Particularly high standards of siting, design and mitigation would be required where any development is proposed within the National Park or AONBs and in locations which may impact on the townscape and setting of the historic City of York.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	-	✓	✓	✓	✓	Underground storage of carbon has the potential for a range of impacts on biodiversity, which range from acute toxicity to fauna and changes in the PH of soils in the event of infrastructure failure causing leaks. Natural gas transport and storage may also have toxic effects where leaks occur[28], while both types of development would have construction impacts such as loss or disturbance to habitat. Pipelines are a key impact on biodiversity for both carbon storage and natural gas storage as land is disturbed temporarily during construction[29]. However, this option would involve a precautionary approach being adopted with a 'high level of assurance in

[28] Natural gas is not thought to be toxic to plants, but is toxic to fauna

[29] Environment Agency, undated. Scoping the Environmental Impacts of Carbon Capture, Transport and Storage [URL: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/297115/geho0811bucq-e-e.pdf]

								relation to impacts and benefits', so impacts relating to leaks would be required to be at very low risk of occurring, and those related to the land take and disturbance caused by infrastructure would also need to be low. It should be noted that as carbon storage projects may cross local authority boundaries and storage options can also be in geological formations beneath the sea, it is assumed in this assessment that the Plan area would be the recipient of carbon or gas for storage, and that the processes for capturing carbon would be regulated by different planning regimes.
2.	-	-	-		✓	✓	✓	Surface water can be affected by leaks of CO2, which can acidify water bodies, while groundwater could be affected by mechanisms such as through the displacement of brines during injection. Construction impacts may also occur as spills leach into waterbodies[30]. Similar effects would occur with underground storage of gas. For instance, in aquifer storage displacement of groundwater flow pathways may occur and contaminants may be mobilised. In storage in salt cavities mobilisation of salts and water demand are the key issues, alongside above ground construction impacts and disposal of brines to sensitive receptors[31]. However, this option would involve a precautionary approach being adopted with a 'high level of assurance in relation to impacts and benefits', so impacts are expected to have a relatively low likelihood and water environment receptors are likely to be less vulnerable. Nonetheless, impacts cannot be ruled out.
3.	-	-	-		✓	✓		Traffic impacts with carbon storage or gas storage are likely to be short term and largely defined to construction and decommissioning stages of development.
4.	- 0	- 0	- 0		✓	✓		Local air quality can be affected during construction due to production and suspension of dust as well as fuel use by machinery and vehicles if (human and biotic) receptors are nearby. For carbon capture, according to the Environment Agency 'Fugitive emissions of CO2 may be experienced from inadequate seals and fittings along the CCS chain' and 'CO2 releases would cause local air quality reductions, being worst during calm weather conditions'[32]. Such effects however would be a product of poor maintenance and not of carbon storage per se, and would be very local in scale. Similar effects may, under conditions of poor maintenance, be observed for gas pipelines, with natural gas leaks having locally toxic effects. However, given the value of

[30] ibid

[31] Department of Energy and Climate Change, 2011. National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) [URL: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/47857/1941-nps-gas-supply-oil-en4.pdf]

[32] Environment Agency, ibid.

								natural gas there would be even more of an imperative to quickly repair leaks. This option would involve a precautionary approach being adopted with a 'high level of assurance in relation to impacts and benefits', so impacts relating to leaks would be required to be at very low risk of occurring
5.	? --	? --	? --	✓	✓	✓	✓	As reported under objective 1, land could experience local changes in soils as a result of enduring carbon or gas leaks. This could have positive or negative effects on the productivity of soils (for instance CO2 can at lower levels act as a fertiliser[33]), though on contaminated sites carbon leaks could potentially mobilise heavy metals. For both CO2 and gas however, impacts are expected to be local and restricted to the immediate vicinity of the pipeline and injection point. Land take is also an issue. Gas storage injection, if they are sited on land, and with the inclusion of ancillary buildings / processing, can have a significant land take[34]. The pipeline, if buried, would only have a temporary impact on soils. CCS injection facilities are, however, currently without precedent in the UK with initial details only currently available for the capture sites, but not for non-marine storage sites. However, it is assumed that such facilities would be significantly smaller owing to their function being purely related to storage and requiring no onward processing. Given no indication is given of the location of future CCS or gas storage it is not possible to accurately assess the likely impact. However, this option would involve a precautionary approach being adopted with a 'high level of assurance in relation to impacts and benefits', so impacts relating to leaks would be required to be at very low risk of occurring. However, loss of high quality land may be more difficult to avoid due to the locational requirements, e.g. geological requirements (particularly Permian saltfields, as aquifer storage is usually considered to be more expensive) of gas storage in particular[35].
6.	+ +	+ +	+ +	✓		✓		Supporting carbon capture would have clear benefits on climate change, as it reduces the input of carbon to the atmosphere from the burning of fossil fuels. Natural Gas storage is not expected to have significant impacts on climate change (though its later burning might well have a very significant impact on flows of CO2

[33] Noomen, M.F. et al. 2003. Detecting the Influence of Gas Seepage on Vegetation using Hyperspectral Remote Sensing, University of Twente, Netherlands [URL: http://www.itc.nl/library/Papers_2003/peer_ref_conf/noomen.pdf]

[34] See Hydrocarbons-Technology.com, undated. Aldbrough Underground Gas Storage Facility, Yorkshire, United Kingdom [URL: http://www.hydrocarbons-technology.com/projects/aldbrough-underground-gas-storage-facility]

[35] See British Geological Survey, undated. Underground Natural Gas Storage in the UK [URL: http://www.bgs.ac.uk/research/energy/undergroundGasStorage.html] for a discussion on potential locational requirements for underground gas storage. The east of the plan area is broadly seen as having the most suitable geological conditions for gas storage.

								to the atmosphere), though as leaks are a potential issue in the transport of both forms of storage, small scale negative effects might also be observed. Although there are clear benefits from carbon capture it is worth noting that there is on-going research on issues such as the theoretical role of impurities such as sulphur dioxide which may affect chemistry in the injection zone / storage reservoir. While most impurities would be expected to be removed upstream of storage [36]The European Commission's CO2 Remove project have identified that 'concerning the potential for impurities to induce changes in the porosity and injectivity of a storage site, there are no indications that the amounts expected in CO2 streams will reduce the efficiency or integrity of storage'[37]
7.	+ ?	+ ?	+ ?	✓	✓		✓	A 'precautionary approach' is expected to align well with the need to ensure that development is resilient to climate change in that it does not impact on the resilience of its setting. However, the wording is open to interpretation, so some uncertainty is noted here.
8.	0	0	0					Storage of gas does not encourage the depletion or conservation of a resource. While it could be argued that carbon storage perpetuates future utilisation of fossil fuels by making the burning of fossil fuels less damaging to the climate, the opposite argument, that without carbon storage hydrocarbons will continue to be burned releasing great quantities of CO2, is also put forward. As it is not within the scope of this SA to question the underlying premises upon which the idea of storing carbon is based we have noted no effects,
9.	0	0	0					Neither carbon nor gas storage has a material effect on the minimisation or appropriate management of waste.
10.	? -	? -	? -	✓		✓		Injection of carbon or underground storage of gas would be below the level at which archaeological impacts could occur though there is the possibility that the injection site or pipeline could disrupt historic assets. These would be entirely dependent on location, though given that pipelines may be buried and range over a significant distance it seems possible that there would be some level of at least minor disruption to historic assets as a result of this option.
11.	-	-	-		✓	✓		Gas storage injection sites as well as carbon injection sites are visible industrial facilities in the landscape if they are sited on land, and with the inclusion of ancillary buildings / processing can have a significant land take. The pipeline, if buried, would only have a temporary impact on the landscape. CCS injection facilities are currently without precedent in the UK with initial details only currently available for the capture sites, but not for non-marine storage sites. However, it is assumed that such facilities would be significantly smaller owing to their function being purely related to storage and requiring no onward processing.

[36] ibid

[37] CO2Remove, 2012. CO2 Storage: do impurities matter. Published by the Global CCS Institute [URL: http://www.globalccsinstitute.com/insights/authors/tommikunda/2012/01/18/co2-storage-do-impurities-matter]

								Given no indication is given of the location of future CCS or gas storage it is not possible to accurately assess the likely landscape impact. Presumably, however gas storage would most likely be in the east of the plan area, while CCS storage elements could either be similarly located in saline formations or depleted oil/gas fields) or, if used in conjunction with Enhanced Coalbed Methane Recovery[38] in coalfield areas. This could mean that in the eastern part of the plan area in particular injection sites may visible from landscape receptors such as the National Park, tourism assets or the AoNB or Yorkshire Wolds. However, this option would involve a precautionary approach being adopted with a 'high level of assurance in relation to impacts and benefits', so impacts relating landscape would need to be dealt with or avoided.
12.	+	+ +	+ +		✓	✓	✓	Gas storage can bring major economic benefits to the UK economy by helping to ensure energy security, while at a local level such facilities can bring jobs to an area. Carbon Capture and Storage, although still untested in the UK is thought to have significant economic benefit, to the extent that the Carbon Capture and Storage Association projects that there is the potential to create 100,000 jobs across the UK by 2030[39] and DECC predict export opportunities for UK firms at between £3- 6.5 billion per year by the late 2020s[40]. Given that the storage element of CCS essentially underpins the wider CCS process (though it is accepted that marine sites may offer alternative locations) the option can be assumed to have a large indirect positive impact on this objective as well as a smaller direct positive impact[41].
13.	+	+	+		✓	✓	✓	As stated above there is a large indirect benefit to jobs from this option, and a smaller direct benefit. There is a risk that this option may, through promoting development that may be visible from tourist receptors, have some degree of negative effect, though the 'precautionary approach' espoused is likely to counter this to a

[38] See Carbon Capture and Storage Association, undated. Enhanced Hydrocarbon Recovery [URL: http://www.ccsassociation.org/what-is-ccs/storage/enhanced-hydrocarbon-recovery/] for a discussion of this topic

[39] Carbon Capture and Storage Association, undated. Economic importance [URL: http://www.ccsassociation.org/why-ccs/economic-importance/]. According to this source "The importance of CCS should not be underestimated. CCS is applicable to both the power sector and the industrial sectors, and will therefore play a vital role in the move to a low-carbon economy. In the power sector, fossil-fuel power with CCS is one of the options which has been identified as a major part of the low-carbon energy mix – alongside nuclear and renewables. CCS will be an increasingly important and necessary option for many industrial sectors, such as steel, cement, chemicals and ammonia."

[40] For a detailed breakdown of the economic benefits of various options for CCS please see Ricardo AEA / DECC, 2008. Future Value of Coal Carbon Abatement Technologies to UK Industry [URL: http://www.ricardo-aea.com/cms/assets/MediaRelease/PR_190609.pdf]

[41] Although the indirect economic benefit of this option is very large, the *direct* benefit is somewhat smaller (though still significant). According to Ricardo AEA '*the costs of measuring, monitoring and verifying emissions from ongoing CO2 storage has been estimated at £10 million in 2030. We have been unable to quantify the value associated with qualification and licensing of sites and so this figure underestimates the total market opportunity for the UK from CO2 storage'.*

								degree. Other sub objectives to this SA objective are likely to be unaffected.
14.	?	?	?		✓	✓		Although construction of the pipeline and land take of injection sites may have some direct short term impacts, impacts from the continued operation of sites would be in the form of indirect impacts on recreational receptors, e.g. impacts on views from rights of way. Because such impacts may or may not occur, depending on the location of future development, they are considered uncertain.
15.	0 -	0 -	0 -		✓	✓		According to the Environment Agency "any significant release of CO2 along the chain has the potential to accumulate in dips or slumps on the surface in calm weather conditions. This poses a risk for humans in the affected area, potentially causing fatalities, due to asphyxiation". Similar impacts would be expected from gas storage. However, this option would involve a precautionary approach being adopted with a 'high level of assurance in relation to impacts and benefits', so impacts relating to leaks would be required to be at very low risk of occurring.
16.	0 ?	0 ?	0 ?		✓	✓		There may be some potential for runoff from sites, which may feature ancillary buildings, and hard standing. This is likely to be at a low level, though in an area already prone to flooding this could be significant. However, impacts would be entirely location dependent, and avoidable due to the precautionary approach espoused by the option.
17.	0	0	0					There is unlikely to be a significant impact from this option on this objective.

Proposed alternative option 2: (And) Option 2:
This option would not express support in principle for the underground storage of carbon or gas due to the uncertain nature of the impacts and risks involved within the Plan area. Any proposals which come forward would be considered against other relevant policies in the Plan and relevant national policy. The NPPF states that minerals planning authorities should encourage underground gas and carbon storage, taking into account the integrity and safety of such facilities.

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SA objective	Impact / timescale	Type of effect	Analysis

	S	M	L	P	T	D	I	
1.	- ?	- ?	- ?	✓	✓	✓	✓	Although potential impacts from this policy would be less likely to occur due to the lack of support, given the encouragement from the NPPF, if development were proposed then it could still happen. The NPPF still requires that *"when determining planning applications, minerals planning authorities should ensure that the integrity and safety of underground storage facilities are appropriate, taking into account the maintenance of gas pressure, prevention of leakage of gas and the avoidance of pollution*", and given that there is expected to be a biodiversity and geodiversity policy in the plan, impacts would be not dissimilar to option 1 (though this remains uncertain until a preferred policy is published). The only concern is that option 1's 'high level of assurance in relation to impacts and benefits' might be lost to a slightly less precautionary and more 'satisfactory approach'. In relation to individual locations, it is difficult to see what material difference this would have on biodiversity or geo-diversity if compared to option 1, though we have added some uncertainty as the preferred approach to other policies in the plan is unknown. There would be less capacity for cumulative impacts on biodiversity / geodiversity due to the lack of support offered by this approach.
2.	- ?	- ?	- ?		✓	✓	✓	Although potential impacts from this policy would be less likely to occur due to the lack of support, given the encouragement from the NPPF, if development were proposed then it could still happen. The only concern is that option 1's 'high level of assurance in relation to impacts and benefits' might be lost to a slightly less precautionary and more 'satisfactory approach'. In relation to individual locations, it is difficult to see what material difference this would have on water resources if compared to option 1, though we have added some uncertainty as the preferred approach to other policies in the plan is unknown. There would be less capacity for cumulative impacts on water due to the lack of support offered by this approach.
3.	- ?	- ?	- ?		✓	✓		Traffic impacts with carbon storage or gas storage are likely to be short term and largely defined to construction and decommissioning stages of development. Although potential impacts from this policy would be less likely to occur due to the lack of support, given the encouragement from the NPPF, if development were proposed then it could still happen In relation to individual locations, it is difficult to see what material difference this option would have on traffic if compared to option 1, though we have added some uncertainty as the preferred approach to other policies in

								the plan is unknown. The only concern is that option 1's 'high level of assurance in relation to impacts and benefits' might be lost to a slightly less precautionary and more 'satisfactory approach', which could mean a higher acceptable threshold of traffic impacts. There would be less capacity for cumulative impacts from traffic due to the lack of support offered by this approach.
4.	- 0	- 0	- 0		✓	✓		Although potential impacts from this policy would be less likely to occur due to the lack of support, given the encouragement from the NPPF, if development were proposed then it could still happen. The NPPF still requires that *"when determining planning applications, minerals planning authorities should ensure that the integrity and safety of underground storage facilities are appropriate, taking into account the maintenance of gas pressure, prevention of leakage of gas and the avoidance of pollution*", This would, in effect, make impacts broadly similar to option 1, though there would be less capacity for cumulative impacts on air due to the lack of support offered by this approach.
5.	? -	? -	? -	✓	✓	✓	✓	Although potential impacts from this policy would be less likely to occur due to the lack of support, given the encouragement from the NPPF, if development were proposed then it could still happen. A slight concern is that option 1's 'high level of assurance in relation to impacts and benefits' might be lost to a slightly less precautionary and more 'satisfactory approach'. This would, in effect, make impacts broadly similar to option 1, though there would be less capacity for cumulative impacts on land due to the lack of support offered by this approach. At this stage, the effect of considering other policies in the plan is uncertain until a preferred approach is confirmed.
6.	+	+	+	✓			✓	Although the policy offers less support for carbon storage sites (and gas storage sites which have no impact on this objective), the NPPF would still, in effect allow the potential for applications to come forward, albeit at a lesser rate. And, should they comply with other policies in the plan, this would be positive for climate change.
7.	+	+	+	✓	✓	✓	✓	The NPPF will require consideration of climate adaptation[42], so any proposals that come forward would need to be considered in light of the predicted effects of climate change in areas which are vulnerable.
8.	0	0	0					Storage of gas / carbon does not encourage the depletion or conservation of a resource.
9.	0	0	0					Neither carbon nor gas storage has a material effect on the minimisation or appropriate management of waste.
10.	?	?	?	✓		✓		Although potential impacts from this policy would be less likely to occur due to the lack of support, given the encouragement from the NPPF, if development were proposed then it could still happen. The only concern is

[42] Paragraph 99 of the NPPF states that "when new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures"

	-	-	-					that option 1's 'high level of assurance in relation to impacts and benefits' might be lost to a slightly less precautionary and more 'satisfactory approach'. In relation to individual locations, it is difficult to see what material difference this would have on the historic environment if compared to option 1, though we have added some uncertainty as the preferred approach to other policies in the plan is unknown. There would be less capacity for cumulative impacts on water due to the lack of support offered by this approach.
11.	-	-	-		✓	✓		Although potential impacts from this policy would be less likely to occur due to the lack of support, given the encouragement from the NPPF, if development were proposed then it could still happen. The only concern is that option 1's 'high level of assurance in relation to impacts and benefits' might be lost to a slightly less precautionary and more 'satisfactory approach'. In relation to individual locations, it is difficult to see what material difference this would have on the historic environment if compared to option 1, though we have added some uncertainty as the preferred approach to other policies in the plan is unknown. There would be less capacity for cumulative impacts on landscape due to the lack of support offered by this approach.
12.	+	+	+		✓	✓	✓	Although the policy offers less support for carbon and gas storage sites, the NPPF would still, in effect allow the potential for applications to come forward, albeit at a lesser rate. This would be positive impact on the economy, though significantly less positive than option 1 (subject to other policies in the plan).
13.	+	+	+		✓	✓	✓	Although the policy offers less support for carbon and gas storage sites, the NPPF would still, in effect allow the potential for applications to come forward, albeit at a lesser rate. This would be positive impact on the vitality of communities (due to jobs), though significantly less positive than option 1 (subject to other policies in the plan).
14.	?	?	?		✓	✓		Although the policy offers less support for carbon and gas storage sites, the NPPF would still, in effect allow the potential for applications to come forward, albeit at a lesser rate (subject to other policies in the plan). Impacts on recreational assets may or may not occur, depending on the location of future development.
15.	0 - ?	0 - ?	0 - ?		✓	✓		Although potential impacts from this option would be less likely to occur due to the lack of support, given the encouragement from the NPPF, if development were proposed then it could still happen. The only concern is that option 1's 'high level of assurance in relation to impacts and benefits' might be lost to a slightly less precautionary and more 'satisfactory approach', though the NPPF does still insist on the 'integrity *and safety of underground storage facilities'.*

								In relation to individual locations, it is difficult to see what material difference this would have on health and safety if compared to option 1, though we have added some uncertainty as the preferred approach to other policies in the plan is unknown.
16.	0 ?	0 ?	0 ?		✓	✓		Although the policy offers less support for carbon and gas storage sites, the NPPF would still, in effect allow the potential for applications to come forward, albeit at a lesser rate. Impacts on flooding may or may not occur, depending on the location of future development (and subject to other, as yet undefined, policies in the plan).
17.	0	0	0					There is unlikely to be a significant impact from this option on this objective.

Proposed alternative option 3: (And) **[**Option 3:
This option would represent an extension to the precautionary principle in Option 1 by requiring applications for permission for the development of underground storage of carbon and gas to demonstrate that the proposed site has been identified so as to avoid sensitive locations and designations, including residential areas, important environmental designations and other important assets which require protection under the planning system.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	-	-	-	✓	✓	✓	✓	Effects on biodiversity / geo-diversity would be similar to option 1 for most of the plan area, though environmental designations / sensitive locations would be avoided, so in these areas there would be a protecting effect from this approach. Taken as a whole, however, there would be minor negative effects outside of these areas attributed to land take, construction impacts and the low risk potential for leaks. The overall negative impact is less than option 1, though still negative.
2.	-	-	-		✓	✓	✓	Effects would be similar to option 1 for most of the plan area, though sensitive locations would be avoided, so in these areas there would be a positive 'maintaining' effect. Taken as a whole there would be minor negative effects outside of these areas attributed to the low risk potential for leachates from gas storage and

								construction spills etc. The overall negative impact is less than option 1, though still negative.
3.	-	-	-		✓	✓		Traffic impacts with carbon storage or gas storage are likely to be short term and largely defined to construction and decommissioning stages of development. The areas most likely to be suitable for carbon or gas storage include a range of sensitive features, but also feature significant areas that are less sensitive, so the displacement effects of this option are not expected to highly significant (so traffic is unlikely to be significantly worse)
4.	0	0	0		✓	✓		Air quality impacts are expected to be largely the result of fugitive emissions, for which there would be a low likelihood of incidents taking place. These are likely to be very local in scale and would only be significant if they co-incided with a receptor, Given this option removes residential areas entirely from consideration, the air quality impact is likely to be confined to wildlife alone, and the avoidance of sensitive locations in this regard is likely to mean the effects are insignificant (though theoretical risks may still occur).
5.	?	?	?	✓	✓	✓	✓	Land take (and to a lesser degree the low risk of leaks) would still be an issue under this option, and if sensitive locations were avoided (particularly those sites which are designated for their nature conservation interest, which are often (though not always) of poorer land quality, it is possible that there would be an increased likelihood that this option would drive sites toward higher quality farmland, unless this is considered an important asset under the planning system[43].
6.	+ +	+ +	+ +	✓		✓		Although this option may further limit the potential for carbon storage (in contrast to option 1) there would still be scope to plan for this potentially highly beneficial technology for climate change. As stated in option 1, effects of natural gas storage on this option are expected to be neutral.
7.	+	+	+	✓	✓		✓	The avoidance of sensitive locations would help increase resilience to climate change, as sensitive receptors such as wildlife sites and water resources are potentially vulnerable to climate change.
8.	0	0	0					As with option 1, storage of gas does not encourage the depletion or conservation of a resource, while storage of carbon is considered in a similarly neutral way in this assessment.
9.	0	0	0					Neither carbon nor gas storage has a material effect on the minimisation or appropriate management of waste.
10.	?	?	?	✓		✓		Injection of carbon or underground storage of gas would be below the level at which archaeological impacts could occur though there is the possibility that the injection site or pipeline could disrupt historic assets. Given

[43] While the NPPF is attentive to the issue of preserving best and most versatile land, references to it do open up the possibility that it could be used – e.g. paragraph 112 "Local planning authorities should take into account the economic and other benefits of best and most versatile agricultural land. Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of higher quality"

	0	0	0					the emphasis on avoiding sensitive locations this would likely be at a lower level than option 1, though given that pipelines may be buried and range over a significant distance it seems possible that there would be some level of at minor disruption to historic assets as a result of this option.
11.	-	-	-		✓	✓		Effects would be broadly similar to option 1, only with additional assurance that sensitive landscape assets would not be affected. Given the European Landscape Convention's emphasis that 'all landscapes matter', even less sensitive locations would receive some level of effect from these industrial developments.
12.	+	+ + +	+ + +		✓	✓	✓	For the same reasons as option 1, indirect economic benefits are expected to be large. There is an increased element of doubt with this option, however, that the full economic potential of CCS as well as the increased energy security offered by gas storage, might not be fully realised, depending on the threshold level for defining locations as sensitive. This might encourage some potential developers to look at sites in other plan areas if costs remain broadly similar.
13.	+	+	+		✓	✓	✓	As stated in option 1 there is potentially a large indirect benefit to jobs from the encouragement of these technologies, and a smaller direct benefit, though under this option there is the risk that development may go elsewhere. There is, however, less of a risk that this option would promote development that may be visible from tourist receptors under this option than option 1.
14.	0 ?	0 ?	0 ?		✓	✓		Receptors such as rights of way may still be affected by industrial looking sites under this option, but the more important recreational assets (e.g. national trails) would presumably see development steered away from them.
15.	0 +	0 +	0 +		✓	✓		As with option 1, there is a low risk of health impacts from these technologies, though this option would effectively remove the most sensitive receptors and residential areas from this theoretical risk (which would only be likely if sites / pipelines were poorly maintained).
16.	+ ?	+ ?	+ ?		✓	✓		Effects would be similar to option 1, though presumably this option, through its avoidance of sensitive locations and residential locations, would in effect protect key receptors receptors from flooding.
17.	0	0	0					There is unlikely to be a significant impact from this option on this objective.

Proposed alternative option 4: (Or) This option would support the principle of development for carbon and gas storage provided proposals comply with other policies in the Plan.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	? -	? -	? -	✓	✓	✓	✓	As the preferred approach to biodiversity and geo-diversity has not yet been fixed, effects are essentially uncertain. However, given options included a theme on biodiversity and geo-diversity (though these options included reliance on national policy) there is an expectation that the plan will at least offer some level of protection here and effects from land take, construction and leaks would at least be controlled for the most significant assets.
2.	? -	? -	? -		✓	✓	✓	As the preferred approach to the water environment has not yet been fixed, effects are essentially uncertain. However, given options included a theme on water (though options these included reliance on national policy) there is an expectation that the plan will at least offer some level of protection here, and effects of leachate would at least be controlled for the most significant assets.
3.	-	-	-		✓	✓		Traffic impacts with carbon storage or gas storage are likely to be short term and largely defined to construction and decommissioning stages of development. Other policies in the plan may moderate this to a degree, but not significantly as traffic impacts are to do with construction rather than operation.
4.	- ?	- ?	- ?		✓	✓		Local air quality can be affected during construction due to production and suspension of dust as well as fuel use by machinery and vehicles and from, fugitive emissions during pipeline / injection operation. These issues may be moderated through over as yet undecided development management policies on local amenity, though until a preferred approach is clearly stated, uncertainty remains,
5.	- ?	- ?	- ?	✓	✓	✓	✓	At this stage, the effect of considering other policies in the plan is uncertain until a preferred approach is confirmed, though the approach to best and most versatile land is currently focussed (at issues and options) on restoring sites to good quality farmland where it is the issue is not considered in relation to a specific mineral policy area. That might suggest that in the near term at least impacts, because of land take, would be negative. They would continue to be negative in the long term if sites continue to be approved, even if

								some earlier are ultimately decommissioned and restored.
6.	+ + ?	+ + ?	+ + ?	✓		✓		As with option 1 this option is likely to be highly beneficial to climate change (subject to other policies in the plan, which are as yet undecided)
7.	0 + ?	0 + ?	+ ?	✓	✓		✓	To a degree, other policies (such as biodiversity) are expected to protect sensitive locations from loss or damage resulting from carbon or gas storage development (though this is expected to be modest protection when compared to other options for carbon and gas storage). This will, indirectly, help make the natural environment more resilient to climate change. Given climate change is a consideration in the strategic approach to reclamation and after use at issues and options, we have added positive effects here in the longer term, balanced with some uncertainty as the preferred approach is not yet known.
8.	0	0	0					As with option 1, storage of gas does not encourage the depletion or conservation of a resource, while storage of carbon is considered in a similarly neutral way in this assessment.
9.	0	0	0					Neither carbon nor gas storage has a material effect on the minimisation or appropriate management of waste.
10.	? -	? -	? -	✓		✓		As the preferred approach to the historic environment has not yet been fixed, effects are essentially uncertain. However, given options included a theme on the historic environment (though these options included reliance on national policy) there is an expectation that the plan will at least offer some level of protection here and effects from disruption of the historic environment due to construction activities associated with the injection site and pipeline will at least be controlled for the most significant assets, though the effects of offering support for development would still result in residual negative effects.
11.	? -	? -	? -		✓	✓		As the preferred approach to landscape has not yet been fixed, effects are essentially uncertain. However, given options included a theme on the landscape (though these options included reliance on national policy) there is an expectation that the plan will at least offer some level of protection here and effects from disruption of the landscape due to new industrial style development coming forward will at least be controlled for the most significant assets, though the effects of supporting development would still result in residual negative effects.
12.	+	+ +	+ +		✓	✓	✓	Gas storage can bring major economic benefits to the UK economy by helping to ensure energy security, while at a local level such facilities can bring jobs to an area. Carbon Capture and Storage, although still untested in the UK is thought to have significant economic benefits also (see option 1). Given that the storage

								element of CCS essentially underpins the wider CCS process the option can be assumed to have a large indirect positive impact on this objective as well as a smaller direct positive impact[44]. In addition, given this option requires less constraints than option 1, the potential for these gas and carbon storage would be greater, with a corresponding increase in economic benefit.
13.	+	+ + +	+ + +		✓	✓	✓	As stated in option 1 there is potentially a large indirect benefit to jobs from the encouragement of these technologies, and a smaller direct benefit. Although under this option, other policies in the plan would help to ensure that this development does not come at the cost of tourism development, it does not demand a precautionary approach and so performs less well in this regard. This must, however, be balanced by the lower level of protection under this policy. Positive to very positive.
14.	- ?	- ?	- ?		✓	✓		As the preferred approach to local amenity issues (which included impacts on rights of way and open space) has not yet been fixed, effects are essentially uncertain. However, there is an expectation that the plan will at least offer some level of protection here and effects on recreational assets due to new industrial style development coming forward will at least be controlled for the most significant assets, though the effects of supporting development would still result in residual negative effects.
15.	0 -	0 -	0 -		✓	✓		As with option 1, there is a low risk of health impacts from these technologies, though this option, though linking with the proposed potential local amenity options would at least prevent unacceptable effects on health and safety. A theoretical risk (which would only be likely if sites / pipelines were poorly maintained) might still be present with this technology if poorly maintained.
16.	0 ?	0 ?	0 ?		✓	✓		As the preferred approach to the water environment (including flooding) has not yet been fixed, effects are essentially uncertain. However, given options included a theme on the water environment (though these options included reliance on national policy) there is an expectation that the plan will at least offer some level of protection here. The issue is most likely to be the effect of hard standing contributing to surface water run off which would only be damaging if there is a receptor to this flooding.
17.	0	0	0					There is unlikely to be a significant impact from this option on this objective.

[44] Although the indirect economic benefit of this option is very large, the *direct* benefit is somewhat smaller (though still significant). According to Ricardo AEA '*the costs of measuring, monitoring and verifying emissions from ongoing CO2 storage has been estimated at £10 million in 2030. We have been unable to quantify the value associated with qualification and licensing of sites and so this figure underestimates the total market opportunity for the UK from CO2 storage'.*

Summary of assessment
These options all, either by deferring to National Policy or through direct support, offer the potential for carbon or gas storage. Depending on the degree of support this is expected to bring greater or lesser economic and jobs benefits, with options 1 and 4 performing particularly well here. Similarly all options have some degree of benefit to climate change, with supporting options 1, 3 and 4 performing particularly well. This is because carbon capture underpins the large potential for greenhouse gas emission reductions from the broader carbon capture and storage process.

As industrial features with a significant development footprint however, options report negative impacts across many of the other environmental and social SA objectives. These impacts are relatively minor impacts as all options offer some degree of protection from them. Option 3 in particular avoids residential areas and important environmental designations, building on the protection of option 1. This emphasis on the protection of key receptors makes a neutral to positive contribution to several objectives in option 3 (e.g. health and safety and climate adaptation), while for other options the protection offered is weaker, meaning that low level negative effects remain possible or likely.

Recommendations
There are strong benefits to climate change and the economy, particularly from options 1 and 3 (although it is accepted that option 4 would, through its less controlled approach perhaps offer the greatest potential). As option 3 offers the greater level of protection, when used in conjunction with option 1, though still supports carbon and gas storage, the SA recommends that this option should be taken forward.

Continuity of Supply of Deep Coal (id29)

Assumptions – This assessment assumes that existing permissions will not lead to significant effects under option 1 (though extensions might) while option 2 is considered to be an upscaling of working by an order of magnitude.

Option 1 This option would support the principle of lateral extensions to the permitted working area for Kellingley Colliery, in locations accessible from the current colliery site, and would set out criteria against which proposals would be assessed. Criteria could include a requirement for the Mineral Planning Authority to be satisfied that the arrangements for managing and mitigating the effects of subsidence and the disposal of mining waste materials arising from the development are acceptable.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	? -	✓	✓		✓	There are occasional areas of priority habitat, woodland and some SINC sites close to the perimeter of current permissions, and to the southwest and northwest two SSSIs. Some of these features may or may not come within the scope of future underground extensions where subsidence or acid mine drainage may have an effect on local hydrological / water quality conditions. Such effects, if they occur would be small scale and highly localised and confined to the longer term. Subsidence in some instances may create opportunities for biodiversity (e.g. where water gathers)
2.	0	0	?	✓	✓	✓	✓	It is possible that groundwater Source Protection Zones could come within the scope of an extension, though there are also numerous opportunities for extension that avoid these SPZs. In the longer term possible

	?	?	-					cessation of minewater pumping from deep mine shafts would have an uncertain impact on overlying aquifers without prior mitigation[45]. A number of rivers and streams cross what is already an area that encompasses a Nitrate Vulnerable Zone, and connect to the Aire. Watercourses in the area are generally of moderate ecological quality. So there is some potential for pollution (e.g. through mine water pumping or run off from surface operations), though environmental permitting regime should significantly lessen any effects to below significance thresholds. If this option is pursued, criteria should also include ensuring a scheme would mitigate appropriately for wider environmental effects including water pollution.
3.	0 ?	?	?	✓		✓		This option will result in continued HGV journeys as spoil is moved off site (though there is some uncertainty if current levels of road journeys will be maintained or increase or decrease). There are rail connections to Eggborough and Drax which will keep transport impacts from moving coal at a low level.
4.	0	0	0 -		✓	✓		There are no predicted effects from this option on the air quality objective in the short and medium term, though the area vulnerable to fugitive coal mine methane may increase in the longer term. It is assumed that the regulatory regime (via HSE controls / permits) should deal with unsafe fugitive emissions (though safe emissions may still occur), and energy extraction from coal mine methane can also provide mitigation
5.	0	0	-	✓			✓	In the longer term this option would increase demand for colliery spoil disposal, which would require space (and thus land take)
6.	-	-	--	✓		✓		Further mining will inevitably increase the chance of ventilation air methane (VAM) / firedamp or gob gas (methane arising from collapsed workings) reaching the air. While safety controls may require flaring (effectively converting the gas to CO2 and water vapour), venting may also occur. However, energy generation from coal mine methane can provide significant mitigation.
7.	0	0	0					There are no predicted effects from this option on the climate adaptation objective
8.	--	--	--	✓		✓		This option promotes the further significant extraction of a non-renewable / non-recyclable fossil resource,

[45] Burke, S and Barber B report that, in relation to the nearby South Yorkshire Coalfield, *"mine water is recovering over large parts of the South Yorkshire Coalfield with many receptors potentially at risk from significant mine water pollution. While much work has so far concentrated on preventing and treating mine water discharges to surface water receptors, the risk to major aquifers has not been fully assessed……mine water could potentially threaten the aquifers from below….."* Burke, S and Barber, J. An overview of mine water rebound in the South Yorkshire Coalfield. Environment Agency, Leeds.

								which can only negatively contribute to the objective. Effects may be lessened to a degree, for instance, by utilising spoil as aggregate, or salvaging coal mine methane.
9.	-- -	-- -	-- -	✓		✓		Waste will inevitably be generated in significant quantities under this objective, though because criteria will expect acceptable disposal of spoil there may be some prospect for use as secondary aggregate. Clarification of 'acceptable' may help clarify and potentially lessen impacts, particularly if utilisation of spoil as a secondary mineral were considered as preferable to disposal.
10.	0	0	0 ?	✓		✓		There are a few listed buildings around the perimeter of the current permission which could conceivably be affected by subsidence, though the area of land around the perimeter with no listed buildings is very much greater, suggesting that the probability of effects occurring is low. Nonetheless, some (low level) uncertainty is noted in the long term due to the theoretical effect that effects could occur.
11.	-	-	-	✓		✓		Extending the area of underground mining is likely to lead to some limited development of surface infrastructure in land that is distant from designated landscapes and is already subject to visual disturbance from features such as power stations and motorways. This will lead to minor effects.
12.	+ + +	+ + +	+ + +		✓	✓		This option will help to secure jobs and will increase energy security, however, coal extraction cannot be said to be 'sustainable' economic growth so this option's contribution to the objective is less than if sustainable economic growth were achieved.
13.	+	+	+	✓		✓		Communities will potentially be sustained as jobs will be maintained, while restoration (both of site and spoil disposal sites) will also generate or secure jobs.
14.	0	0	0					As this involves underground working, this option will not significantly affect recreation, leisure and learning.
15.	0	-	-	✓		✓		Traffic (from HGVs) will continue to present a risk of accidents occurring. Safety risks from fugitive firedamp / methane are expected to be largely controlled by HSE regulation, though there may be some potential for a longer term low level risk depending on the adequacy of monitoring. This could be negated through criteria specifying adequate safety and monitoring controls.
16.	0	0	-		✓		✓	Although flooding from rivers (and to a limited extent surface water flooding) affects the perimeters of the Kellingley permission, this option, relating to underground extensions, is not expected to present a significantly

								greater risk than the present site. However, in the long term subsidence could cause additional flooding. Pumping of water is expected to prevent ingress of groundwater from intervening fissures. In the longer term, if pumping ceases there may be potential flooding of shafts as pumping is switched off, but as this is a deep mine, mine water rebound to the surface is not expected to be an issue.
17.	+	+	+	✓		✓		This option, through securing jobs, will reduce future social exclusion.

Option 2 This option would not express support for the principle of further lateral extensions to the working area for Kellingley Colliery and would seek the maximum exploitation of the resource within the current permitted area.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0	0	0 ?	✓	✓		✓	This option would not be expected to have a significant effect on biodiversity or geodiversity (that hasn't already been considered within the current permission), though there remains a longer term uncertain prospect that an application may come forward if viable options for exploitation of further resources in the permitted area are exhausted.
2.	0	0	0 ?	✓	✓	✓	✓	This option would not be expected to have a significant effect on water over and above present operations, though there remains a longer term uncertain prospect that an application may come forward if viable options for exploitation of further resources in the permitted area are exhausted.
3.	0	?	?	✓		✓		This option will result in continued HGV journeys as spoil is moved off site (though there is some uncertainty if current levels of road journeys will decrease over time as finite resources in the permitted site run out). There

		+	+					are rail connections to Eggborough and Drax which will keep transport impacts from moving coal at a low level.
4.	0	0	0					As with other objectives there is only a longer term possibility that development outside of the current permitted area would be proposed. The assessment is thus considered the same as option 1, but with a lower prospect of any effects occurring, which would be confined to the longer term (and are considered not to rise above a strategic significance threshold).
5.	0	0	?	✓			✓	This option would not be expected to have a significant effect on soils or land, though there remains a longer term uncertain prospect that an application may come forward if viable options for exploitation of further resources in the permitted area are exhausted. This application might require more land for disposal.
6.	-	-	-- ?	✓		✓		Maximising exploitation of the resource may, in the same way as option 1, contribute to climate change. There is uncertainty as to whether an 'unsupported' application may still arise in the future.
7.	0	0	0					There are no predicted effects from this option on the climate adaptation objective
8.	--	--	- ?	✓		✓		This option enables the further significant extraction of a non-renewable / non-recyclable fossil resource, which can only negatively contribute to the objective. The effects may be less than for option 1, but are still considered to be of a greater magnitude than a minor sustainability effect. In the long term, resources may become increasingly exhausted under this option (though a future application for extension may still come forward). Effects may be lessened to a degree, for instance, by utilising spoil as aggregate, or salvaging coal mine methane.
9.	--	--	-	✓		✓		Waste will inevitably be generated in significant quantities under this objective (though potentially at a lesser rate than option 1 as it is unclear what 'maximise' means in this context). In the long term resources may become increasingly exhausted under this option (so waste will be generated at a lower rate). Criteria are not mentioned for disposal.
10.	?	?	?	✓		✓		Maximising exploitation within the permitted area could potentially affect some listed buildings if maximising means going beyond the scope of previous subsidence assessments, depending on the location of mining activity. Under this scenario current conditions may not be sufficient to control all potential subsidence, so this would need to be evaluated at the time an application comes forward.
11.	0 -	0 -	0 -	✓		✓		Confining the area of underground mining may lead to some limited development of surface infrastructure in land that is distant from designated landscapes and is already subject to visual disturbance from features such as power stations and motorways. As this is expected to be more limited than option 1 this will lead to insignificant to minor effects.

12.	+	+ ?	-- ?		✓	✓		This option will help to secure jobs and will increase energy security, but at a lesser scale than option 1. However, coal extraction cannot be said to be sustainable economic growth so this options contribution to the objective will be minor. There is uncertainty in the longer term as this option may reduce the prospect that future extensions will come forward, thus decreasing the potential resource that can be extracted (causing a loss of jobs).
13.	+	+ ?	-- ?	✓		✓		Communities will potentially be sustained as jobs will be maintained in the short term, while restoration (both of site and spoil disposal sites) will also generate or secure jobs. However, as time goes on, uncertainty over the viability of the coal resource increases and in the longer term the logical conclusion of extracting a finite resource is that the resource will run out, jobs will be lost and local communities will be less viable (though there remains the prospect that an extension application might still come forward).
14.	0	0	0					As this involves underground working, this option will not significantly affect recreation, leisure and learning.
15.	0	+ ?	+ ?	✓		✓		Traffic (from HGVs) will continue to present a risk of accidents occurring at present levels in the short term, though this may decline going forward (a positive effect). Safety risks from fugitive firedamp / methane are expected to be largely controlled by HSE regulation, though there may be some potential for a longer term low level risk depending on the adequacy of monitoring. This could be negated through criteria specifying adequate safety and monitoring controls.
16.	0	0	0					This option is not expected to present a significantly greater risk than the present site. Pumping of water is expected to prevent ingress of groundwater from intervening fissures. In the longer term, if pumping ceases there may be potential flooding of shafts as pumping is switched off, but as this is a deep mine, mine water rebound to the surface is not expected to be an issue.
17.	+	?	- ?	✓			✓	This option will help reduce future social exclusion in the short term, though as a finite resource is being mined, will expose jobs to greater uncertainty going forward (though it is still possible that an application for extension will come forward in the future, even without support)

Summary of assessment

Both options show a range of environmental, social and economic effects, with negative effects being observed for Options 1 and 2 for a wide range of environmental objectives including climate change, resource use and waste generation, with the latter option showing some falling off of effects if levels of coal mining decline in the longer term. Other negative effects associated with Option 2 include a longer term negative effects on the

economy and community viability.

Option 1 shows very positive economic effects and positive effects on community vitality. There are also positive effects on the population SA objective, which has a sub objective on reducing social exclusion. Option 2 also reports lower level positive effects for the economy and community vitality in the short and medium term.

Several other objectives under both options report minor negative effects, though Option 2 reports less negative effects as a whole.

Recommendations
Several recommendations to improve both objectives are made, including expanding the range of criteria considered to include water pollution impacts, considering the potential for a secondary use for spoil and considering the utilisation of coal mine methane (which may also be considered under other options, if chosen).

Broadly, the SA reports mixed effects for these options with option 2 favoured for environmental performance, and option 1 favoured for economic and social performance.

Shallow Coal (id30)

Option 1 This option would not express specific support for the principle of shallow coal mining in the Joint Plan area (except where extraction would take place as part of an agreed programme of development to avoid sterilisation of shallow coal as a result of the implementation of other permitted surface development).

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	- / ?	- / ?	- / ?	✓	✓	✓	✓	Should an open cast application come forward, given the location of the opencast resource, effects could range from minor to major negative on biodiversity (though most of the opencast coal resource lies away from the areas with the highest status for biodiversity / geodiversity). Overall, the lack of support is likely to have neutral effects on biodiversity (as the baseline situation is maintained if it is effective). However, there may be significant negative impacts on biodiversity if extraction takes place to avoid sterilisation. The net effect is therefore - / ? .
2.	-	-	-	✓	✓	✓	✓	As with objective 1, though the option may, to an extent, deter (or at least not attract) new opencast

	?	?	?					development, there remains the possibility that future opencast extraction may take place, despite the lack of any expression of support (though this has not been the case in the past). Generally effects on water from open cast mining can range from moderate to highly significant with problems such as acid mine drainage, effect on groundwater and changes in drainage patterns all potentially occurring at a local level. However, it is uncertain the extent to which this policy will facilitate development and where that development will be (near or far from sensitive receptors?). There is some overlap with Nitrate Vulnerable Zones in the distribution of the shallow coal resource. Overall, the lack of support is likely to have neutral effects on water (as the baseline situation is maintained if it is effective). However, there may be significant negative impacts on water if extraction takes place to avoid sterilisation. The net effect is therefore - / ? .
3.	0 -	0 -	-	✓			✓	This approach, which denies explicit support to opencast coal, may lead to longer journeys to service coal powered power plants in the future when existing suppliers become unviable. There may also be negative effects if extraction takes place to avoid sterilisation, particularly if transporting extracted material involves use of the minor road network.
4.	- ?	- ?	- ?		✓	✓	✓	Dust can be a problem at opencast mines, as can use of heavy vehicles, meaning that if this option deters opencast development local air quality may be maintained at the present level (though effects may simply be displaced to more distant mines). However, it is uncertain whether this approach would deter all opencast coal development so there remains the possibility of some effects occurring. Overall, the lack of support is likely to have neutral effects on air quality (as the baseline situation is maintained if it is effective). However, there may be significant negative impacts on air quality if extraction takes place to avoid sterilisation. The net effect is therefore - / ? .
5.	- ?	- ?	- ?	✓	✓		✓	As with previous options this approach may deter opencast development leading to neutral effects. However, this does not mean that development won't happen in the future. Should development happen, effects on soils could be major negative, at least in the short to medium term (longer term restoration may occur). Overall, the lack of support is likely to have neutral effects on soils (as the baseline situation is maintained if it is effective). However, there may be significant negative impacts on soils if extraction takes place to avoid sterilisation. The net effect is therefore - / ? .

6.	- ?	- ?	- ?	✓			✓	Any open cast coal mine will release a quantum of methane (a powerful greenhouse gas) into the air (though substantially less than deep coal as shallow coal tends to have retained little of its original methane). It will also generate significant traffic and may cause loss of areas of carbon sinks. This objective may discourage future open cast mining to a degree, which in theory will not do anything to increase emissions, so the impact is considered to be neutral (no development) though uncertainty arises as it may still be possible that unsupported development will occur. Overall, the lack of support is likely to have neutral effects on climate change (as the baseline situation is maintained if it is effective). However, there may be negative impacts on climate change if extraction takes place to avoid sterilisation. The net effect is therefore - / ? .
7.	0	0	0					There is no clear link between this option and the adaptation to climate change SA objective
8.	- ?	- ?	- ?	✓		✓		This option will help maintain the baseline situation as it does not aim to attract non-renewable coal mining activity. However, there is some uncertainty and possible negative effects as unsupported development, or extraction to avoid sterilisation may still occur
9.	0	0	0					There is no clear link between this option and the waste minimisation SA objective
10.	- ?	- ?	- ?	✓		✓	✓	There is significant potential for open cast mining to affect the historic environment, both directly (destruction of archaeology) and in terms of setting or via indirect means such as dust deposition / vibration. This objective may discourage future open cast mining to a degree, which, if none goes ahead, will have a neutral effect on the baseline, though uncertainty arises as it may still be possible that unsupported development will occur, or extraction may take place to avoid sterilisation.
11.	- ?	- ?	- ?	✓		✓		There is significant potential for open cast mining to affect the landscape, including in the most sensitive part of the Plan area (the National Park). This objective may discourage future open cast mining to a degree, which, if none goes ahead, will have a neutral effect on the baseline, though uncertainty and possible negative effects arise as it may still be possible that unsupported opencast development will occur, or extraction may take place to avoid sterilisation.
12.	-	-	-	✓		✓		This option is likely to deter future investment in shallow coal mining and ancillary industry. However, in other sectors jobs will be retained as a certain degree of blight may occur in the immediate vicinity of a shallow coal mine. The net effect, however, is minor negative.

13.	?	?	?	✓		✓		The effect of this option on communities is uncertain, even though the option discourages open cast coal mining to a degree. On the one hand there may be benefits to community cohesion and viability resulting from coal mining, which could potentially be a significant employer, while on the other hand, the environmental and amenity effects of open cast coal mining may damage the perception of a place, leading to effects such as lower house prices or loss of visitor income. As this development discourages open cast mining, but may allow mining to avoid sterilisation, effects are uncertain.
14.	-	-	-		✓	✓		The effect of this option on recreation is likely to be neutral (if it discourages open cast development) or uncertain to negative (if it results in limited development to avoid sterilisation).
	?	?	?					
15.	0	0	0	✓		✓		There is significant potential for open cast mining to affect the health and safety, both directly (the site itself is hazardous) and in terms of the heavy traffic, particulate matter and other traffic pollutants it can generate. This objective may discourage future open cast mining to a degree, which will help prevent or moderate health safety and wellbeing impacts: so the impact is considered to range from neutral (no development) to minor negative (limited development, e.g. if development to avoid sterilisation occurs), though at a local scale there could be major negative impacts where development happens.
	-	-	-					
16.	0	0	0					There is no clear link between this option and the reduction of flood risk.
17.	0	0	0					There is no clear link between this option and the addressing the needs of a changing population sub objective.

Option 2 This option would support the principle of extraction of shallow coal where it would be consistent with the development management policies in the Plan.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	**Impact / timescale**			**Type of effect**				**Analysis**
	S	**M**	**L**	**P**	**T**	**D**	**I**	

1.	-	-	0 +	✓	✓	✓	✓	While the shallow coal resource generally lies away from the most important areas for biodiversity, the effects of open cast mining, which include loss of habitats from the extraction (and spoil) site and potential problems such as acid drainage and effects on hydrology, can mean that local effects without mitigation have the potential to be wide ranging. Although not finalised, development management policies, coupled with the environmental permitting regime, should mitigate for any major impacts, though the level of local disturbance to biodiversity / geo-diversity must still be recorded as being negative. In the longer term there may be some potential for restoration either to the baseline or to an enhanced scenario for biodiversity. This holds true throughout the plan area, though in some sensitive locations (e.g. the North York Moors) effects may be greater (though still moderated by development management policies)
2.	-	-	-		✓	✓		The effects of open cast mining on water can be severe without proper mitigation. Although not finalised, development management policies, coupled with the environmental permitting regime, should mitigate for any major impacts, though there may still be some disruption of surface water drainage patterns due to the large scale land loss; and incorrect site management leading to a pollution risk (e.g. from spills) can never be ruled out.
3.	+	+	+	✓			✓	This more supportive approach allows greater potential for a more local supply source to feed nearby power stations, thus reducing transport.
4.	-	-	-		✓	✓		This option would support open cast development, which could lead to dust and traffic pollution problems. However, other policies are likely to mitigate these effects to a degree.
5.	- --	- --	? 0	✓	✓		✓	This option increases the chance that large open cast mining (creating a large void) will occur. If development occurs, this will inevitably mean the loss of soil or land (some of which may be high quality) up until sites are restored, at which point it is possible that there will be a return to baseline conditions (depending on restoration proposals). Development management policies should help moderate impacts, and sites ultimately may be restored.
6.	--	--	--	✓			✓	Any open cast coal mine will release a quantum of methane (a powerful greenhouse gas) into the air (though substantially less than deep coal as shallow coal tends to have retained little of its original methane). It will also generate significant traffic and may cause loss of areas of carbon sinks (particularly in areas such as the National Park). As this objective supports shallow coal (assuming there is a demand for coal) effects will be major negative. Mitigation may be possible to a degree, however this is only like to moderate, rather than remove effects.
7.	0	0	0					There is no clear link between this option and the adaptation to climate change SA objective
8.	--	--	--	✓		✓		This option effectively supports the exploitation of a non-renewable (and non-recyclable – if burned) resource
9.	0	0	--					In the long term, if this option encourages mining, significant waste will be generated.

10.	-	-	-	✓		✓	✓	There is significant potential for open cast mining to affect the historic environment, both directly (destruction of archaeology) and in terms of setting, or via indirect means such as dust deposition / vibration. Effects can be mitigated by the development management policies to a degree – but cannot be ruled out, particularly in the most sensitive parts of the plan area, such as the National Park.
11.	-	-	-	✓		✓		There is significant potential for open cast mining to affect landscape / townscape quality. As this objective supports shallow coal (assuming there is a demand for coal) effects could potentially be major negative. Mitigation may be possible to a degree, and this is likely to occur under other development management policies. But it is likely that residual effects may remain, which could be major if close to or in the more sensitive parts of the plan area (e.g. National Parks).
	--	--	--					
12.	+	+	+	✓		✓		As a major employer and source of energy security this option may have significant positive effects. However, given the non-renewable nature of coal, unless linked with future carbon capture and storage generation, this form of economic growth cannot be said to be sustainable.
13.	?	?	?	✓		✓		The effect of this option on communities is uncertain. On the one hand there may be benefits to community cohesion and viability resulting from coal mining, which could potentially be a significant employer, while on the other hand, the environmental and amenity effects of open cast coal mining may damage the perception of a place, leading to effects such as lower house prices or loss of visitor income. While development management policies may help moderate impacts, residual effects may still remain.
14.	-	-	-		✓	✓		While development management will mitigate effects, access is highly likely to need to be re-routed if open cast mining is supported. This effect may be heightened in areas such as National Parks, where recreation is particularly important.
15.	-	-	-	✓		✓		There is significant potential for open cast coal mining to affect health and safety, both directly (open cast sites themselves are dangerous) and in terms of the heavy traffic, particulate matter and other traffic pollutants it can generate. Effects can be mitigated by the development management policies to a degree – but residual effects may still remain.
16.	0	0	0					There is no clear link between this option and the reduction of flood risk.
17.	0	0	0					There is no clear link between this option and the addressing the needs of a changing population sub objective.

Summary of assessment

Both options are associated with a number of negative effects, and Option 1 records a significant amount of uncertainty in relation to several environmental and social factors – though effects would be dependent upon the scale and location of extraction. Potential effects on the North York Moors are unlikely under Option 1 as it is unlikely that other development of a sufficient scale would be permitted in the area of shallow coal

resource. There is, however, greater certainty that Option 2 would at least create a more supportive policy environment for shallow coal extraction. This, if development occurs, could potentially cause significant sustainability effects, such as landscape and amenity effects, the nature and magnitude of which would depend on the development management policies chosen, and could have heightened effects if such development takes place in or close to protected landscapes.
There are a limited number of positive effects, mainly associated with Option 2, including benefits accruing for possible restoration, reduction in transport miles, and increased employment.

Recommendations
The sustainability appraisal has shown the potential for significant negative sustainability effects associated with option 2. From a sustainability perspective option 1 is preferable. Consideration of the implications for these options should be considered when selecting / drafting development management policies.

Safeguarding Shallow Coal (id31)

Assumptions – Minerals safeguarding does not create any presumption that the mineral would be extracted, and any proposals for extraction in a safeguarded area would still need to meet the same policy requirements as proposals for extraction in an area which is not safeguarded. Equally the presence of a safeguarding area would not preclude any other developments but would enable the presence of potentially important minerals to be considered as part of the usual planning process. Some uncertainty is noted throughout this assessment as the stringency of any eventual safeguarding policy is not known (e.g. whether safeguarding is likely to shift the spatial approach taken in a different plan).

Option 1.
This option would safeguard the whole of the known shallow coal resource, with a 500m buffer zone to help ensure maximum protection of the resource from proximal sterilisation. A buffer of 250m would be applied in the NYMNP.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
2.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
3.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.

	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
4.	0 ?	0 ?	+ ?	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted effect. However, the buffer zone may one day help to ensure that users of new developments are protected from the effects of extraction on local air quality, if development ever takes place. Positive effects would occur when / if shallow coal is extracted, which may be some years in the future. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
5.	0 ?	0 ?	+ + ?	✓			✓	Safeguarding keeps open option of developing the optimum locations for shallow coal extraction. This may help minimise land take when compared to extraction from a sub optimum location (which may require more land take). The buffer applied would also protect the coal resource from proximal development. Positive effects would occur when / if shallow coal is extracted, which may be some years in the future. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
6.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
7.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
8.	+ +	+ +	+ + ?	✓		✓		Safeguarding shallow coal would enable the option of future extraction and thus strongly contribute to the safeguarding and wise use of minerals sub objective. However, if safeguarding enables the option of future extraction for energy development the results could ultimately be seen to be the irretrievable loss of a fossil minerals resource.
9.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were

								development to take place it would need to accord with other policies in the plan.
10.	0	0	0					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.
	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
11.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.
	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
12.	+ +	+ +	+ +	✓			✓	Safeguarding shallow coal will keep open the future option of extraction as this option will prevent sterilisation of the resource. This potentially retains a future economic opportunity.
13.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.
	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
14.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.
	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
15.	0	0	+	✓		✓	✓	Under this option, residents / users of new developments would be well protected from potential future minerals extraction through the inclusion of a 500m buffer, and thus wellbeing would be protected if in the future any shallow coal development were to happen.
	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
16.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.

	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
17.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.
	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.

Option 2 This option would only safeguard the shallow coal resource without a buffer zone, given the absence of expectation of working of shallow coal during the plan period.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.
	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
2.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.
	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
3.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.

	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
4.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
5.	0	0	+	✓			✓	Safeguarding keeps open options of developing the optimum locations for shallow coal extraction. This may help minimise land take when compared to extraction from a sub optimum location (which may require more land take). Positive effects would occur when minerals are extracted, which may be some years in the future. The effect would be less than option 1; however, as under this option there would be no protection from proximal development. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
6.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
7.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
8.	+ +	+ +	+ +	✓		✓		Safeguarding shallow coal would enable the option of future extraction and thus strongly contribute to the safeguarding and wise use of minerals sub objective. However, if safeguarding enables the option of future extraction for energy development the results could ultimately be seen to be the irretrievable loss of a minerals resource. The positive effect of this option is less than options 1 and 4 as no buffer is applied under this option, so proximal development may result in sterilisation of a portion of the resource.
	+	+	?					
9.	0	0	0					As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were

								development to take place it would need to accord with other policies in the plan.
10.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
11.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
12.	+	+	+	✓			✓	Safeguarding shallow coal will keep open the future option of extraction as this option will prevent sterilisation of the resource. This potentially retains a future economic opportunity. The positive effect of this option is less than option 1 or 4 as no buffer is applied, so proximal development may result in sterilisation of a portion of the resource.
13.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
14.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
15.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					

16.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
17.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					

Option 3 This option would only safeguard shallow resources outside urban areas and National Park and AONB designations as working in these areas are less likely to be acceptable

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
2.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.

	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
3.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
4.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
5.	0	0	+	✓		✓		Safeguarding keeps open option of developing the optimum locations for shallow coal extraction. This may help minimise land take when compared to extraction from a sub optimum location (which may require more land take). Positive effects would occur when mineral are extracted, which may be some years in the future. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
6.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
7.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					

8.	++ +	++ +	++ ?	✓		✓		Safeguarding shallow coal would enable the option of future extraction and thus strongly contribute to the safeguarding and wise use of minerals sub objective. However, if safeguarding enables the option of future extraction for energy development the results could ultimately be seen to be the irretrievable loss of a minerals resource. As less of the land is safeguarded than other options under this option, effects are less positive.
9.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
10.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
11.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
12.	+	+	+	✓		✓		Safeguarding shallow coal will keep open the future option of extraction as this option will prevent sterilisation of the resource. This potentially retains a future economic opportunity. As less of the land is safeguarded than previous options under this option, effects are less positive.
13.	+	+	+	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. However, there may be some small scale benefits for communities in protected landscapes and urban areas as under this approach

	?	?	?					they will be freed from the constraints that a safeguarding policy might place upon them. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
14.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
15.	0	0	+	✓			✓	Although safeguarding does not infer any shallow coal development will take place, safeguarding shallow coal resources outside urban areas and National Park and AONB designations will help prevent any longer term future health and wellbeing detractors from becoming significant in national parks and AONBs. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered
	?	?	?					
16.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
17.	+	+	+	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. However, there may be some small scale benefits for communities in protected landscapes and urban areas as under this approach they will be freed from the constraints that a safeguarding policy might place upon them. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					

Proposed alternative option 4: (Or) This option would safeguard the whole of the known shallow coal resource, with a 250m buffer zone to help ensure maximum protection of the resource from proximal sterilisation.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
2.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
3.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
4.	0	0	+	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted effect. However, the buffer zone may one day help to ensure that users of new developments are protected from the effects of extraction on local air quality, if development ever takes place (but to a lesser extent than Option 1). Positive effects would occur when / if shallow coal is extracted, which may be some years in the future. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					

5.	0 ?	0 ?	++ ?	✓			✓	Safeguarding keeps open the option of developing the optimum locations for shallow coal extraction. This may help minimise land take when compared to extraction from a sub optimum location (which may require more land take). The buffer applied would also protect the coal resource from proximal development. Positive effects would occur when / if shallow coal is extracted, which may be some years in the future. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
6.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
7.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
8.	++	++	++ ?	✓		✓		Safeguarding shallow coal would enable the option of future extraction and thus strongly contribute to the safeguarding and wise use of minerals sub objective. However, if safeguarding enables the option of future extraction for energy development the results could ultimately be seen to be the irretrievable loss of a fossil minerals resource.
9.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.
10.	0 ?	0 ?	0 ?					As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
11.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.

	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
12.	+ +	+ +	+ +	✓			✓	Safeguarding shallow coal will keep open the future option of extraction as this option will prevent sterilisation of the resource. This potentially retains a future economic opportunity. The positive effect of this option may be less than option 1 as a smaller buffer is applied, so proximal development may result in sterilisation of a portion of the resource, although this impact is considered to be minimal.
	+	+	+					
13.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
14.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
15.	0	0	+	✓		✓	✓	Under this option, residents / users of new developments would be protected from potential future minerals extraction through the inclusion of a 250m buffer, and thus wellbeing would be protected to an extent if in the future any shallow coal development were to happen. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
16.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
17.	0	0	0	✓			✓	As safeguarding does not infer any shallow coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.

								Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.

Summary of assessment
As safeguarding does not infer shallow coal extraction will take place there is generally no predicted direct effect. Were development to take place it would need to accord with other policies in the plan.

Safeguarding contributes positively, however, to the SA objective 'to minimise the use of resources and encourage their re-use and safeguarding'. In other ways positive indirect effects are noted for all options, such as benefits for the economy.

Options 1 and 4, as they safeguard land with a buffer zone, show additional positive effects through avoiding proximal sterilisation of the resource (Option 1 more so than Option 4 as the buffer zone is larger).

Option 3 shows some additional indirect positive effects as it prevents land with little prospect of development being safeguarded. This is likely to positively contribute to the needs of the population and community vitality sub objectives.

Under the options which support safeguarding, effects from displacement of development which would have taken place are uncertain as this will depend upon the stringency of any policy approach applied.

Recommendations
The SA shows a mild preference for option 3, though it should be noted that this preference is based on an assumption that development is less likely outside of safeguarded areas. Option 1 and 4's 'buffer zones' show some limited benefit when contrasted with option 2. Generally, however, sustainability effects of all options are fairly weak.

Safeguarding Deep Coal (id32)

Option 1.
This option would not support the safeguarding of deep coal resources.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					There is no clear link between this option and the biodiversity / geodiversity objective
2.	0	0	0					There is no clear link between this option and the water objective
3.	0	0	0					There is no clear link between this option and the transport objective
4.	0	0	0					There is no clear link between this option and the air quality objective
5.	0	0	0					There is no clear link between this option and the soil / land objective
6.	0	0	0					There is no clear link between this option and the climate change objective.
7.	0	0	0					There is no clear link between this option and the climate change adaptation objective
8.	--	--	-- ?	✓			✓	This option would not safeguard the coal resource which may make it vulnerable to sterilization. This would work against the SA sub objective to safeguard resources. In addition, as a fossil mineral resource, not safeguarding could ultimately be seen to be enabling the retention of a fossil minerals resource in the ground (because it may ultimately be sterilised and thus prevented from being destroyed by burning?
9.	0	0	0					There is no clear link between this option and the waste objective
10.	0	0	0					There is no clear link between this option and the historic environment objective
11.	0	0	0					There is no clear link between this option and the landscape objective
12.	-- +	-- +	-- +	✓		✓		Not safeguarding any land would have strong negative economic effects as a potentially valuable resource may be lost. A possible positive is developers would be less constrained,

13.	0	?	?	✓			✓	Not safeguarding any land for coal mining would have uncertain effects for the communities that rely on the future viability of coal mining at Kellingley Colliery as future development near to the site may sterilise further development of the site.
14.	0	0	0					There is no clear link between this option and the recreation / leisure objective
15.	0	0	0					There is no clear link between this option and the health and wellbeing objective
16.	0	0	0					There is no clear link between this option and the flooding objective
17.	0	0	0					A possible positive is in relation to communities being free of the constraints arising from safeguarding

Option 2 This option would safeguard the whole of the deep coal resource

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
2.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.

	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
3.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. As the safeguarded resource roughly aligns with the Leeds City Region, which offers good access to markets there is some prospect that displaced sensitive development might be displaced to locations more distant from markets.
	-	-	-					
4.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. As the safeguarded development roughly aligns with the Leeds City Region, which offers good access to markets there is some prospect that displaced sensitive development might be displaced to locations more distant from markets. This might increase journey lengths to and from displaced development (e.g. from commuters) and increase the net amount of air pollution, though local effects on air quality may be relatively insignificant.
	-	-	-					
5.	0	0	0					As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
6.	0	0	0	✓			✓	As safeguarding does not infer any coal development there is no clear direct link between this option and the climate change objective. Displaced development (see above) might involve further journeys, which would have an insignificant to minor negative effect on climate change.
	-	-	-					
7.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					

8.	+ +	+ +	+ + ?	✓			✓	This option would contribute strongly to the safeguarding of a mineral resource. However, if safeguarding enables the option of future extraction for energy development the results could ultimately be seen to be the irretrievable loss of a fossil minerals resource.
9.	0	0	0					As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan.
10.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
11.	0 ?	0 ?	0 ?				✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
12.	+ +	+ +	+ +	✓			✓	Safeguarding the deep coal resource would ensure that it is available for future economic benefit.
13.	0 ?	0 ?	+ ?	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered. However, if safeguarding eventually kept the option open for future mining, it may bring jobs to local communities.
14.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. It is possible displaced development might have an impact, but at this level possible receptors cannot be identified.
15.	0	0	0					There is no clear link between this option and the health and wellbeing objective

16.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
17.	+	+	+	✓			✓	Safeguarding helps to ensure that coal may be available in the future to support the energy security of the population.

Option 3 This option would only safeguard deep coal resources within extant coal mining licence areas for Kellingley Colliery and within the Selby Coalfield

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. The stringency of any eventual safeguarding policy is not known, so displacement effects on development cannot yet be fully considered. These displacement effects will, however, be at a lower level than option 2.
	?	?	?					
2.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. The stringency of any eventual safeguarding policy is not known, so displacement effects on development cannot yet be fully considered. These displacement effects will, however, be at a lower level than option 2.
	?	?	?					

3.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. As the safeguarded resource is in an area that is relatively close to markets there is some prospect that displaced sensitive development might be displaced to locations more distant from markets. This is not likely to rise above a threshold of significance until later in the plan period (as effects are cumulative).
	?	?	-					
4.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. As the safeguarded development is in an area that is relatively close to markets there is some prospect that displaced sensitive development might be displaced to locations more distant from markets. This might increase journey lengths to and from displaced development (e.g. from commuters) and increase the net amount of air pollution. This is not likely to rise above a threshold of significance until later in the plan period (as effects are cumulative).
	?	?	-					
5.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. The stringency of any eventual safeguarding policy is not known, so displacement effects on development cannot yet be fully considered. These displacement effects will, however, be at a lower level than option 2
	?	?	?					
6.	0	0	0	✓			✓	As safeguarding does not infer any coal development there is no clear direct link between this option and the climate change objective. Displaced development (see above) might involve further journeys, which would have a significant to minor negative effect on climate change in the long term.
	?	?	-					
7.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. The stringency of any eventual safeguarding policy is not known, so displacement effects on development cannot yet be fully considered. These displacement effects will, however, be at a lower level than option 2
	?	?	?					
8.	+	+	+	✓		✓	✓	This option would contribute to the safeguarding of a mineral resource (though not as strongly as option 2). However, if safeguarding enables the option of future extraction for energy development the results could ultimately be seen to be the irretrievable loss of a fossil minerals resource.
			?					
9.	0	0	0					As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were

								development to take place it would need to accord with other policies in the plan.
10.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. The stringency of any eventual safeguarding policy is not known, so displacement effects on development cannot yet be fully considered. These displacement effects will, however, be at a lower level than option 2
11.	0 ?	0 ?	- ?	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. If this option displaces other development in a similar way to objective 1 it may have some minor indirect negative effects on views out of AONBs for example as development may be displaced to locations within the visual zone of those areas. However, effects are likely to small scale and may only become significant through the cumulative effects of development. There remains significant uncertainty around this, particularly as development may also go outside the plan area.
12.	+	+	+	✓			✓	Safeguarding the deep coal resource in this area would ensure that it is available for future economic benefit. This would, however, be at a lower level than option 2.
13.	0 ?	0 ?	+ ?	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered. However, if safeguarding eventually kept the option open for future mining, it may bring jobs to local communities.
14.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. It is possible displaced development might have an impact, but at this level possible receptors cannot be identified.
15.	0	0	0					There is no clear link between this option and the health and wellbeing objective
16.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan.

	?	?	?					It is possible displaced development might have an impact, but at this level possible receptors cannot be identified.
17.	+	+	+	✓			✓	Safeguarding helps to ensure that coal may be available in the future to support the energy security of the population.

Option 4 This option would only safeguard deep coal resources within the Kellingley Colliery licensed area.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. While the option may cause some development to be displaced, this is considered to be at too low a level for it to exhibit significant sustainability effects.
2.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. While the option may cause some development to be displaced, this is considered to be at too low a level for it to exhibit significant sustainability effects.
3.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. While the option may cause some development to be displaced, this is considered to be at too low a level for it to exhibit significant sustainability effects.

4.	0	0	0					There is no clear link between this option and the air quality objective
5.	0	0	0					As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. Similarly, this option is expected to have no significant effect on the SA objective as much of the land in and around the licensed area is of a similar agricultural land classification status, so any displaced development would be likely to either be directed to land of a similar status.
6.	0	0	0					This option would not have a significant effect on climate change.
7.	0	0	0					This option would not have a significant effect on climate change adaptation.
8.	+	+	+ ?	✓			✓	This option would contribute (at a relatively low level) to the safeguarding of a mineral resource (though not as strongly as option 2 or 3). However, if safeguarding enables the option of future extraction for energy development the results could ultimately be seen to be the irretrievable loss of a fossil minerals resource.
9.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan.
10.	0	0	0 +	✓		✓	✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. Displacement effects on other development are small scale and unknown. However, this option may help contain future coal development in an area with relatively low historic environment assets, benefitting the wider plan area.
11.	0	0	0 +	✓		✓	✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. Displacement effects on other development are small scale and unknown. However, this option may help contain future coal development in an area of relatively high visual disturbance, benefitting the wider plan area.

12.	0	0	+	✓		✓		Safeguarding the deep coal resource within the licensed area would help ensure that it is available for future economic benefit. The benefits will not, however, be as great as options 2 and 3.
13.	0	0	+	✓		✓	✓	Safeguarding the deep coal resource within the licensed area may help ensure that it continues to deliver viability benefits to local communities through job retention.
14.	0	0	0					Although rights of way cross the licensed area, because this is underground development effects no significant effects are predicted.
15.	0	0	0					There is no clear link between this option and the health and wellbeing objective
16.	0	0	0					As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. While the option may cause some development to be displaced, this is considered to be at too low a level for it to exhibit significant sustainability effects.
17.	+	+	+	✓			✓	Safeguarding helps to ensure that coal may be available in the future to support the energy security of the population. This will be at a lower level than options 2 and 3.

Option 5 In association with any safeguarding of deep coal, this option would include an additional 700m buffer zone to help protect the resource from sterilisation through proximal development

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan.

	?	?	?					When considered together with other safeguarding options, some uncertainty is noted as it is not known whether displacement effects on development will occur and what the likely alternative locations are, though were development to take place it would need to accord with policies in other plans and the NPPF.
2.	0 ?	0 ?	0 ?		✓		✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. When considered together with other safeguarding options, some uncertainty is noted as it is not known whether displacement effects on development will occur and what the likely alternative locations are, though were development to take place it would need to accord with policies in other plans and the NPPF.
3.	0	0	0					This option would have no significant additional effects when combined with other safeguarding options.
4.	0	0	+	✓		✓	✓	As safeguarding does not infer any coal development will take place there is no predicted effect. However, the buffer zone may help to ensure that users of new developments are protected from the effects of extraction on local air quality that might arise from vehicles arriving / leaving sites if development ever takes place. Positive effects would occur when / if deep coal is extracted, which may be some years in the future.
5.	0	0	0					This option would have no significant additional effects when combined with other safeguarding options.
6.	0	0	0					This option would not have a significant effect on climate change when combined with other safeguarding options.
7.	0	0	0					This option would not have a significant effect on climate change when combined with other safeguarding options.
8.	++	++	++	✓			✓	When combined with other options this option will ensure that safeguarded land is not eroded by proximal development, thereby ensuring mineral safeguarding areas are effective at protecting the whole of the intended area of resource that is to be defended from sterilization.
9.	0	0	0					This option would not have a significant effect on waste when combined with other safeguarding options.
10.	0	0	0	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan.

	?	?	?					When considered together with other safeguarding options, some uncertainty is noted as it is not known whether displacement effects on development will occur and what the likely alternative locations are, though were development to take place it would need to accord with policies in other plans and the NPPF.
11.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any coal development will take place there is no predicted direct effect. Were development to take place it would need to accord with other policies in the plan. When considered together with other safeguarding options, some uncertainty is noted as it is not known whether displacement effects on development will occur and what the likely alternative locations are, though were development to take place it would need to accord with policies in other plans and the NPPF.
12.	+ +	+ +	+ +	✓		✓		1 In combination with other options this option would maximise economic opportunity as safeguarded areas would be protected in their entirety from proximal development, thus maximising the future viability of exploitation. However, there could also be some minor adverse effects on other economic interests through additional constraint arising from the more comprehensive approach to safeguarding.
13.	0	0	+ +	✓			✓	Safeguarding deep coal resources plus a buffer would help ensure that any potential future sites deliver viability benefits to nearby local communities (e.g. though job creation) and helps ensure that impacts on nearby future residents are less likely.
14.	0	0	0					This option would have no significant additional effects when combined with other safeguarding options.
15.	0	0	+	✓		✓		Buffers around safeguarding areas should, if coal development ever occurs, protect communities from any local impacts associated with coal mining subsidence that could affect health and wellbeing.
16.	0	0	0					This option would have no significant additional effects when combined with other safeguarding options.
17.	+	+	+	✓			✓	Safeguarding helps to ensure that coal may be available in the future to support the energy security of the population.

Summary of assessment
As safeguarding does not infer deep coal extraction will take place there is generally no predicted direct effect. Were development to take place it would need to accord with other policies in the plan.

Safeguarding contributes positively, however, to the SA objective 'to minimise the use of resources and encourage their re-use and safeguarding'. This positive effect occurs with options 2, 3, 4 and 5, with option 2 performing the best in this respect.

Option 5, as it safeguards land with a buffer zone, shows additional positive effects when used in conjunction with other options through avoiding proximal sterilisation of the resource.

In other ways indirect effects are noted for options, in particular benefits for the economy (e.g. Options 2, 3, 4 and 5). Some of the options also note negative effects (Option 1), or neutral to positive effects on the economy.

Under each option, effects from displacement of development which would have taken place are uncertain as this will depend upon the stringency of any policy approach applied. This will need to be considered when assessing policies at the Preferred Options stage.

Recommendations
Option 5 combined with option 2, 3 or 4) is the most compatible with the SA Framework though there are a range of benefits and dis-benefits associated with all options, with option 1 being the least favoured option.

Disposal of Colliery Spoil (id33)

Assumptions – This assessment takes account of the proposals in the current planning application at Womersley Quarry.

Option 1 This option would support the principle of maximising the availability of disposal capacity at the existing Womersley spoil disposal site and the utilisation of any available capacity at the Gale Common ash disposal site.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	--	-	✓	✓	✓		Although initially land will be lost at Womersley under existing or 'in the pipeline permissions', restoration of Womersley will create opportunities for biodiversity in the longer term as phased restoration will incorporate significant species rich grassland restoration. In the medium term it is anticipated that a small grassland Site of Importance for Nature Conservation will be lost (in 7 to 8 years from approval of the amendment and extension scheme at Womersley, though the effect will be moderated by on-going restoration, including translocation work[46]). This is highly uncertain, however, as the current application at Womersley is as yet undetermined. It is expected that if further capacity increases were required this would be within the current (or proposed) planned area, though increased height of spoil might be a future possible solution. Effects would be
	?	+	?					

[46] Whether this impact falls into the short term or medium term depends on whether or not the scheme at Womersley is approved and when this Joint Minerals and Waste Plan is adopted. We have assumed it would occur in the medium term in this assessment.

		?						dependent on the nature of any proposed future scheme, but restoration would still continue to bring gains for biodiversity (subject to the outcome of the current planning application at the site). In a similar way Gale Common is a phased development, which has through restoration in the past resulted in gains for biodiversity after initial land take[47]. As phases progress so restoration will also progress, and this is expected to continue to happen under this scenario, with utilisation of available capacity expected to be within the boundaries of the 'planned for site'. It is not certain whether 'maximising the availability of disposal capacity' could mean that the lifetime of these sites could be extended, therefore the long term effect is uncertain - negative.
2.	- ?	- ?	- ?	✓		✓		Colliery spoil can have significant impacts on water quality. However, given that environmental controls will be in place at these two sites (and if increases in capacity are made a corresponding upgrade in controls may be necessary), effects are expected to be relatively minor, though this clearly subject to the outcome of the current planning permission at the Womersley Site. It is not certain whether 'maximising the availability of disposal capacity' could mean that the lifetime of these sites could be extended, therefore the long term effect is uncertain - negative.
3.	- ?	- ?	-- ?	✓		✓		Both sites represent relatively local disposal options (Gale Common is closest to the colliery), so this option would retain reasonably short journeys (this is subject to the outcome of the current planning application at Womersley). However, if further capacity is allowed, it may lead to increased local traffic. It is not certain whether 'maximising the availability of disposal capacity' could mean that the lifetime of these sites could be extended, therefore the long term effect is uncertain to major negative (owing to the fact that the baseline situation should, without this option, significantly improve).
4.	- ?	- ?	- ?	✓		✓		Both sites represent relatively local disposal options (Gale Common is closest to the colliery), so this option would retain reasonably short journeys (this is subject to the outcome of the current planning application at Womersley). However, if further capacity is allowed, it may lead to increased local traffic, and thus increased effects on air quality It is not certain whether 'maximising the availability of disposal capacity' could mean that the lifetime of these sites could be extended, therefore the long term effect is uncertain to negative.

[47] Pulverised Fuel Ash is disposed of in a liquid form to lagoon, which dry out prior to further layer being deposited, eventually these build in height and ultimately either material is removed for sale or restoration is initiated.

5.	+ 0 ?	+ 0 ?	+ ?	✓		✓		Land that is not currently being used for spoil will be lost under the application that is currently part of an active planning application at Womersley (although none of this is greenfield land), though it is unlikely that there would be any increased land take beyond that under this option as solutions for increased utilisation of the disposal sites are expected to come from within the existing boundaries of each these sites (this is subject to the outcome of the current planning application at Womersley). Phased restoration at Womersley would permit best and most versatile land to be developed in the future if required (though the restoration plan is primarily promoting restoration to biodiversity), though whether this is delayed due to efforts to maximise extraction is uncertain. At Gale common phased restoration would also continue, though uncertainty remains as to how maximising capacity may ultimately affect the timelines for this.
6.	0 ?	0 -- ?	-- ?	✓		✓		Both sites represent relatively local disposal options (Gale Common is closest to the colliery), so this option would retain reasonably short journeys and not significantly affect the CO2 emissions baseline (this is subject to the outcome of the current planning application at Womersley). However, if ,maximising the capacity means extending the workings at either of these sites, the baseline situation would worsen in the long term (as the baseline would have been that traffic levels would drop off in the longer term)
7.	+ ?	+ ?	+ ?	✓		✓		Both sites are in Flood Zone 1 (which gives them a degree of resilience to river flooding, which is expected to increase under climate change), with only small parts of each site prone to surface water flooding (this is subject to the outcome of the current planning application at Womersley).
8.	-- ?	-- ?	?	✓		✓		This option allows for the disposal of colliery spoil but says nothing about opportunities for re-use. Maximising capacity is likely to continue to dis-incentivise re-use (though some windfall sale of spoil does go on) though much depends on what is meant by 'maximising disposal capacity' and whether there exists a local market[48]. It is not certain whether 'maximising the availability of disposal capacity' could mean that the lifetime of these sites could be extended, which could prolong the lack of an incentive for re-use, or, if sites reach capacity may continue to drive incentives to sell spoil from these sites. Therefore the long term effect is uncertain.

[48] Minerals Planning Guidance 3: Coal Mining and Colliery Spoil Disposal [URL: http://www.sustainableaggregates.com/library/docs/l0157_mpg03_coal_mining_and_colliery_spoil_disposal_1999.pdf] highlights the high transportation costs of minestone which limits the potential market for minestone as secondary aggregate.

9.	-- ?	- ?	?		✓	✓		Both Womersley and Gale Common are primarily disposal sites. Maximising disposal capacity at these sites would continue to allow a disposal option, which would dis-incentivise other options for dealing with this waste. However, given the limited space for disposal beyond current and planned permissions disposal space would be finite in nature. This may, alternatively, drive producers of colliery spoil or the disposal site operators to more actively seek opportunities to utilise the waste stream (e.g. as secondary aggregate) to reduce volumes required for disposal. However, they may also seek alternative opportunities for disposal (e.g. in other plan areas / or through backstowing or co-disposal with other waste[49]). (This is subject to the outcome of the current planning application at Womersley.) It is not certain whether 'maximising the availability of disposal capacity' could mean that the lifetime of these sites could be extended. This uncertainty could either prolong the lack of an incentive for re-use, or, through the finite nature of supply, may continue to drive incentives to sell spoil from these sites. Therefore the long term effect is uncertain.
10.	0 ?	0 ?	0 ?	✓		✓		Under this option, existing disposal sites are to be used, including (subject to planning permission being granted) that planned for under the current application at Womersley (which is considered to have negligible impacts on cultural heritage). This is subject to the outcome of the current planning application at Womersley.
11.	- ?	-- +	-- ?	✓		✓		In the current proposal at Womersley there remains some outstanding concern over landscape impacts, particularly relating to height and slippage. If disposal capacity were to be further maximised both here and at Gale common it is considered that landscape impacts would generally be negative, particularly when the Site of Importance for Nature Conservation at Womersley is lost and if impacts were compounded by adjustments to the final landforms. This would, however, be balanced to a degree by phased restoration. In the longer term maximising capacity may or may not mean these disposal sites would operate for longer, resulting in uncertain, though likely negative, long term impacts on landscape.
12.	?	?	?	✓			✓	It is currently unclear the extent to which these two sites would be able to accommodate the colliery spoil from local sources of spoil (e.g. Kellingley Colliery). A shortfall in capacity may raise costs at Kellingley which could have negative effects on jobs as the colliery becomes less competitive[50]. (This is subject to the outcome of the current planning application at Womersley.)

[49] See Minerals Planning Guidance 3 for a range of disposal options

[50] At the time of writing there was some uncertainty on the future of Kellingley Colliery. Any significant changes at this would obviously have a bearing on the outcome of this assessment.

13.	- ?	- ?	-- ?	✓	✓		✓	The effect of this option on the vitality of local communities is expected to be uncertain to negative as continued disposal may affect general perceptions of the area, though the outcomes of the current Womersley site are still under consideration so the situation is uncertain. It is not certain whether 'maximising the availability of disposal capacity' could mean that the lifetime of these sites could be extended, therefore the long term effect is uncertain to major negative (as although jobs may be sustained, the expected baseline return to pre disposal conditions would be delayed, affecting future community vitality).
14.	0 ?	- ?	- ?	✓	✓	✓	✓	Effects on the recreation, leisure and learning baseline are predicted to be negative as maximising capacity may lead to changes in the visual appearance at sites. If the permissions at sites are extended due to maximising disposal, negative visual impacts on recreation might be extended (when they would have been expected to fall away). (This is subject to the outcome of the current planning application at Womersley.)
15.	- ?	- ?	-- ?	✓	✓	✓		Continued use of these two sites within the context of a maximisation of capacity may have some effects on health and wellbeing as journeys are made between Kellingly Colliery and the sites. Many issues such as air quality are subject to management measures that are designed to keep the level of impact at an acceptable level, so minor effects are noted here However, as the planning application at Womersley has not yet been determined it is not possible to say if these impacts are acceptable. It is not certain whether 'maximising the availability of disposal capacity' could mean that the lifetime of these sites could be extended, therefore the long term effect is uncertain to major negative (owing to the fact that the baseline situation should, without this option, significantly improve).
16.	+ ?	+ ?	+ ?	✓	✓	✓		Both sites are in Flood Zone 1 (which gives them a degree of resilience to river flooding, which is expected to increase under climate change), with only small parts of each site prone to surface water flooding. (This is subject to the outcome of the current planning application at Womersley.)
17.	0 ?	0 ?	+ ?		✓	✓		Limiting the supply of sites for disposal to two extant sites may drive an increase in the incentive to increase the amount of spoil offered for sale as secondary aggregate in the longer term though this is highly uncertain as it is unclear whether maximisation means the life of sites will be extended. However, although this arguably supports the sustainability sub-objective 'to shorten supply chains for building materials', effects on the overall objective are considered to be minor and highly uncertain. This is subject to the outcome of the current planning application at Womersley, so there is considerable

								uncertainty noted.

Option 2 This option would not express support for any further increase in capacity at the Womersley spoil disposal site, which has already been subject of recent proposals for the further raising of tipping levels, and would instead seek the utilisation of any available capacity at the Gale Common ash disposal site, as well as support the principle of development of a new disposal facility for the colliery if necessary, and would set out criteria against which any proposals for a new facility would be assessed. Criteria could include the requirement for proposals to utilise quarry voids or, if not possible, derelict or degraded land, wherever possible, and; provide a detailed justification for proposals which, in exceptional circumstances, seek to utilise best and most versatile agricultural land. Proposals could also be required to provide satisfactory arrangements for transport of spoil from the colliery to point of disposal, with preference being given to options that would use alternatives to road transport, or road haulage routes which minimise any impacts on local communities

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	--	-	✓	✓	✓	✓	Under this option, the beneficial effects of phased restoration of Womersley and Gale Common would continue (although a site of importance for nature conservation would still be lost if the site expands in line with the current as yet to be determined application, though on-going restoration would continue). As phases progress so restoration will also progress, with utilisation of available capacity expected to mean that which has already been planned for. However, development of a new disposal site for colliery waste could lead to significant land take (albeit potentially brownfield land), which, if steered toward quarry voids or derelict land, could generate significant impacts on biodiversity such as loss of habitats or effects of acid drainage on local watercourses if measures to control drainage are not correctly implemented, though restoration may offset these problems to a degree in the longer term. Although the net amount of land used for disposal would likely be the same as under option 1, as phased restoration would create a new land resource, the impact of a new site is thought to bring uncertain to negative net effects due to the potential disruption that colliery spoil disposal can bring at a new site.
	?	?	?					

								Uncertainty is also noted because this assessment is subject to the outcome of the current planning application at Womersley.
2.	- ?	- ?	- ?	✓	✓	✓	✓	Colliery spoil can have significant impacts on water quality. However, given that environmental controls will be in place at all sites, effects are expected to be relatively minor (though accidental spills may still occur). However, given the location of a new site is unknown, it is not known how sensitive local water bodies will be to change and the efficacy of any future controls. We have recorded minor negative to uncertain impacts here to reflect the likelihood that impacts, because of environmental controls, would be expected to be minor negative[51], but the magnitude would remain unknown until a site was identified. Uncertainty is also noted because this assessment is subject to the outcome of the current planning application at Womersley.
3.	? +	? +	? +	✓		✓	✓	Under this option the emphasis on Gale Common and the preference for a new site accessible by non-road transport or avoiding communities would improve the transport situation (a new site may also lessen transport impacts at Womersley by reducing lorry deliveries there). However, until the location of the site is known it cannot be said that tonne-kilometres of waste would fall, so uncertainty is also noted. Uncertainty is also noted because this assessment is subject to the outcome of the current planning application at Womersley.
4.	-	-	-	✓		✓		Under this option, the emphasis on Gale Common and the preference for a new site accessible by rail / pipeline / other non-road transport or avoiding communities would improve the transport situation, and thus air

[51] The uncertainty associated with an as yet unidentified site could in certain circumstances turn out to be positive if a limestone quarry void were utilised for disposal. Hubbard, 2011, points to a study of the restoration of Whitwell Quarry in Derbyshire. At this site colliery spoil from a nearby spoil tip was translocated to the quarry as a means of avoiding long term impacts on water quality. This is because surface tips of colliery spoil are often exposed to erosion and weathering which, coupled with the chemical processes that occur to spoil in the presence of air and water, may in some cases result in pollution. Burying spoil in a limestone quarry changes the chemical processes that occur due spoil being stored in anaerobic rather than aerobic conditions and also due to a local supply of neutralising limestone dust (Hubbard, P, 2011. Unspoiling the Environment: sustainable quarry restoration using colliery spoil extractive waste. Aggregates and Recycling Information Network [URL: http://www.agg-net.com/resources/articles/unspoiling-the-environment?source=search&highlight=unspoiling%20the%20environment]

	+	+	+					quality. However, until the location of the site is known it cannot be said that tonne-kilometres of waste (and thus transport emissions to air and dust from transportation) would fall, so uncertainty is also noted. A new site may also bring localised dust problems though environmental controls are expected to mitigate for significant effects to receptors (though localised effects, e.g. on habitat, may be possible if management is incorrectly implemented), though presumably it would offset impacts at the existing sites. There are therefore a range of positive, negative and uncertain effects arising from this option. Uncertainty is also noted because this assessment is subject to the outcome of the current planning application at Womersley.
	?	?	?					
5.	-	-	-	✓		✓		As this option may involve the creation of a new disposal site, which would be likely to have a significant land take, the likely effects can only be said to be negative; the degree of which is dependent on the quality of land utilised and the rate / quality of restoration. The option would help steer sites to the most acceptable areas in terms of land quality, though still allow for the use of best and most versatile land in exceptional circumstances. Any new site land take would to a degree be offset by restoration at existing sites. Uncertainty is also noted because this assessment is subject to the outcome of the current planning application at Womersley.
	?	?	?					
6.	-	?	?	✓		✓		Under this option the emphasis on Gale Common and the preference where necessary for a new site accessible by non-road transport or avoiding communities may improve the transport situation and thus lower greenhouse gas emissions. However, until the location of any new site is known it cannot be said that tonne-kilometres of waste would fall, so uncertainty is also noted. This assessment is also subject to the uncertainty associated with the outcome of the current planning application at Womersley.
	?	+	+					
7.	+	?	?	✓		✓		Under this option, while existing sites are relatively low risk in terms of flooding, it is not yet known the extent to which any new site would be vulnerable to flooding under climate change.
	?							
8.	?	?	?	✓		✓		This option allows for the disposal of colliery spoil at existing sites (although no further increase of capacity at Womersley) plus a new site, but says nothing about opportunities for re-use of spoil. However, a new site could substantially increase the land available for disposal, which might act to dis-incentivise the pursuit of

	--	--	--					other options, such as sale of spoil as secondary aggregate. This assessment is subject to the outcome of the current planning application at Womersley and thus is uncertain.
9.	--	--	--	✓		✓		This option would make more space available for future disposal, so in overall terms the increased disposal would reduce pressures to seek alternatives to disposal (thus working against this objective to manage waste higher up the waste hierarchy). Should this option be pursued it will be important to ensure that any new site offers significant opportunity to enable utilisation of colliery spoil as secondary aggregate. This assessment is subject to the outcome of the current planning application at Womersley.
	?	?	?					
10.	?	?	?	✓		✓		Under this option, although the use of existing sites will have negligible consequences on the historic environment, the location of any new disposal facility is as yet unknown, so effects on the historic are unknown. However, the option does seem to allow the use of derelict or degraded sites, which while not clearly defined, would seem to potentially create some negative effects on the historic environment (as many derelict sites can be historic assets in themselves). This assessment is subject to the outcome of the current planning application at Womersley.
	0	-	-					
11.	-	--	-	✓		✓		While landscape impacts remain uncertain in relation to Womersley due to the undetermined planning application, a new site would also result in effects on landscape, depending on location. Given the highly visual nature of colliery spoil disposal, these may range from minor (e.g. as infill in a quarry void) to major (if the site results in raised piles (e.g. at a currently derelict or agricultural site – the latter only being used in exceptional circumstances). Generally the criteria approach advocated will result in lesser landscape effects (though in the short and medium term it may be hard to mitigate for the appearance of a spoil tip). This assessment is subject to the outcome of the current planning application at Womersley. Landscape impacts may be offset to a degree by restoration at all sites. At existing sites this would occur earlier than option 1.
	?	?	?					
12.	+	+	+	✓		✓		Under this option the capacity for taking colliery spoil would be increased, which would help to keep disposal costs down, thereby helping maintain the competitive status of the principal supplier of spoil (Kellingley). This assessment is subject to the outcome of the current planning application at Womersley.
	?	?	?					
13.	-	-	-	✓		✓		Although there is a great deal of uncertainty in relation to this objective, there would also potentially be negative effects associated with a new site depending on its location and whether or not it is within a quarry

			+					void. While positive effects might include the creation of jobs at the new site, by the same token such a site might have a negative local effect on tourism for example. Generally the criteria approach advocated will result in lesser community effects. This assessment is subject to the outcome of the current planning application at Womersley. It is also worth noting that this option would help lessen community impacts at existing sites in the longer term as impacts would shift location.
	?	?	?					
14.	0	-	-	✓		✓		Although the use of exiting sites would have neutral effects on the baseline, a new site could lead to either minor or major negative effects on recreation and leisure depending on factors such as whether a quarry void is used, height above ground level and location. For instance, the site could alter views from rights of way or green spaces. Generally the criteria approach advocated will result in lesser recreational effects however, if appropriate criteria are chosen. This assessment is subject to the outcome of the current planning application at Womersley. Positive effects are also noted because of the eventual opening up of restored sites.
		+	+					
	?	?	?					
15.	-	--	--	✓		✓		As with previous objectives, effects may range from minor to major negative as, in addition to existing sites, a new site would display effects on wellbeing, health and safety that are a function of its size and location. A new site could potentially be associated with a range of impacts on health and wellbeing from transport, noise, air quality, restriction of public access to open space and possible site access issues, though criteria are expected to mitigate for this to a degree, and a new site may lessen impacts at existing sites. This assessment is subject to the outcome of the current planning application at Womersley. Once disposal at that and Gale Common ceases there would be positive effects on wellbeing in those areas.
	?	+	+					
		?	?					
16.	+	?	?	✓		✓		Both existing sites are in Flood Zone 1 (which gives them a degree of resilience to river flooding, which is expected to increase under climate change), with only small parts of each site prone to surface water flooding. However, as the location of a new site is as yet unknown, its exposure to flood risk is also unknown. This assessment is subject to the outcome of the current planning application at Womersley.
	?							
17.	?	?	?					It is not clear whether a new site or Gale Common taking Colliery Spoil would offer any advantage in terms of making secondary aggregate available to users, but if such a site were designed so as to make secondary aggregates supply a principal purpose of its operation, there may be positive effects in terms of shortening the supply chains for (aggregate) building materials.

Proposed alternative option 3: (Or) This option would support new colliery spoil tips where existing facilities have reached capacity

Assumptions: In this assessment uncertainty is generally noted in relation to the active planning application at Womersley. However, we have assumed that the major source of colliery spoil, Kellingley Colliery, will continue to operate.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	-- ? ?	-- ? ?	✓	✓	✓	✓	The active planning application to extend Womersley Colliery states that there will be 9.5 to 10.5 years of capacity at that site (as of mid 2011), should the application be approved, Restoration would be phased and on-going and would include restoration for biodiversity. During this time there would be the loss of a site of importance for nature conservation (in 7 to 8 years) / loss of woodland etc. In this option, given that Gale Common is not a colliery spoil, but an ash disposal site, a new site would be sought to operate from the early 2020s. If the Womersley application was approved this would mean that the impacts on biodiversity that will result from tipping at Womersley Colliery will continue to happen, including the loss of significant nature conservation interest at a SINC site. However, phased restoration would continue to occur, offsetting some impacts and eventually expanding biodiversity at the Womersley site. However, that application is not yet approved, so this is uncertain. However, in the late medium and long term a new site (or more than one new site) would be identified, constructed and begin operation. No indication is given of the whereabouts of such as site so the impact on biodiversity is highly uncertain, however, it is hard to imagine that such a site, wherever it is located, would not have at least some level of negative impact on biodiversity, given the large land take of colliery spoil tips. While similar restoration proposals might be proposed, the combined impact of construction and operation traffic (if delivery of spoil is by road) and noise as well as the potential for water pollution and of course the

								loss of land would see negative impacts hold the balance of sway in a new location for several years, This assessment is subject to the outcome of the current planning application at Womersley.
2.	?	- ?	- ?		✓	✓	✓	Colliery spoil can have significant impacts on water quality. However, given that environmental controls will be in place at Womersley, policed by an Environmental Permit, effects are expected to be relatively minor to insignificant[52], dependant on the outcome of the planning application at Womersley (so this assessment is uncertain). If and when capacity is reached at Womersley (the expectation is 9.5 to 10.5 years from mid 2011) a new site (or more than one new site) would be required under this option. Therefore, in the late medium and long term a new site would be identified, constructed and begin operation. However, given the location of a new site is unknown, it is not known how sensitive local water bodies will be to change and the efficacy of any future controls. We have recorded minor negative to uncertain impacts here to reflect the likelihood that impacts, because of environmental controls, would be expected to be minor negative, but the magnitude of impacts would remain unknown until a site was identified. This assessment is subject to the outcome of the current planning application at Womersley.
3.	- ?	? -	? -- +		✓	✓		The current colliery spoil disposal site received, during 2011, 180 to 200 lorry loads of spoil per day to the site, generating 360 to 400 lorry movements per 11 hour day. Although this is a high figure it does not raise highway capacity concerns[53] and is in effect a continuation of the current baseline situation, it may be a source of considerable noise, dust and vibration disturbance to those living along the route. However, as the planning application at Womersley is still undecided effects are rated as uncertain through to the medium term of this assessment, at which point they would be expected to have diminished then effectively ceased as the site is fully restored. At about this time (or earlier, depending on the outcome of the Womersley planning application) a new site (or more than one new site) would come on stream at an as yet unknown location. No restrictions on locations are stated in this option. This could mean that traffic levels could rise or fall, depending on rates of spoil delivery, distance for lorries to travel to disposal sites (if lorries rather than rail are used), operating hours etc.

[52] The environmental controls cited in the Environmental Statement for Amendment and extension at Womersley Quarry Spoil Disposal Scheme report no significant effects

[53] See North Yorkshire County Council, 2013. Planning and Regulatory Functions Committee 22 October 2013 [URL: https://www3.northyorks.gov.uk/n3cabinet_comm/planningregulat_/reports_/20131022_/06womersleyquar/06womersleyquar.pdf]

								Given no restrictions are identified, the appraisal notes that the effects are likely to be highly uncertain, though could be significantly negative. It should, however be noted that for the vicinity of Womersley, effects would be positive in the long term as the traffic would cease to flow. This assessment is subject to the outcome of the current planning application at Womersley.
4.	0 - ?	0 - ?	- ? 		✓	✓		The continued working of Womersley Quarry could lead to major adverse impacts if no mitigation was put in place, however assuming the Womersley goes ahead dust abatement measures such as dust and engineering controls and monitoring would be put in place[54] so, assuming the Womersley application goes ahead, for the next 9.5 to 10.5 years dust levels would be minor adverse to insignificant (with the potential for moderate adverse effects at close proximity sites). The assessment, however notes some uncertainty here as the application is as yet undetermined. As Womersley is completely restored and one or more new sites elsewhere begin to operate the air pollution impacts are likely to shift location. However, at other as yet unknown sites it would be expected that dust pollution levels could be significant, though local air quality requirements imposed on local authorities would in effect necessitate a high degree of mitigation. Nonetheless, nothing is as yet known about the proximity of receptors to air pollutants, so effects might be significant if, for instance, there are more properties closer to sites. This assessment is subject to the outcome of the current planning application at Womersley.
5.	- ?	+ ?	0 - -- -	✓	✓	✓		According to the present Environmental Statement, no greenfield sites would be affected by the proposals at Womersley, However, continued phased restoration, albeit to mainly grassland and woodland, does present the opportunity to bring new farmed land into being[55]. (Initially, under the criteria in this assessment there would still be some land loss, and even if that is brownfield land it would be a negative assessment). However, this situation is highly uncertain as the planning application at Womersley is as yet undetermined. Once the capacity of Womersley is exhausted, one or more new sites would be sought. While no restrictions on the selection of this site are detailed in the option, this could mean that some greenfield land could be lost. More

[54] UK Coal Mining Ltd, 2012. Amendment and Extension of Womersley Quarry Spoil Disposal Scheme. Environmental Statement

[55] According to the Environmental Statement for the Womersley scheme "Available soils resources and proposed restoration profiles would remain in accordance with the approved scheme, ensuring that soils are concentrated in areas and on gradients which would permit best and most versatile land to be developed in the future if required".

								likely, however, would be the selection of perhaps one or more quarry voids, which could eventually be returned to best and most versatile land. Supporting land (e.g. for access at new sites) may result in some land loss). This assessment is subject to the outcome of the current planning application at Womersley.
6.	- ?	- ?	?	✓		✓		While it is thought that this option would maintain and extend the traffic baseline at Womersley until the medium term, this is uncertain as the current application at Womersley is undecided (ultimately though if traffic continues to service the site, as carbon in the atmosphere is cumulative, it would negatively impact on this objective). However, as a new site comes on stream, CO2 emissions would depend on factors such as distance to the site, mode of transit and the CO2 sequestration capacity of land lost. This is highly uncertain under this option. This assessment is subject to the outcome of the current planning application at Womersley.
7.	+ ?	+ ?	?	✓			✓	While Womersley is in Flood Zone 1 (though this is uncertain as the application to extend the site has not yet been determined), it is unknown if other sites will be in locations that are not vulnerable to flooding. This assessment is subject to the outcome of the current planning application at Womersley.
8.	0 -- ?	- -- ?	- --	✓		✓	✓	This option allows for the disposal of colliery spoil at Womersley (athough no further increase of capacity at Womersley) plus new sites once capacity is reached, but says nothing about opportunities for re-use of spoil. This situation at Wormersley is uncertain as the planning application has not yet been determined. However, any new sites could maintain the land available for disposal, which might act to dis-incentivise the pursuit of other options, such as sale of spoil as secondary aggregate. This assessment is subject to the outcome of the current planning application at Womersley.
9.	-- ?	-- ?	--	✓		✓	✓	This option would maintain current disposal capacity. In the pipeline capacity at Womersley is currently an undetermined planning application, but given that current permissions are expiring this would be expected to lead to an increase in disposal capacity (and thus a disincentive to recycle / re-use) from current conditions (though this is uncertain due to the undetermined nature if the application). This position would be maintained as new sites are planned and opened up for use. This assessment is subject to the outcome of the current planning application at Womersley
10.	0 ?	0 ?	- ?	✓		✓	✓	No significant heritage assets have been identified at Womersley, so impacts would be insignificant while this site is in operation (assuming current or similar planning permission to extend the site is approved, which is uncertain). Beyond this, one or more new sites could potentially damage either on site historic assets or

								disrupt views of historic assets. Given the capacity of these types of sites to generate traffic, there may be considerable effects due to vibration at a new site if routes pass historic assets. This assessment is subject to the outcome of the current planning application at Womersley
11.	- ?	- ?	- ?	✓	✓	✓	✓	Current proposals at Womersley predict a short term minor adverse impact on landscape character and a longer term neutral impact (as the site would be regarded as an outlier feature of the Magnesian limestone ridge to the west. However, these predictions are uncertain as the application at Womersley is as yet undetermined. A new site to replace Womersley once it has reached completion would have an unknown impact, depending on factors such as whether it would be sited in a quarry void, though one could expect at least some negative effects. This assessment is subject to the outcome of the current planning application at Womersley
12.	+ ?	+ ?	+ ?		✓	✓		This option would continue to provide a disposal opportunity for colliery spoil from Kellingley, helping to maintain its competitive status into the long term (though at the time of writing there is uncertainty over the future of Kellingley Colliery). In the short to medium term there is uncertainty due to the undetermined status of the Womersley planning application. This assessment is subject to the outcome of the current planning application at Womersley
13.	- ?	- ?	+ -		✓	✓		While spoil disposal at Womersley may continue to support some jobs if the site continues to operate, there may also be some delay in opportunities to enhance community vitality (e.g. through access to a fully restored site) during this time period as well as continued negative effects on perceptions of the area from being in the shadow of a major spoil tip. In the short to medium term there is significant uncertainty due to the undetermined status of the Womersley planning application. In the longer term one or more new sites would transplant similar issues to other locations, though the situation would improve at Womersley. This assessment is subject to the outcome of the current planning application at Womersley.
14.	0 ?	+ - ?	- +	✓		✓		While restoration will ultimately lead to a recreational resource at Womersley (whatever the outcome of the current planning application), one or more new sites may reduce recreation opportunities at another location. However, an alternative site once Womersley has reached capacity would ensure no further delays in opening up this potential recreational open space resource at Kellingley.

								This assessment is subject to the outcome of the current planning application at Womersley
15.	- ?	-- ?	+ --	✓	✓	✓	✓	While it is as yet unknown what the effects of continuing to operate Womersley would be as the planning application is undecided, one could expect new sites to have negative effects from traffic and dust that would impact on quality of life to varying degrees, depending on local receptors. However, communities near Womersley would see environmental conditions, and thus quality of life improve in the longer term. This assessment is subject to the outcome of the current planning application at Womersley
16.	+ ?	+ ?	?	✓		✓	✓	The existing Womersley (and proposed extension) site is in Flood Zone 1 (which gives them a degree of resilience to river flooding, which is expected to increase under climate change), with only small parts of each site prone to surface water flooding. However, as the location of a new site is as yet unknown, its exposure to flood risk is also unknown. This assessment is subject to the outcome of the current planning application at Womersley, so uncertainty is noted in relation to when possible impact may occur.
17.	+ ?	+ ?	?		✓	✓		It is not clear whether a new site would offer any advantage in terms of making secondary aggregate available to users. The existing Kellingley site operates an occasional service, which presumably would continue to operate if the site were extended, though this is uncertain as the current application at Womersley is undecided at present.

Proposed alternative option 4: (And) This option would support the disposal of colliery spoil at locations which are accessible by non-road transport methods or are close to the strategic road network.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	**Impact / timescale**			**Type of effect**				**Analysis**
	S	**M**	**L**	**P**	**T**	**D**	**I**	

1.	0	0 + ?	0 + ?	✓	✓	✓	✓	When considered in addition to other options this would have insignificant to minor positive benefits to biodiversity as there would be a reduction in wildlife traffic casualties as well as decreased ingress of pollutants from road run off, and deposition of dust / pollution on habitats adjacent to roads if non road alternatives are pursued. Uncertainty is noted due to the requirement to the choice to locate close to the strategic road network, which could offer a way of avoiding the more sustainable 'use of non-road transport' element of this option.
2.	0	0 + ?	0 + ?		✓	✓		When considered in addition to other options this option would have insignificant to minor positive benefits on water quality and supply due to decreased runoff from roads if non road alternatives are pursued. Uncertainty is noted due to the requirement to the choice to locate close to the strategic road network, which could offer a way of avoiding the more sustainable 'use of non-road transport' element of this option.
3.	0	0 + + ?	0 + + ?					When considered in addition to other options this option would either achieve a significant reduction in traffic if non road methods (such as pipeline) are used, though it is unlikely that proximity to the strategic road network will make much of a difference when compared to the existing Womersley site (which was already close to Kellingley Colliery)[56]. Uncertainty is noted due to the requirement to the potential to locate close to the strategic road network, which could offer a way of avoiding the more sustainable 'use of non-road transport' element of this option.
4.	0	0 + + ?	0 + + ?	✓	✓	✓		When considered in addition to other options this option would either result in a reduction in pollution (due to the potential for more use of alternatives to road transport such as pipelines), or, while driving on strategic roads may be less polluting[57], would have little effects (as it is unlikely to result in a closer location for a site). Uncertainty is noted due to the requirement to the choice to locate close to the strategic road network, which could offer a way of avoiding the more sustainable 'use of non-road transport' element of this option.
5.	0	0	0		✓	✓		When considered in addition to other options this option would either not have an effect on land / soils, or have a probably temporary minor effect due to possible construction of a pipeline.

[56] Hot exhaust emission factors for rigid HGVs for the UK fleet in 2011 showed that motorway driving produced less emissions for NOx, PM10, PM2.5, and VOC when compared to both rural driving scenarios and urban driving scenarios. Often the difference was considerable, e.g. 2.554 g/km of NOX for motorway driving contrasted with 5.068 for urban driving. National Atmospheric Emissions Inventory, 2014. Emission factors for transport [URL: http://naei.defra.gov.uk/data/ef-transport]

[57] Hot exhaust emission factors for rigid HGVs for the UK fleet in 2011 showed that motorway driving produced less emissions for NOx, PM10, PM2.5, and VOC when compared to both rural driving scenarios and urban driving scenarios. Often the difference was considerable, e.g. 2.554 g/km of NOX for motorway driving contrasted with 5.068 for urban driving. National Atmospheric Emissions Inventory, 2014. Emission factors for transport [URL: http://naei.defra.gov.uk/data/ef-transport]

		- ?	- ?					Uncertainty is noted due to the requirement to the choice to locate close to the strategic road network, which could offer a way of avoiding the more sustainable 'use of non-road transport' element of this option.
6.	0	+ + 0 ?	+ + 0 ?	✓		✓		When considered in addition to other options, the use of non-road transport such as a pipeline (or possibly rail), would have significant benefits to the carbon footprint of colliery spoil disposal. Close proximity to the strategic road network would, for the reasons stated at objective 4, would likely result in insignificant effects. Uncertainty is noted due to the requirement to the choice to locate close to the strategic road network, which could offer a way of avoiding the more sustainable 'use of non-road transport' element of this option.
7.	0	0	0					There is no clear link between this policy and the climate adaptation objective.
8.	0	0 + ?	0 + ?	✓		✓		Non road modes of transport would save fuel resources (though there would be a material / fuel cost to bear in constructing a pipeline). There would be negligible savings from proximity to the strategic road network for the reasons stated under other objectives. Uncertainty is noted due to the requirement to the choice to locate close to the strategic road network, which could offer a way of avoiding the more sustainable 'use of non-road transport' element of this option.
9.	0	0	0					There is no clear link between this policy and the waste generation objective
10.	0	0 ?	0 ?	✓		✓		If this option resulted in the building of a pipeline it is possible, though uncertain, that this could result in some loss or damage of historic assets. There are some listed buildings and a scheduled monument in the vicinity of Kellingley Colliery.
11.	0	0 ?	0 ?	✓		✓		If this option resulted in the building of a pipeline it is possible, though uncertain, that this could result in some temporary disturbance to landscape (though there is already a good deal of visual disturbance in the vicinity of Kellingley.
12.	0	0	0					There is no clear link between this policy and the sustainable economy objective.
13.	0	0	0					There is no clear link between this policy and the viability of the 'local communities' objective.
14.	0	0	0	✓	✓	✓	✓	If this option resulted in the building of a pipeline it is possible, though uncertain, that this could result in some temporary disturbance to recreational assets such as rights of way.
15.	0	+ + ?	+ + ?	✓		✓		When considered in addition to other options this could have major positive benefits to health and wellbeing by taking many truckloads of spoil off the roads of the future, thereby reducing the risk of road accidents, dust and pollution, noise and vibration. Locating close to the strategic road network might also have some minor benefits in terms of keeping lorries off minor roads. Uncertainty is noted due to the requirement to the choice to locate close to the strategic road network, which

								could offer a way of avoiding the more sustainable ‘use of non-road transport’ element of this option.
16.	0	0	0					There is no clear link between this policy and the flooding objective.
17.	0	0	0					There is no clear link between this policy and the changing population objective.

Summary of assessment
There is significant uncertainty around all four options. Overall the most major negative effects are reported under Option 2 and 3 where new sites in particular may affect biodiversity, water, soil and land, waste generation, heritage, landscape, community vitality, recreation and leisure and health and wellbeing depending on future site location; though a number of negative effects are recorded under each of options 1, 2 and 3.

Positive effects are generally minor (for instance job creation under the first three options, shortened supply chains for aggregates (option 1) or possible transport reductions under option 2), however, utilisation of available capacity under option 1 may, to a degree, incentivise the extraction of secondary aggregate from existing sites, though where a new site comes on stream (options 2 and 3) this may lessen such incentives if disposal remains economically attractive due to an increase in available space for disposal.

Option 4 works in addition to other options and, although often uncertain, includes a number of benefits across the environmental objectives and strong positive effects for the health and wellbeing sustainability objective.

Recommendations
Option 1 performs better than option 2 and 3. Option 4, where used in conjunction with other options, would enhance sustainability effects. However, it should be noted that there is significant uncertainty around this assessment as the outcome of a major planning application at the Womersley site is still to be determined and the location of a new site or new sites under options 2 and 3 is unknown. There is some potential to mitigate some negative effects for option 2 and 3, particularly through detailed criteria and if a new facility is developed to encourage the utilisation of secondary aggregates. Options 2 and 3 will also offer the chance to reduce sustainability effects at communities that are currently adversely affected by existing sites (though effects may be displaced to other communities). .

Potash Supply (id34)

Assumptions – Boulby potash mine has planning permission up to 2023 and therefore effects up to this time resulting from the mine cannot be assessed as part of the Sustainability Appraisal of the new Plan. However, effects in the longer term beyond 2023 can be considered as part of this assessment. It assumed under options 2, 3 and 4 that the same number of potash mines would exist. Consideration has been given to a range of possible methods of minerals transportation, in line with the Table of Effects in the Sustainability Appraisal report.

In this assessment potash is used as a generic term for a variety of potassium bearing minerals including polyhalite (hydrated potassium, magnesium, calcium sulphite)[58].

[58] BGS, 2011, Minerals Planning Factsheet – Potash [URL: https://www.**bgs**.ac.uk/downloads/start.cfm?id=1367]. Potassium minerals resources rarely occur in a pure form, with polyhalite (a mixture of hydrated potassium, magnesium, calcium sulphite), as well as other variations such as sylvinite.

Option 1
Support an indigenous supply of potash from one location only.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	-	✓	✓	✓	✓	1. As there is currently one potash mine within the Plan Area this option would have a positive effect in terms of the protection of biodiversity in the short to medium term by not supporting any further potash mines. The positive is not major as the option would not serve to enhance biodiversity (only to protect it). Effects in and around Boulby Potash Mine would be uncertain, due to the possibility (if it were ever proposed) of expansion under this option. In the longer term effects may be negative as the option would be supporting the principle of continued working (considering the current permission for Boulby mine ends in 2023) or would be supporting development of a new mine. After 2023, the effects of continued working at Boulby are likely to be much less significant than effects resulting from development of a new, alternative mine as Boulby is well established and has a Biodiversity Action Plan in place. The development of a new, alternative mine could result in more significant effects on biodiversity and geo-diversity.
	?	?	?					
2.	+	+	-	✓		✓	✓	As there is currently one potash mine within the Plan Area this option would have positive effects in terms of maintaining water quality and supply in the short to medium term by not supporting any further potash mines. The positive is not major as the option would not serve to enhance water quality and supply. Effects in and around Boulby Potash Mine would be uncertain, due to the possibility of expansion under this option. In the longer term effects may be negative as the option would be supporting the principle of continued working (considering the current permission for Boulby mine ends in 2023) or would be supporting development of a new mine. The development of a new, alternative mine could result in more significant effects on water quality.
	?	?	?					

3.	+ ?	+ ?	- ?	✓	✓	✓		As there is currently one potash mine within the Plan Area this option would have positive effects in terms of transport in the short to medium term by not supporting any further potash mines, i.e. there would be no additional significant effects from construction, maintenance, employees etc. However, there may be uncertain effects resulting from traffic associated with any expansion / extension of Boulby mine (which the option appears to allow). In the longer term effects may be negative as the option would be supporting the principle of continued working (considering the current permission for Boulby mine ends in 2023) or would be supporting development of a new mine. However, a new mine may have alternative transportation methods, such as pipeline, which would reduce reliance on the present system of transporting output by rail (adding uncertainty to the long term assessment), though there would still be a an impact from workers and suppliers arriving at any future site, however the potash is transported.
4.	+ ?	+ ?	- ?		✓	✓		As there is currently one potash mine within the Plan area, which transports much of its output by rail, this option would have positive effects on protecting air quality in the short to medium term by not supporting any further potash mines. Effects may be uncertain in the vicinity of Boulby mine as the option may support expansions at Boulby, acknowledging that there are gas and particulate emissions from Boulby mine as part of the potash drying process. In the longer term effects may be negative as the option would be supporting the principle of continued working (considering the current permission for Boulby mine ends in 2023) or would be supporting development of a new alternative mine (which would have unknown effect on air quality).
5.	+ ?	+ ?	- + ?	✓		✓		This option would have positive effects in the short to medium term by not supporting the development of any further potash mines in the Plan area, thus protecting agricultural land across most of the Plan area. The option could, however, lead to loss of agricultural land and damage to soils should a new replacement mine be supported in the longer term (acknowledging that the potash resource covers land of varying agricultural quality, including both high and low quality). However, potash provides a supply of agricultural fertilizer which would provide for increased agricultural productivity from land. We have therefore rated the overall long term effect as both positive and negative but with significant uncertainty due to the unknown local impact of any future mine. ,
6.	+ ?	+ ?	- ?	✓		✓		This option would largely have positive effects in the short to medium term by not supporting the development of any further potash mines in the Plan area, thus not resulting in any greenhouse gas emissions additional to those resulting from Boulby. However, existing greenhouse gas emissions related to Boulby, which are particularly related to energy consumption and transport, could increase should the option support expansion of the mine. In the longer term, this option is likely to lead to negative effects as it would support continued extraction at Boulby, along with associated greenhouse gas emissions, or extraction from another location which is likely to have some element of greenhouse gas emissions, including those associated with construction, operation and transport, and possible loss of carbon from soils / vegetation at the site. The scale of these emissions is, however, dependent on uncertain factors such as location.

7.	+	+	?	✓			✓	This option would largely have positive effects in the short to medium term by not supporting the development of any further potash mines in the Plan Area, thus reducing the potential for habitat fragmentation and minimising the development of impermeable surfaces which may exacerbate flood risk. Effects may occur within the immediate vicinity of Boulby mine should any expansion take place there. In the longer term, there may be effects should the option result in the development of a new mine which includes, for example, larger areas of hardstanding thus exacerbating flood risk or leading to fragmentation of habitats.
	-	-	-					
8.	- ?	- ?	-- ?	✓		✓		Although this option would limit potash extraction to one location, it could support the expansion of workings at Boulby which would have negative effects against minimising the use of resources. Considering that Boulby has permission until 2023, in the longer term support for continued extraction would have greater negative effects on this objective as cumulatively a greater amount of the resource will have been consumed.
9.	- ?	- ?	- ?	✓			✓	In the short to medium term the option could have negative effects should expansion of Boulby mine be supported. In the longer term, the option may have greater negative effects depending upon whether a new alternative mine is developed and the construction and extraction processes associated with this.
10.	+	+	-	✓		✓	✓	In the short to medium term this option would have positive effects across most of the Plan Area by not supporting any new potash mines, although the positive is not major as it would not be enhancing the historic environment. Effects in and around Boulby Potash Mine would be uncertain, due to the possibility of expansion under this option. In the longer term effects are uncertain as this would depend upon whether the option would lead to continued extraction at Boulby or would lead to a new alternative mine, in which case this may have negative effects on the historic environment depending upon its location.
	?	?	?					
11.	+	+	?	✓		✓		In the short to medium term this option would have positive effects across most of the Plan Area by not supporting any new potash mines, although the positive is not major as it would not secure landscape enhancements. The option may support expansion at Boulby which could have negative landscape effects, particularly considering its location in the National Park. In the longer term, the option would have uncertain effects by supporting either the continued existence of the Boulby mine or a new, alternative mine and the location and design of that mine.
	- ?	- ?	-					
12.	-	-	+		✓	✓	✓	Not supporting any additional potash mines may have negative effects in the short to medium term through loss of opportunity for employment creation with associated knock-on benefits. However, there may be some positive effects should it support expansion of Boulby. In the longer term the option will have positive effects by supporting either the continuation of working at Boulby or the development of a new mine, although these benefits would be limited as the option only supports having one mine. On the other hand, by limiting the number of mines to one, the option may have positive effects on other sectors of the economy such as the tourism economy, which is particularly important in the National Park, and could be affected by the presence
	+ ?	+ ?						

								of an additional mine.
13.	- + ?	- + ?	+		✓	✓	✓	In the short to medium term the option may have negative effects through the loss of opportunities for job creation, although in the longer term the option would enable jobs to continue to be supported at Boulby or would lead to job creation at an alternative mine. Additional jobs at Boulby may be supported in the short to medium term should expansion take place. Expansion or a new mine could also bring new construction workers to the plan area, increasing demand for temporary accommodation (thus helping to support the accommodation business sector to a degree). By limiting the number of mines to one, the option may have positive effects on the tourism economy, which is particularly important in the National Park, and could be affected by the presence of an additional mine.
14.	+ ?	+ ?	- ?	✓		✓	✓	In the short to medium term there would be positive effects as any effects on recreation or on understanding and enjoying the National Park would be limited to any existing effects in the Boulby area (thus protecting other recreational assets within and outside of the National Park). There would however be effects in the vicinity of Boulby mine should this be expanded. In the longer term the effects would be uncertain as the option would support continued extraction from Boulby or the development of a new mine, the latter of which is likely to be more negative as it would lead to disruption in a new area, although it is presumed that should this happen recreational benefits could be provided as part of any restoration at Boulby).
15.	+ ?	+ ?	? -		✓	✓	✓	In the short to medium term effects would be positive as the option would preclude any additional mines, though it could support expansion at Boulby (which would be likely to result in effects on communities, such as the effects of construction traffic plus on-going maintenance and staff traffic, and possibly vehicles carrying the potash or other products). In the longer term the option would support continued extraction from Boulby, with associated transport, or it would support development of a new mine which would have more significant health and wellbeing effects on local communities due to construction impacts in particular. We have rated the long term effects as uncertain to minor negative as although we consider that minor effects would be most likely to occur, the location of any new mine would have a bearing on the magnitude of effects, which could potentially be greater than minor negative.
16.	+	+	?	✓			✓	This option would have positive effects in the short to medium term by not supporting the development of any further potash mines in the Plan Area, thus minimising developed/impermeable surfaces which exacerbate flooding. There may be minor negative effects resulting from any additional development at Boulby which

	- ?	- ?	-					result in increased areas of hard surfacing thus increasing flood risk. In the longer term, there may be negative effects should the option result in the development of a new mine which includes larger areas of hard-standing thus exacerbating flood risk, though much would depend on whether a new mine would be progressed and where (uncertain to minor negative).
17.	0	0	- ?		✓		✓	In the short to medium term this option would not support provision of additional potash onto the market other than through expansion at Boulby. Although there is apparent shortage currently, there could be a greater demand in the longer term as global demand for fertilizers rise in line with population growth / consumer food demand. Set against the limits on supply that this option suggests, the effect on the SA objective may be minor negative (or possibly greater in the very long term)[59].

[59] See The Telegraph, 17 August 2013. Potash: Growth Market in a Rising Economy [URL: http://www.telegraph.co.uk/finance/commodities/10249590/Potash-growth-market-in-a-changing-economy.html] which cites a need for agricultural production to rise by 60% by 2050 presenting a potential opportunity for fertiliser markets.

Option 2
Support the principle of multiple sources of potash supply from within the Plan area

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-- ?	-- ?	-- ?	✓	✓	✓	✓	This option would have significant negative effects for biodiversity, including through loss of habitat and disturbance, as potash mines are significant developments. Due to the scale of a new mine development and the fact that much of the potash resource underlies significant 'high order' receptors for biodiversity and geo-diversity such as SACs, SPAs and SSSIs (e.g. in and around the National Park) it is considered that effects could be particularly significant, though much is dependent on location of sites.
2.	-- ?	-- ?	-- ?	✓		✓	✓	This option could result in negative effects on water quality and supply due to potential contamination of groundwater, the usage of large quantities of water and effects of run-off on surface water, though the magnitude of effects is to a degree, dependent on location of sites
3.	-- -	-- -	-- -		✓	✓	✓	This option would result in more transport requirements related to both construction and operation of a new mine, albeit that it is recognised that the transportation requirements for the mineral itself may not necessarily be via road or rail in which case the significant negative effects would be limited to the construction phase, though workers and suppliers would still need to travel to sites.
4.	- ?	- ?	- ?		✓	✓	✓	This option could have negative effects on air quality related to both the transport (see above) and emissions from the mine (Boulby mine is a source of potentially polluting gases and particulates), as well as construction methods (dust). Effects may be greater or lesser depending on the location of receptors.
5.	- +	- +	- +	✓	✓	✓		This option would result in the loss of agricultural land and possible damage to / loss of soils. The potash resource is located in areas of varying agricultural land quality and it is therefore not possible to assess the significance of any agricultural land loss at this level, although the option does provide opportunities for new mines to be located in the National Park which generally has lower agricultural land quality (so the qualitative aspects of the effects of this option may be lower, though still highly significant). It should however be recognised that potash provides a supply of agricultural fertilizer which would provide for

								increased agricultural productivity from land bringing benefits to a national / international market.
6.	-- ?	-- ?	-- ?	✓		✓	✓	The development of further potash mines would result in further emissions of greenhouse gases related to transport and to energy use at the mine, as well as possible small scale release of carbon from soils and vegetation cover associated with built infrastructure. Some uncertainty is noted as transport of potash may not be by road.
7.	- ?	- ?	- ?	✓			✓	This option would have effects on adapting to climate change as it would lead to more development and therefore to increased hard surfaced areas thus exacerbating issues of run-off. This could increase flood risk, though much is dependent on location.
8.	--	--	--	✓		✓		This option would support increases in extraction of potash which is a non-renewable resource. The appraisal does however acknowledge that there are limited alternatives to potash as a source of fertilizer, though anaerobic digestate has been shown to contain useful amounts of potash (though field trials are still underway)[60]. The extent to which this may represent an adequate alternative is uncertain.
9.	- ?	- ?	- ?	✓			✓	This option would be likely to result in increased levels of waste being produced, the extent of which would be dependent upon the type of extraction process.
10.	- ?	- ?	- ?	✓		✓		The development of new potash mines could lead to impacts on historic assets although the significance of this will depend upon the location of any new mine in relation to historic assets.
11.	-- ?	-- ?	-- ?	✓		✓		The development of new potash mines, which are particularly significant developments, would have a negative impact on landscape (and potentially seascape). Bearing in mind the fact that much of the potash resource is located beneath the National Park (which is also notable for its tranquillity and dark skies), in areas with high visual sensitivity (such as the 'soft coastal cliffs and bays' and 'chalk wolds' landscape character areas[61]), or close to receptors such as popular tourism assets, there exists the potential for effects to have heightened significance, though much will be dependent on location.
12.	+ + - -	+ + - -	+ + - -		✓	✓	✓	The development of new potash mines would lead to large levels of job creation, with associated knock-on effects, and would therefore have strong positive effects on this objective. However it should be noted that there may be negative effects on the tourism sector in the locality of any new mine.

[60] See Wrap, 2012. Using Quality Anaerobic Digestate to Benefit Crops [URL: http://www.wrap.org.uk/sites/files/wrap/Quality%20digestate%20-%20using%20quality%20anaerobic%20digestate%20to%20benefit%20crops.pdf]

[61] As detailed in the North Yorkshire and York Landscape Characterisation Project (North Yorkshire County Council, 2011. [URL: http://www.northyorks.gov.uk/media/22473/North-Yorkshire-and-York-landscape-character-assessment-report/pdf/North_Yorkshire_and_York_landscape_character_assessment_report.pdf]

13.	+ +	+ +	+ +		✓	✓	✓	The development of new potash mines would lead to large levels of job creation and would therefore have positive effects on this objective. However it should be noted that there may be negative effects on the tourism sector in the locality of any new mine, particularly local tourism businesses.
	-	-	-					
14.	-- ?	-- ?	-- ?	✓		✓	✓	The development of new potash mines may lead to the loss of recreation assets, depending upon the location, and is also likely to affect the experience of those undertaking recreational activities. It is significant that much of the potash resource is under the National Park, as well as close to major recreational attractions along the coast, as new mines in the Park are likely to lead to the loss of opportunities to understand and enjoy the National Park's special qualities, while recreation which relies on coastal fringe landscapes and seascapes[62] may suffer.
15.	-- ?	-- ?	-- ?	✓	✓	✓	✓	The development of new potash mines is likely to lead to effects on nearby communities if they are along transport routes or close to the mine> These effects include the effects of construction traffic and other traffic associated with the operation of the mine, as well as from other construction measures such as blasting or night time working. As with several other objectives, much depends on location
16.	- ?	- ?	- ?	✓			✓	This option could have effects on flood risk as it would lead to more development and therefore to increased hard surfaced areas thus exacerbating issues of run-off. This would be a particular problem where sites are located close to receptors such as flood prone water courses.
17.	+ +	+ +	+ +		✓	✓	✓	This option would support the provision of a sufficient supply of potash, although there is apparent currently. This seems likely to become increasingly important in the long term.

[62] Countryside Council for Wales et al (2001) define seascapes as 'views from the land to sea, views from the sea to land, views along the coastline and the effect of landscape on the conjunction of land and sea'. In the same guidance seascape units are based on a landward boundary of 5 to 10 km from the sea (CCW et al, 2001. Guide to Best Practice in Seascape Assessment [URL: http://www.ccw.gov.uk/pdf/Guide-to-best-practice-in-seascape-assessment.pdf]

Option 3
Support new locations for potash extraction outside of the North York Moors National Park only.
SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+ / - / ?	+ / - / ?	+ / - / ?	✓		✓	✓	Whilst there are likely to be direct effects on biodiversity from the development of any further mines outside of the National Park, this option would protect key internationally and nationally designated sites within the plan area from any potash development[63]. This is because there is a close correlation between the boundary of the North York Moors National Park and the major area of internationally / nationally designated sites. Outside of the National Park there are no internationally and limited nationally designated sites which coincide with the potash resource but there are a number of locally designated SINCs which may be significantly affected, depending on location. Given the protection afforded by the option at a Plan Area scale there would be strong positive effects in relation to the protection (though not enhancement) of biodiversity. However, at the local scale in the vicinity of sites, there are likely to be negative effects. One consequence of restricting the extraction of potash in designated landscapes is that areas outside of the National Park / AONB may be seen as relatively more favourable for potash development (assuming that suitable potash resources are extractable). This could lead to further cumulative negative effects in the remaining area and adds additional uncertainty to this assessment.
2.	-- / ?	-- / ?	-- / ?	✓		✓	✓	This option could result in negative effects on water quality and supply due to potential contamination of groundwater, the usage of large quantities of water and effects of run-off on surface water, depending on location.

[63] Although the option protects the National Park, it would not enhance the National Park (which is a key element of the objective), so a '+' rather than a '++' is recorded.

								One consequence of restricting the extraction of potash in designated landscapes is that areas outside of the National Park / AONB may be seen as relatively more favourable for potash development (assuming that suitable potash resources are extractable). This could lead to significant negative effects in the remaining area (e.g. as a result of site operation or if subsequent subsidence were to occur). This could lead to further cumulative negative effects in the remaining area and adds additional uncertainty to this assessment.
3.	- ?	-- ?	- ?		✓	✓	✓	This option could generate one or more new mines which would undergo construction phases which are likely to be transport intensive. While the transport requirements during operation are likely to be location dependent (much would depend on where workers are coming from and where potash is going to) it is also recognised that the transportation requirements for the mineral itself may not necessarily be via road or rail in which case the significant effects would be limited to the construction phase and the transit of worker / suppliers during operation. This has resulted in a negative assessment though uncertainty is noted due to unknown locational factors and distribution methods during the operational phase of any development.
4.	- ?	- ?	- ?		✓	✓	✓	Potash extraction can have a range of impacts on air quality, including the generation of dust and particulate matter (mainly from construction and extracted ventilation air from mines containing polyhalite salts), road traffic emissions (where road vehicles are used in construction and operation), and emissions of combustion pollutants to atmosphere from, for example, gas fired drying plant[64]. Although this option would steer development away from nationally important receptors that would be sensitive to these forms of pollution (such as the National Park, internationally important biodiversity sites etc.), given that there is a greater population density in this area than in the National Park the overall effect is negative as there could be greater localised effects on populations. Uncertainty is also noted, however, as the magnitude of air pollution effects is determined to a large degree by the location of sites.
5.	--	--	--	✓		✓		This option would direct potash development to areas of generally higher agricultural land value, much of

[64] Turley Associates, York Potash Environmental Statement

								which is Grade 2 or 3 in the area of potash resource outside of the National Park.
6.	-- ?	-- ?	-- ?	✓		✓	✓	The development of further potash mines would result in further emissions of greenhouse gases related to transport and to energy use at mines. Carbon may also be lost to the atmosphere through disruption of carbon rich soils or vegetation (though this is less likely than in than in the National Park which has a high density of carbon rich soils. Some uncertainty is noted as transport of potash may not be by road.
7.	- ?	- ?	- ?	✓			✓	This option would have effects on adapting to climate change as it would lead to more development and therefore to increased hard surfaced areas thus exacerbating issues of run-off and increasing flood risk. However, by avoiding the upland areas (which within the potash resource area tend to be contained in the National Park) the option reduces the potential significance of effects related to run-off from upland areas. The magnitude of effect is also dependent on location.
8.	--	--	--	✓		✓		This option would support increases in extraction of potash which is a non-renewable resource. The appraisal does however acknowledge that there are limited alternatives to potash as a source of fertilizer, though anaerobic digestate has been shown to contain useful amounts of potash (though field trials are still underway)[65].
9.	- ?	- ?	- ?	✓			✓	This option would be likely to result in increased levels of waste being produced, the extent of which would be dependent upon the type of extraction process.
10.	+ - ?	+ - ?	+ - ?	✓		✓	✓	Whilst there would be positive effects on protecting the historic assets of the National Park (which is part of the National Park statutory purposes), there may be negative effects on historic assets outside of the Park. Both below ground archaeology and surface features of the historic environment may be deleteriously affected by potash development and both occur in locations across the potash resource area. There is, however, a greater concentration of Scheduled Monuments in the National Park than in the area of potash resource outside the Park although a greater concentration of Conservation Areas in the area of potash resource outside the Park. Although the former may be more directly under threat from potash development (which is more likely to take place away from settlements), there may still be effects on settlements with Conservation Areas where traffic is routed through them. As this option could direct development outside the Park, impacts on Conservation Areas in particular may be possible as traffic is more likely to route through settlements (though effects are dependent on location to a degree).

[65] See footnote 13

								In the longer term there is less certainty as if subsidence becomes an issue in mine areas[66] this may or may not have additional effects on local heritage both inside and outside the National Park. One consequence of restricting the extraction of potash in designated landscapes is that areas outside of the National Park / AONB would be seen as relatively more favourable for potash development (assuming that suitable potash resources are extractable). This could lead to further cumulative negative effects in the remaining area and adds additional uncertainty to this assessment.
11.	+ / - / ?	+ / - / ?	+ / - / ?	✓		✓		This option would protect landscape of the National Park from the impacts of potash development. However, there is still likely to be an impact upon landscapes outside of the National Park. The National Park is a nationally designated landscape area, so although the option would not enhance the National Park it would protect it from the significant visual intrusion of potash mines. In the wider potash resource area the impacts are likely to be negative at a locally significant scale rather than at a nationally significant scale. The exception to this would be if potash mines were developed in proximity to coastal resorts which rely on their seascape setting (see footnote 15 above), or areas of high landscape sensitivity such as the Yorkshire Wolds (as landscape impacts here could be more severe). We have therefore rated the impact outside the National Park as minor negative with significant uncertainty as locally impacts could be more severe. One consequence of restricting the extraction of potash in designated landscapes is that areas outside of the National Park / AONB may be seen as relatively more favourable for potash development (assuming that suitable potash resources are extractable). This could lead to further cumulative negative effects in the remaining area and adds additional uncertainty to this assessment.

[66] See footnotes 21 and 22 for descriptions of how subsidence can come to affect surface features such as habitats and subsurface hydrology. Given such change it is assumed that subsurface archaeology and surface historic features could also be affected by subsidence if they are present.

12.	?	?	?		✓	✓	✓	In principle the development of new potash mines would lead to large levels of job creation, with associated knock-on effects, and would therefore have strong positive effects on this objective, although economic benefits may be hampered by the geographical limitations of this option should it lead to development in a less optimal location. The issue of developing in a less than optimal location is a significant one as it could have a major impact on the viability of working the resource, potentially making development unfeasible and negating the potential benefits of a new mine. For this reason we have scored the effect of this option on the economic growth SA objective as highly uncertain. Should development prove feasible it should be noted that there may be negative effects on the tourism sector in the locality of any new mine.
13.	+ +	+ +	+ +		✓	✓	✓	Assuming potash development is possible outside the National Park, the development of new potash mines would lead to large levels of job creation and would therefore have positive effects on this objective. However it should be noted that there may be negative effects on the tourism sector in the locality of any new mine, particularly local tourism businesses.
	-	-	-					
14.	+	+	+	✓		✓	✓	This option would protect the recreational opportunities of the North York Moors National Park, particularly protecting opportunities to understand and enjoy the Park's special qualities (the second National Park statutory purpose). However, there may be effects on recreation outside of the National Park, particularly if potash extraction were to take place close to the coast (so uncertainty is noted over the magnitude of these effects).
	- ?	- ?	- ?					
15.	-- ?	-- ?	-- ?		✓	✓	✓	Whilst this option would have positive effects on the health and wellbeing of communities in the National Park, there may be negative effects on the health and wellbeing of communities outside of the National Park. As there are more and larger settlements outside of the National Park, we have rated the impact as potentially major negative, but dependent on the location of population receptors to potash mines.

16.	- + ?	- + ?	- + ?		✓		✓	This option could have effects in relation to flooding as it could lead to more development and therefore to increased hard surfaced areas thus exacerbating issues of run-off and increasing flood risk, depending on location. However, by avoiding the upland areas of the National Park the option reduces, to some degree, the potential significance of effects related to run-off from upland areas.
17.	+	+	+		✓	✓	✓	This option would support the provision of a sufficient supply of potash, although there is no apparent shortage currently. However, the amount of potash extraction which would be supported would be limited to that which is found outside of the National Park, potentially limiting the amount which would be made available for use.

Option 4
Support extraction of potash from under the National Park as well as outside of the National Park, but only support siting of surface infrastructure outside the National Park.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓	✓	✓	✓	Whilst there are likely to be effects on biodiversity from the development of any further mines, this option would largely protect the internationally designated sites within the National Park from any surface potash

	- ?	- ?	- ?					development[67][68]. Outside of the National Park there are no internationally and very limited nationally designated sites which coincide with the potash resource but there are a number of locally designated SINCs which may be affected by surface infrastructure if it is positioned in proximity to them. One consequence of restricting the extraction of potash in designated landscapes is that areas outside of the National Park / AONB may be seen as relatively more favourable for potash development (assuming that suitable potash resources are extractable). This could lead to further cumulative negative effects in the remaining area and adds additional uncertainty to this assessment.
2.	-- ?	-- ?	-- ?	✓	✓	✓	✓	This option could result in negative effects on water quality and supply due to potential contamination / alteration[69] of groundwater (inside and outside the National Park), the usage of large quantities of water and effects of run-off on surface water (outside the National Park). Much is, however dependent on location. One consequence of restricting the extraction of potash in designated landscapes is that areas outside of the National Park / AONB may be seen as relatively more favourable for potash development (assuming that suitable potash resources are extractable). This could lead to further cumulative negative effects in the remaining area and adds additional uncertainty to this assessment.
3.	- ?	- ?	- ?		✓	✓	✓	This option could generate one or more new mines which would undergo construction phases which are likely to be transport intensive. While the transport requirements during operation are likely to be location dependent (much would depend on where workers are coming from and where potash is going to) it is also recognised that the transportation requirements for the mineral itself may not necessarily be via road or rail in which case the significant effects would be limited to the construction phase and the transit of worker / suppliers during operation. This has resulted in a negative assessment though uncertainty is noted due to unknown locational factors and distribution methods during the operational phase of any development.

[67] Although the option protects the National Park, it would not enhance the National Park (which is a key element of the objective), so a '+' rather than a '++' is recorded.

[68] There is the potential for groundwater fed ecosystems to be affected by changes in hydrology if for instance a subsurface shaft for transporting of potash were routed under the National Park, which could lead to locally significant adverse impacts during the construction phase (as acknowledged in the York Potash Mine, MTS and MHF Environmental Statement). This effect is obviously dependent on such underground works being in hydrologically linked to receptor habitats and in this assessment is not considered to alter the overall positive outcome for the National Park under this option.

[69] E.g. as a result of future subsidence and consequent possible contamination of overlying aquifers (see UNEP (United Nations Environment Programme)/ International Fertiliser Industry Association, 2001. Environmental Aspects of Phosphate and Potash Mining [URL: https://www.elaw.org/system/files/PotashMining.pdf] or if sub surface tunnel shafts are used (for instance as part of an underground conveyor system) construction impacts could include a lowering of the water table / reduced groundwater flow, particularly during construction (see York Potash Ltd, 2014. Mine, MTS and MHF Environmental Statement [URL: http://planning.northyorkmoors.org.uk/MVM.DMS/Planning%20Application/811000/811019/ae%20Environmental%20Statement%20Non%20Technical%20Summary.pdf]

4.	- ?	- ?	- ?		✓	✓	✓	There may be negative effects on air quality outside of the National Park, from transport and mine emissions. Given that there is a greater population density in this area than in the National Park the overall effect is negative (though modest benefits to the air quality of the National Park (which includes a number of air quality sensitive habitat receptors) may be observed. Uncertainty is also noted, however, as the magnitude of air pollution effects is determined to a large degree by the location of sites.
5.	--	--	--	✓		✓		This option would be more likely to direct potash development to areas of generally higher agricultural land value, much of which is Grade 2 or 3 in the area of potash resource outside of the National Park.
6.	-- ?	-- ?	-- ?	✓		✓	✓	The development of further potash mines would result in further emissions of greenhouse gases related to transport and to energy use at mines. Carbon may also be lost to the atmosphere through disruption of carbon rich soils or vegetation (though this is less likely than in than in the National Park which has a high density of carbon rich soils. Some uncertainty is noted as transport of potash may not be by road.
7.	- ?	- ?	- ?	✓			✓	This option would have effects on adapting to climate change as it would lead to more development and therefore to increased hard surfaced areas thus exacerbating issues of run-off and increasing flood risk. However, by avoiding upland areas the option reduces the potential significance of effects related to run-off from upland areas. The magnitude of effect is also dependent on location.
8.	--	--	--	✓		✓		.This option would support increases in extraction of potash which is a non-renewable resource. The appraisal does however acknowledge that there are limited alternatives to potash as a source of fertilizer, though anaerobic digestate has been shown to contain useful amounts of potash (though field trials are still underway)[70]. The extent to which this may represent an adequate alternative is uncertain.
9.	- ?	- ?	- ?	✓			✓	This option would be likely to result in increased levels of waste being produced, the extent of which would be dependent upon the type of extraction process.
10.	+ - ?	+ - ?	? -	✓		✓	✓	Whilst there would be positive effects on protecting the historic assets of the National Park (which is part of the National Park statutory purposes), there may be negative effects on historic assets outside of the Park. Both below ground archaeology and surface features of the historic environment may be deleteriously affected by potash development and both occur in locations across the potash resource area. There is, however, a greater concentration of Scheduled Monuments in the National Park than in the area of potash resource outside the Park although a greater concentration of Conservation Areas in the area of potash resource outside the Park. Although the former may be more directly under threat from potash development (which is more likely to take place away from settlements), there may still be effects on settlements with Conservation Areas where traffic is

[70] See footnote 13

								routed through them. As this option could direct development outside the Park, impacts on Conservation Areas in particular may be possible as traffic is more likely to route through settlements (though effects are dependent on location to a degree). In the longer term there is less certainty as if subsidence becomes an issue in mine areas[71] this may or may not have additional effects on local heritage both inside and outside the National Park. One consequence of restricting the extraction of potash in designated landscapes is that areas outside of the National Park / AONB would be seen as relatively more favourable for potash development (assuming that suitable potash resources are extractable). This could lead to further cumulative negative effects in the remaining area and adds additional uncertainty to this assessment.
11.	+	+	+	✓		✓		This option would protect the landscape of the National Park from the impacts of potash development. However, there is still likely to be an impact upon landscapes outside of the National Park. The National Park is a nationally designated landscape area, so although the option would not enhance the National Park it would protect it from the significant visual intrusion of potash mines. In the wider potash resource area the impacts are likely to be negative at a locally significant scale rather than at a nationally significant scale. The exception to this would be if potash mines were developed in proximity to coastal resorts which rely on their seascape setting (see footnote 14 above), or areas of high landscape sensitivity such as the Yorkshire Wolds (as landscape impacts here could be more severe). We have therefore rated the impact outside the National Park as minor negative with significant uncertainty as locally impacts could be more severe. One consequence of restricting the extraction of potash in designated landscapes is that areas outside of the National Park / AONB may be seen as relatively more favourable for potash development (assuming that suitable potash resources are extractable). This could lead to further cumulative negative effects in the remaining area and adds additional uncertainty to this assessment. It is also worth considering views looking out of the National Park or into it. Presumably this option would allow some above ground development to take place close to the boundary of the National Park. However, the magnitude of these effects is considered uncertain.
	-	-	-					
	?	?	?					

[71] See footnotes 21 and 22 for descriptions of how subsidence can come to affect surface features such as habitats and subsurface hydrology. Given such change it is assumed that subsurface archaeology and surface historic features could also be affected by subsidence if they are present.

12.	?	?	?		✓	✓	✓	In principle, the development of new potash mines would lead to large levels of job creation, with associated knock-on effects, and would therefore have strong positive effects on this objective although economic benefits may be hampered by the geographical limitations of this option should it lead to development in a less optimal location (less so than option 3). The issue of developing in a less than optimal location is a significant one as it could have a major impact on the viability of working the resource, potentially making development unfeasible and negating the potential benefits of a new mine. For this reason we have scored the effect of this option on the economic growth SA objective as uncertain. However, the fact that potash could still be extracted from underneath the National Park may make the achievement of viable potash mining more likely than option 3 (though even taking this into account, the assessment cannot state with any assurance that a viable location could be found within range of the bordering area as much would depend on factors such as the location of technical constraints such as arrangement of local geological faults, hydrological factors and the depth, continuity and grade of the accessible resource). Should development prove feasible it should be noted that there may be negative effects on the tourism sector in the locality of any new mine.
13.	+ +	+ +	+ +		✓	✓	✓	Assuming potash development is possible outside the National Park, the development of new potash mines would lead to large levels of job creation and would therefore have positive effects on this objective. However it should be noted that there may be negative effects on the tourism sector in the locality of any new mine, particularly local tourism businesses.
	-	-	-					
14.	+	+	+	✓		✓	✓	This option would protect the recreational opportunities of the North York Moors National Park, particularly protecting opportunities to understand and enjoy the Park's special qualities (the second National Park statutory purpose). However, there may be effects on recreation outside of the National Park, particularly if potash extraction were to take place close to the coast (so uncertainty is noted over the magnitude of these effects, which are dependent on location).
	- ?	- ?	- ?					

15.	-- ?	-- ?	-- ?		✓	✓	✓	Whilst this option would have positive effects on the health and wellbeing of communities in the National Park, there may be negative effects on the health and wellbeing of communities in the wider potash resource area. As there are more and larger settlements outside of the National Park, we have rated the impact as potentially major negative, but dependent on the location of population receptors to potash mines.
16.	- + ?	- + ?	- + ?		✓		✓	This option would have effects in relation to flooding as it could lead to more development and therefore to increased hard surfaced areas thus exacerbating issues of run-off and increasing flood risk. This would be a particular problem where sites are located close to receptors such as flood prone water courses (so dependent on location). However, by avoiding upland areas (which tend to be in the National Park) the option reduces the potential significance of effects related to run-off from upland areas.
17.	+ +	+ +	+ +		✓	✓	✓	This option would support the provision of a future supply of potash, although there is no apparent shortage currently (though there may be in the future). As this allows potash resources under the National Park to be accessed the positive effect is particularly strong.

Proposed alternative option 5: (Or) This option would support the supply of potash from new sites. Within the National Park and AONBs the requirements of the Major Development Test would need to be met.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	- ?	- ?	- ?	✓	✓	✓	✓	Whilst there are likely to be effects on biodiversity / geo-diversity from the development of any further mines outside of the National Park, this option would provide a robust approach to proposals in the National Park and AONBs[72] in line with national policy.

[72] Albeit that the current known potash resource area does not include AONBs. It may be, however, that further AONBs will be designated in the future.

								The starting position of the Major Development Test is that major development in designated areas should be refused. This would clearly protect biodiversity / geo-diversity in these areas. However, schemes can be approved in exceptional circumstances where it is demonstrated that they are in the public interest and there has been an assessment of the need for a development, the cost of locating it elsewhere and the extent that environmental effects could be moderated. This potentially allows an opportunity for a Major Development Test compliant development to take place, though the hurdles it must overcome are clearly substantial. This could mean that development (albeit exceptional development) could happen. Given that part of the first statutory National Park purposes is to conserve and enhance the natural environment[73], and that many biodiversity features of the National Park are of international significance, effects on biodiversity / geo-diversity would be likely to occur if any development were to happen, though would, to comply with the Test, need to be moderated to a high standard. We have rated this impact as minor negative to uncertain (the uncertainty arising from the impact that even a mitigated impact may have on the National Park's first purpose, and the uncertainty over whether proposals that might come forward would meet the standards of the Major Development Test and be seen as acceptable). Outside of the National Park there are no internationally and very limited nationally designated sites which coincide with the potash resource but there are a number of locally designated SINCs which may be affected, as well as non-designated biodiversity assets. One consequence of applying the Major Development Test in designated landscapes is that areas outside of the National Park may be seen as relatively more favourable for potash development (assuming that suitable potash resources are extractable). This could lead to potentially cumulative negative effects. We have considered this effect to be most likely to be minor negative to uncertain. This leads to an overall score for this option of minor negative to uncertain for the biodiversity / geo-diversity of the Plan Area as a whole.
2.	- -- ?	- -- ?	- -- ?		✓	✓	✓	This option would provide a robust approach to the consideration of proposals in the National Park and AONBs in line with national policy. As the Major Development Test could allow development to take place in exceptional circumstances (see objective 1 above) it is possible that an exceptional future potash mine could be seen as acceptable.

[73] A similar primary purpose of AONBs is to conserve and enhance 'natural beauty', though the AONB does not co-incide with the potash resource area.

								However, a high level of mitigation is likely to be an integral part of meeting the requirements of the MDT assessment, which would moderate effects significantly. Based on factors such as the likelihood and magnitude of effects we have rated this effect to be minor negative to uncertain. One consequence of applying the Major Development Test in designated landscapes is that areas outside of the National Park / AONB may be seen as relatively more favourable for potash development (assuming that suitable potash resources are extractable). This could lead to significant potentially cumulative negative effects (e.g. as a result of site construction / operation or if subsequent subsidence were to occur). We have considered this effect to potentially be major negative to uncertain.
3.	- ?	- ?	- ?		✓	✓	✓	This option would provide a robust approach to the consideration of minerals proposals in the National Park and AONBs in line with national policy, and the means of transporting the mineral in these areas would be taken into account in any decision. However, the Major Development Test may make development outside of the National Park more likely than inside the National Park. This could potentially bring transport closer to communities (due to a number of large and small settlements outside of the National Park). However, as with previous options which promote development outside of the National Park, much is dependent on location, particularly during the operational phase of a site (a lot would depend on where workers are coming from and where potash is going to). In addition, as stated in previous options it is recognised that transport of the potash itself would not necessarily be by road.
4.	- ?	- ?	- ?		✓	✓	✓	This option would provide a robust approach to the consideration of minerals proposals in the National Park and AONBs in line with national policy, and the means of transporting the mineral in these areas would be taken into account in any decision. However, the Major Development Test may make development outside of the National Park more likely than inside the National Park. This would potentially bring transport closer to communities which could affect air quality (minor negative with some uncertainty, depending on location). Other air quality impacts arising from any site in the National Park would be moderated by the Major Development Test's emphasis on moderating impacts (possibly to a higher degree than elsewhere), though because of the range and distribution of sensitive habitat receptors in the Park the assessment has concluded the effect is unknown. Elsewhere such impacts would be largely dependent on location but locally negative.
5.	-- ?	-- ?	-- ?	✓		✓	✓	This option would provide a robust approach to the consideration of minerals proposals in the National Park and AONBs in line with national policy and the effect on soil and agricultural land quality would be taken into account in any decision. However the best quality agricultural land generally lies outside the protected landscapes, so if this option provides a greater incentive to develop in those other areas (due to the restrictive

								nature of the Major Development Test) one could expect a higher chance of negative impacts occurring. Given the large size of potash related development these effects could be fairly large scale if in Best and Most Versatile land. However, some uncertainty exists as should exceptional circumstances be made apparent there would remain a possibility that a site could be deemed suitable within the National Park.
6.	-- ?	-- ?	-- ?	✓		✓	✓	This option would provide a robust approach to the consideration of minerals proposals in the National Park and AONBs in line with national policy. However, the Major Development Test may make development outside of the National Park more likely than inside the National Park. This would have an uncertain effect on journey length, though as the option allows the possibility of more than one mine (which regardless of distance to market during the operational phase would require numerous journeys to be undertaken during the construction phase would generate additional carbon. However, as stated in previous options it is recognised that transport of the potash itself would not necessarily be by road. Potash extraction / processing itself would also generate carbon, wherever it is situated. It could also, through its impact on soils and vegetation release stored carbon into the atmosphere.
7.	- ?	- ?	- ?	✓			✓	This option would provide a robust approach to the consideration of minerals proposals in the National Park and AONBs in line with national policy. However, as stated under other objectives it may make areas outside of the National Park more realistic development prospects (while still not ruling out development in the National Park completely). The option is slightly negative as it supports potash extraction from new sites, which would lead to greater hard standing areas (though these are less likely to be in upland areas). However, The magnitude of effects is dependent on location.
8.	--	--	--	✓		✓		This option would support increases in extraction of potash which is a non-renewable resource. The appraisal does however acknowledge that there are limited alternatives to potash as a source of fertilizer[74], though anaerobic digestate has been shown to contain useful amounts of potash (though field trials are still underway)[75]. The extent to which this may represent an adequate alternative is uncertain.
9.	- ?	- ?	- ?	✓			✓	This option would be likely to result in increased levels of waste being produced, the extent of which would be dependent upon the type of extraction process.

[74] The appraisal also understands that potash is not considered to be in short supply world-wide and that there is currently spare capacity in the industry.
[75] See footnote 14

10.	- ?	- ?	- ?	✓	✓	✓	✓	The effects on this objective are uncertain but potentially negative for the National Park as if proposals for mining are approved following consideration against the Major Development Test there could be effects on the historic environment depending on its location, though effects would need to be shown to be moderated as part of the Test (minor / uncertain effect). There is a greater concentration of Scheduled Monuments in the National Park than in the area of potash resource outside the Park, although there is a greater concentration of Conservation Areas in the area of potash resource outside the Park. As this option could indirectly direct development outside the Park, impacts on Conservation Areas in particular may be possible as traffic is more likely to route through settlements (minor negative / uncertain effect). One consequence of restricting the extraction of potash in designated landscapes is that areas outside of the National Park / AONB may be seen as relatively more favourable for potash development (assuming that suitable potash resources are extractable). This could lead to further cumulative negative effects in the remaining area and adds additional uncertainty to this assessment.
11.	- -- ?	- -- ?	- -- ?	✓	✓	✓	✓	The effects on this objective are uncertain but potentially negative for the National Park as if proposals for mining are approved following consideration against the Major Development Test there are likely to be effects on landscape and townscape depending on its location, though effects would need to be shown to be moderated as part of the Test (minor / uncertain effect). In the wider potash resource area the impacts are likely to be negative at a locally significant scale rather than at a nationally significant scale. The exception to this would be if potash mines were developed in proximity to coastal resorts which rely on their seascape setting (see footnote 16 above), or areas of high landscape sensitivity such as the Yorkshire Wolds (as landscape impacts here could be more severe). We have therefore rated the impact outside the National Park as ranging from minor negative to occasionally major negative. One consequence of restricting the extraction of potash in designated landscapes is that areas outside of the National Park / AONB may be seen as relatively more favourable for potash development (assuming that suitable potash resources are extractable). This could lead to further cumulative negative effects in the remaining area and adds additional uncertainty to this assessment.
12.	?	?	?		✓	✓	✓	The effects on this objective are highly uncertain as if proposals for mining are approved following consideration against the Major Development Test there will be a positive effect on the creation of new jobs at

	- + +	- + +	- + +					the mine itself and the generation of indirect jobs, however there could be negative effects on tourism arising from visitor experiences of the Park with the construction and operation of a new mine. Elsewhere in the resource area the development of new potash mines would lead to large levels of job creation, with associated knock-on effects, and would therefore have strong positive effects on this objective. However it should be noted that there may be negative effects on the tourism sector in the locality of any new mine. A large degree of uncertainty is noted if the Major Development Test restricts the area from which the resource can be extracted, which in practice may not be technically or economically viable.
13.	? + + -	? + + -	? + + -		✓	✓	✓	The effects on this objective are highly uncertain as if proposals for mining are approved following consideration against the Major Development Test there may be a positive effect on the vitality and viability of communities from the creation of new jobs at the mine itself and the generation of indirect jobs, however there could be negative effects on tourism arising from visitor experiences of the Park with a new mine. Elsewhere in the resource area the development of new potash mines would lead to large levels of job creation, with associated knock-on effects, and would therefore have strong positive effects on this objective. However it should be noted that there may be negative effects on the tourism sector in the locality of any new mine.
14.	? -	? -	? -		✓	✓	✓	The effects on this objective are uncertain for the National Park as if proposals for mining go ahead following consideration against the Major Development Test there could be negative effects on recreation and visitor experience depending on their location. There may, however, be positive effects through improvements to recreation facilities to mitigate any adverse effects. Elsewhere in the resource area there may be negative effects as potash facilities would, as an indirect consequence of the Major Development Test, be more likely to be located outside the National Park. Such effects could include re-routing of rights of way, erosion of tranquillity etc. and would be most likely to be minor negative.
15.	? -	? -	? -		✓	✓	✓	The effects on this objective are rated uncertain to minor negative for the National Park as if proposals for mining go ahead following consideration against the Major Development Test there could be negative effects on the health and wellbeing of local communities depending on their location, although these would have to be significantly moderated due to the requirements of the Test.

	--	--	--					In the wider resource area, which is more populated, there may be more negative effects as potash facilities would, as a possible indirect consequence of the Major Development Test, be more likely to be located outside the National Park (subject to the resource being suitable). These effects could arise from factors such as increased traffic, noise, reduced air quality or significant visual intrusion changing the character of an area. We have rated these as being potentially major negative (though could be mitigated e.g. by other policies in the Plan).
16.	? -	? -	? -		✓		✓	The effects on this objective are uncertain in the National Park as if proposals for mining go ahead following consideration against the Major Development Test there could be effects on surface water and flooding depending on any mine's location, though a high standard of mitigation would be expected as a result of the Major Development Test. In the rest of the resource area this option could have effects in relation to flooding as it could lead to more development and therefore to increased hard surfaced areas thus exacerbating issues of run-off and increasing flood risk. However, by being more likely to avoid upland areas (which tend to be in the National Park) the option reduces the potential significance of effects related to run-off from upland areas.
17.	+	+	+		✓	✓		There could be positive effects on this objective as it supports potash extraction from new sites. In addition, if proposals for mining go ahead following consideration against the Major Development Test which considers the need for the development including in terms of any national considerations, these effects could be further enhanced. However, if the Major Development Test is not passed the amount of potash extraction which would be supported would be limited to that which is found outside of the National Park, potentially limiting that which would be made available for use. Minor positive.

Summary of assessment

Option 1 would enable the economic and minerals supply benefits associated with having a potash mine in the Plan area to be maintained, whilst limiting the environmental and social effects. However, the scale of potential negative environmental, community and recreational effects in the longer term may vary depending on whether the option would lead to the development of a new or extended mine. The environmental effects include effects on landscape, biodiversity / geo-diversity, the historic environment, water and air quality. The other options all display increased negative impacts as they potentially support more than one potash mine, though significant uncertainty is often noted as much will depend on location. Of all the options, Option 2 would have the most significant negative effects on the sustainability objectives.

Options 3 and 4 would help prevent damaging effects occurring to the environment and recreational assets of the National Park, though negative effects may still occur outside of the National Park, particularly where potash mining may intersect with important aspects of the Plan area, such as the seascape and high quality farmland. There may also be negative effects on health and wellbeing under these options as communities outside the National Park which are close to future potash mines could see effects on local environmental quality and amenity.

Option 5 would provide a robust approach to considering proposals in the National Park, though the Major Development Test does allow development in exceptional circumstances. So in relation to most of the environmental and community objectives the SA considers that there may be negative effects, but that this is uncertain as it depends on the extent to which development meets the requirements of the Test. Elsewhere in the potash resource area negative effects are often more likely to occur as new sites are supported, though much depends on where sites are eventually located.

Options 2 has strong positive economic effects as it supports more than one potash site which would help bring new jobs to the area, though facilities in some locations may have negative impacts on levels of tourism. Options 3 and to a lesser extent option 4 are geographically restrictive options which could mean that only sub-optimum sites are available for use, which may or may not be technically or economically viable. Option 5 may remove a degree of the uncertainty associated with a geographically restricted approach leading to more positive effects on the economy if development can demonstrate the exceptional circumstances necessary to pass the Major Development Test.

Recommendations

It is recommended that option 1 be pursued. The next best option, at least in terms for protecting the most nationally significant environmental assets, would be option 4. However, there are question marks over deliverability of this option as it is unknown if viable locations could be found. So if this option were to be pursued further work to establish the quality of the resource may be necessary, or an approach akin to option 5 may allow a better balance between protecting nationally important assets and delivering a steady supply of potash.

Safeguarding Potash (id35)

Assumptions – Minerals safeguarding does not create any presumption that the mineral would be extracted and any proposals for extraction in a safeguarded area would still need to meet the same policy requirements as proposals for extraction in an area which is not safeguarded. Equally the presence of a safeguarding area would not preclude any other developments but would enable the presence of potentially important minerals to be considered as part of the usual planning process. Potash safeguarding relates to potential sterilisation by the presence of sensitive uses (such as precision manufacturing) that may be affected by small levels of subsidence over large areas.

Option 1
Safeguard land above the area permitted for potash working only

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓	✓	✓	✓	As the resource at Boulby is already permitted for potash working there would be no effects. Should further extraction be permitted, the option could have minor positive effects by precluding other developments on the surface. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on biodiversity of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
	?	?	?					
2.	+	+	+	✓	✓	✓	✓	As the resource at Boulby is already permitted for potash working there would be no effects. Should further extraction be permitted, the option could have minor positive effects by precluding other developments on the surface. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on water of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
	?	?	?					

3.	+	+	+	✓		✓	✓	As the resource at Boulby is already permitted for potash working there would be no effects. Should further extraction be permitted, the option could have positive effects by precluding other developments on the surface. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects from transport of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
	?	?	?					
4.	+	+	+		✓	✓		As the resource at Boulby is already permitted for potash working there would be no effects. Should further extraction be permitted, the option could have positive effects by precluding other developments on the surface. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on air quality of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
	?	?	?					
5.	+	+	+	✓		✓		As the resource at Boulby is already permitted for potash working there would be no effects. Should further extraction be permitted, the option could have positive effects by precluding other developments on the surface. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on land and soils of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
	?	?	?					
6.	0	0	0	✓		✓	✓	Whilst there is no clear link, some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on climate change mitigation of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
	?	?	?					
7.	0	0	0	✓		✓	✓	Whilst there is no clear link, some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on climate change adaptation of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
	?	?	?					
8.	-	-	-	✓		✓		This option would not safeguard land above the area of potash until it has planning permission meaning it could still become sterilised in the meantime.
9.	0	0	0					No link
10.	+	+	+	✓		✓	✓	As the resource is already permitted for potash working there would be no effects. Should further extraction be permitted, the option could have positive effects by precluding other developments on the surface and therefore protecting historic assets in these areas. Some uncertainty is noted as the stringency of any

	?	?	?					eventual safeguarding policy is not yet known so effects on the historic environment of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
11.	+	+	+	✓		✓	✓	As the resource is already permitted for potash working there would be no effects. Should further extraction be permitted, the option could have positive effects by precluding other developments on the surface and therefore protecting the landscape. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on the landscape of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
	?	?	?					
12.	-	-	-	✓			✓	This option would not safeguard land above the area of potash which is not already subject to a planning permission for its extraction meaning the remainder of the resource may become sterilised, therefore losing potential opportunities for job creation and economic benefits. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on the economy of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
	?	?	?					
13.	-	-	-	✓			✓	This option would not safeguard land above the area of potash which is not already subject to a planning permission for its extraction meaning the remainder of the resource may become sterilised, therefore losing potential opportunities for job creation and economic benefits. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on the viability and vitality of communities of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
	?	?	?					
14.	+	+	+	✓	✓	✓	✓	As the resource is already permitted for potash working there would be no effects. Should further extraction be permitted, the option could have positive effects by precluding other developments on the surface, thus protecting recreation assets. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on recreation of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
	?	?	?					
15.	+	+	+		✓		✓	As the resource is already permitted for potash working there would be no effects. Should further extraction be permitted, the option could have positive effects by precluding other developments on the surface, thus protecting communities. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on community health and wellbeing of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
	?	?	?					

16.	+ ?	+ ?	+ ?	✓		✓	✓	As the resource is already permitted for potash working there would be no effects. Should further extraction be permitted, the option could have minor positive effects by precluding other developments on the surface, therefore not exacerbating any run-off issues. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on flooding of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
17.	- ?	-- ?	-- ?	✓			✓	This option may lead to the sterilisation of potash resources which don't benefit from planning permission which in the longer term may result in an inability to match demand for potash with supply, particularly with an indigenous supply considering there are no other potash mines in the country. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on displacement of other development is unknown, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.

Option 2
Safeguard land above all of the potash.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓	✓	✓	✓	Effects may be slightly positive should the existence of a safeguarding area preclude any sensitive development at the surface, but this would depend upon the policy approach adopted. Extraction of potash would still need to accord with other policies relating to biodiversity, habitats and wildlife and there would therefore be no effects resulting from this policy. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on biodiversity of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
	0	0	0					
	?	?	?					
2.	+	+	+	✓	✓	✓	✓	Effects may be slightly positive should the existence of a safeguarding area preclude any sensitive development at the surface, but this would depend upon the policy approach adopted. Extraction of potash would still need to accord with other policies relating to water quality and supply and there would therefore be no effects resulting from this policy. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on water of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
	0	0	0					
	?	?	?					
3.	+	+	+	✓		✓	✓	Effects may be slightly positive should the existence of a safeguarding area preclude any sensitive development at the surface, but this would depend upon the policy approach adopted. Extraction of potash would still need to accord with other policies relating to transport and to potash supply and there would therefore be no effects resulting from this policy. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects from transport of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would
	0	0	0					
	?	?	?					

								preclude other development are likely to be rare.
4.	+	+	+	✓		✓	✓	Effects may be slightly positive should the existence of a safeguarding area preclude any sensitive development at the surface, but this would depend upon the policy approach adopted. Extraction of potash would still need to accord with other policies relating to air quality and there would therefore be no effects resulting from this policy. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on air quality of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
	0	0	0					
	?	?	?					
5.	0	0	0	✓		✓		Effects may be slightly positive should the existence of a safeguarding area preclude any sensitive development at the surface, but this would depend upon the policy approach adopted. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on land and soils of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
	?	?	?					
6.	0	0	0	✓		✓	✓	Whilst there is no clear link, some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on climate change mitigation of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
	?	?	?					
7.	0	0	0	✓		✓	✓	Whilst there is no clear link, some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on climate change adaptation of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
	?	?	?					
8.	+ +	+ +	+ +	✓		✓		This option would contribute strongly to the aim of safeguarding minerals by safeguarding all of the potash resource.
9.	0	0	0					No clear link
10.	+	+	+	✓		✓	✓	Effects may be slightly positive should the existence of a safeguarding area preclude any sensitive development at the surface, but this would depend upon the policy approach adopted. Extraction of potash would still need to accord with other policies relating to the historic environment and there would therefore be no effects resulting from this policy. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on the historic environment of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
	0	0	0					
	?	?	?					
11.	+	+	+	✓		✓	✓	Effects may be slightly positive should the existence of a safeguarding area preclude any sensitive development at the surface, but this would depend upon the policy approach adopted. Extraction of potash

	0 ?	0 ?	0 ?					would still need to accord with other policies relating to the landscape and there would therefore be no effects resulting from this policy. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on the landscape of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
12.	?	?	?	✓			✓	This option may preclude other development from coming forward thus losing opportunities for job creation and economic benefits, yet may also enable potash development that may otherwise have been sterilised. There could be positive effects alongside negative effects but it is not possible to ascertain what the net effect is likely to be at this level.
13.	?	?	?	✓			✓	This option may preclude other development from coming forward thus losing opportunities for job creation and economic benefits, yet may also enable potash development that may otherwise have been sterilised. There could be positive effects alongside negative effects but it is not possible to ascertain what the net effect is likely to be at this level.
14.	+ 0 ?	+ 0 ?	+ 0 ?	✓	✓	✓	✓	Effects may be slightly positive should the existence of a safeguarding area preclude any sensitive development at the surface, but this would depend upon the policy approach adopted. Extraction of potash would still need to accord with other policies relating to recreation and there would therefore be no effects resulting from this policy. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on recreation of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
15.	+ 0 ?	+ 0 ?	+ 0 ?	✓			✓	Effects may be slightly positive should the existence of a safeguarding area preclude any sensitive development at the surface, but this would depend upon the policy approach adopted. Extraction of potash would still need to accord with other policies relating to the health and wellbeing of communities and there would therefore be no effects resulting from this policy. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on community health and wellbeing of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
16.	0 ?	0 ?	0 ?	✓		✓	✓	Whilst there is no clear direct link some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on flooding of displacing development to elsewhere cannot yet be considered, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.
17.	+	++	++	✓			✓	This option would help to protect the potash resource from sterilisation thus enabling it to be available for extraction if needed (subject to compliance with other planning policies). This may be particularly beneficial in

	?	?	?					the medium to long term should new areas of extraction be needed. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so effects on displacement of other development is unknown, although the circumstances where the presence of a potash safeguarding area would preclude other development are likely to be rare.

Summary of assessment

As safeguarding does not infer deep mineral extraction will take place there is generally no predicted direct effect. Were development to take place it would need to accord with other policies in the Plan.

The assessment has concluded that all options may have indirect benefits for the environment and communities should the extraction of potash preclude certain types of development from taking place on the surface above. However, Option 1 may not have positive effects in terms of the supply of minerals as land could become sterilised prior to the granting of planning permission for the extraction of potash below. Option 2 would provide benefits in terms of ensuring potash supply could be maintained.

Under each option, effects from displacement of development which would have taken place are uncertain as this will depend upon the stringency of any policy approach applied.

Recommendations

It is recommended that option 2 be progressed as it would provide the same benefits as option 1 along with more benefits.

Supply of Gypsum (id36)

Assumptions – It is assumed that demand for gypsum, predominantly for the manufacture of building products such as plaster, plasterboard and cement, will continue. There are two extraction techniques for gypsum; the first is mining for natural gypsum and the second is as a by-product from flue gas desulpherisation processes from coal fired power stations. The support for increasing/development of new coal fired power stations is decreasing.

Option 1
This option would support the principle of the extraction of natural gypsum subject to suitable proposals coming forward and would set out a range of environmental criteria against which proposals would be assessed.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?	✓		✓		This policy would set out a range of environmental criteria which should include biodiversity. The effects from the extraction of gypsum on biodiversity would be location specific and commensurate to the scale of the building works/processing above ground as predominantly this mineral is mined underground.
	+	+	+					
2.	?	?	?	✓		✓		This policy would set out a range of environmental criteria which should include water quality and supply. The effects from the extraction of gypsum by mining is likely to have more significant effects where it coincides with source protection zones and nitrate vulnerable zones. It is likely to be subject to licensing subject to the amount of water required for processing on site which would be a useful acceptability appraisal measure.
	+	+	+					
3.	+	?	?	✓		✓		The consideration of impacts from the extraction of gypsum would need to refer to the implications on and as a result of transportation. The implications from future proposals are uncertain as this would depend upon the

			-					location for extraction. Mining is likely to be limited to where the mineral is found and consideration for linking with existing infrastructure should be considered where practicable. Also, processing plants such as plasterboard manufacturers are acknowledged to usually be located close to mines with the baseline showing a plaster works in Sherburn, which has positive implications for low transportation miles. Supporting local extraction overall could have positive benefits but it is considered that this is likely to become more uncertain in the long-term as it would be location and transportation mode specific.
4.	? +	? +	? +	✓		✓		This policy would set out a range of environmental criteria which should include implications on air quality. The effects that would be particularly relevant would be as a result of dust.
5.	? +	? +	? +					This policy would set out a range of environmental criteria which should include implications on soils and agricultural land quality. The impacts are likely to be location specific and commensurate with the scale of building/associated functions above ground where proposals for mining are considered..
6.	? +	? +	? +	✓		✓		This policy would set out a range of environmental criteria which should include implications on the causes of climate change. The effects that would be particularly relevant would be in relation to transportation and land take as well as any emission from plant.
7.	0	0	0					There is no clear link between this policy and the objective for adapting to climate change.
8.	-	-	-	✓		✓		This option would support the extraction of mineral resources in general and would therefore conflict with minimising the use of resources.
9.	0 ?	0 ?	0 ?					There is no clear link between this policy and the objective to effectively manage waste. However there is some uncertainty noted as to whether support for working natural gypsum act against maximising the use of FGD gypsum, which is essentially a waste.
10.	? +	? +	? +	✓		✓		This policy would set out a range of environmental criteria which should include implications on the historic environment and heritage assets. The effects likely to be considered are visual impact and proximity to any proposals.
11.	? +	? +	? +	✓		✓		This policy would set out a range of environmental criteria which should include implications on the landscape. Any impacts are likely to be location specific. The effects likely to be considered are visual impact, land take and whether proposals are likely to cause harm to specific designations such as the AONB and National Park.
12.	+	+	+	✓		✓		This option would support the extraction of gypsum, subject to environmental assessment, which would be positive in meeting arising need/demand proposed. It is acknowledged that there are widespread deposits across the plan area of gypsum although currently no natural extraction is taking place. Supporting extraction would also have direct benefit for associated industries which use gypsum. The rise in house building and popularity of gypsum based building materials (plasterboard, plaster and cement) may give rise to new demand within the plan area for this material. There is also an existing plaster manufacturer within the plan

								area (at Sherburn[76]) that may benefit in the long-term from supporting any future proposals. In the long-term, the use of synthetic gypsum (DSG) is uncertain as this is a by-product form coal-fired power stations which are declining. Should this continue to be the case, this option would allow mining in less sensitive environmental locations to continue to support the industry in the long-term.
13.	-	-	-	✓		✓		This option does not state that social considerations and the effects on communities would be considered. This should be added given that extraction could have positive and negative impacts. It is considered that due to this, the effects may have minor negatives.
14.	0	0	0					There is no clear link to between this policy and the objective for recreation and leisure.
15.	-	-	-	✓		✓		This option does not state that social considerations would be considered, which would include safety. This should be added given that extraction could have potentially negative impacts from new mining locations. It is considered that due to this, the effects may have minor negatives.
16.	+ ?	+ ?	+ ?					This policy would set out a range of environmental criteria which should include implications on flood risk. Any impacts are likely to be location specific.
17.	+	+	+	✓		✓		The rise in house building and popularity of gypsum based building materials (plasterboard, plaster and cement) may give rise to new demand within the plan area for this material and this option would allow proposals to be considered for extraction. This would be positive in enabling the wider development needs to be met.

[76] As per British Geological Survey (2013) Construction Aggregates: Mineral Planning Factsheet for Gypsum, Figure 3.

Option 2
This option would not express support for the principle of working of natural gypsum.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓		✓		This policy would make any proposals default to National Policy and other policies set out with the plan, which include consideration for biodiversity. Interpretation of the impacts may be more generic than appraising against specific criteria as set out in option 1. It is considered that this should have positive effects but also uncertainty as to its implementation should proposals come forward.
	?	?	?					
2.	+	+	+					This policy would make any proposals default to National Policy and other policies set out with the plan, which include consideration for impacts on water. Interpretation of the impacts may be more generic than appraising against specific criteria as set out in option 1. It is considered that this should have positive effects but also uncertainty as to its implementation should proposals come forward.
	?	?	?					
3.	+	+	+					This policy would make any proposals default to National Policy and other policies set out with the plan, which include consideration for impacts on transport. Interpretation of the impacts may be more generic than appraising against specific criteria as set out in option 1. It is considered that this should have positive effects but also uncertainty as to its implementation should proposals come forward.
	?	?	?					
4.	+	+	+					This policy would make any proposals default to National Policy and other policies set out with the plan, which include consideration for impacts on air quality. Interpretation of the impacts may be more generic than appraising against specific criteria as set out in option 1. It is considered that this should have positive effects but also uncertainty as to its implementation should proposals come forward.
	?	?	?					
5.	+	+	+					This policy would make any proposals default to National Policy and other policies set out within the plan, which include consideration for impacts on soils and best and most versatile agricultural land. Interpretation of the impacts may be more generic than appraising against specific criteria as set out in option 1. It is considered that this should have positive effects but also uncertainty as to its implementation should
	?	?	?					

								proposals come forward.
6.	+	+	+					This policy would make any proposals default to National Policy and other policies set out with the plan, which include consideration for the causes of climate change. Interpretation of the impacts may be more generic than appraising against specific criteria as set out in option 1. It is considered that this should have positive effects but also uncertainty as to its implementation should proposals come forward.
	?	?	?					
7.	0	0	0					There is likely to be no links between this policy and the objective to adapt to climate change.
8.	+	+	+					This option reflects the lack of gypsum extraction interest across the plan area. It would also not directly support the extraction of this type of mineral which would be positive for this objective.
9.	0	0	0					There is no clear link between this policy and the effective management of waste.
10.	+	+	+					This policy would make any proposals default to National Policy and other policies set out with the plan, which include consideration for the historic environment and heritage assets. Interpretation of the impacts may be more generic than appraising against specific criteria as set out in option 1. It is considered that this should have positive effects but also uncertainty as to its implementation should proposals come forward.
	?	?	?					
11.	+	+	+					This policy would make any proposals default to National Policy and other policies set out with the plan, which include consideration for the urban and rural landscape. Interpretation of the impacts may be more generic than appraising against specific criteria as set out in option 1. It is considered that this should have positive effects but also uncertainty as to its implementation should proposals come forward.
	?	?	?					
12.	0	0	?					The effects on the economy are likely to be mixed. There has been no interest in natural gypsum in recent history within the plan area which this policy reflects. In the short-term neutral effects may be encountered. However, in the long-term, the effects of not overtly supporting the extraction of gypsum are uncertain. The NPPF is likely to provide a generally supportive approach but the outcomes would depend upon the opportunities and implementation of the policy. Similarly the future production of synthetic gypsum (DSG) is likely to be uncertain as the support for coal fired power stations reduces which could mean more importation of the mineral or more natural extraction.
		?						
13.	+	+	+					This policy would make any proposals default to National Policy and other policies set out with the plan, which include consideration for local communities. Interpretation of the impacts may be more generic than appraising against specific criteria as set out in option 1. It is considered that this should have positive effects but also uncertainty as to its implementation should proposals come forward.
	?	?	?					
14.	0	0	0					There is not likely to be a link between this policy and the objective for recreation and leisure.
15.	+	+	+					This policy would make any proposals default to National Policy and other policies set out with the plan, which include consideration for health and well-being in relation to minerals extraction. Interpretation of the impacts may be more generic than appraising against specific criteria as set out in option 1. It is considered that this should have positive effects but also uncertainty as to its implementation should proposals come forward.
	?	?	?					

16.	+ ?	+ ?	+ ?					This policy would make any proposals default to National Policy and other policies set out with the plan, which include consideration for flood risk and drainage in relation to minerals extraction. Interpretation of the impacts may be more generic than appraising against specific criteria as set out in option 1. It is considered that this should have positive effects but also uncertainty as to its implementation should proposals come forward.
17.	?	?	?					This policy would make any proposals default to National Policy and other policies set out with the plan. In comparison to option 1 and similarly to objective 12, not overtly supporting the extraction of gypsum may have a minor negative impact on meeting increasing demand for building materials such as plasterboard making any effects uncertain.

Option 3
This option would operate independently of options 1 and 2 above and would support the principle of continued supply of desulphogypsum (DSG) from power stations in the Joint Plan area.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					The impacts on biodiversity are considered neutral due to the synthetic gypsum being generated at established power stations and the unlikely delivery of new ones over the planning period. The current effects on biodiversity are therefore considered to continue.
2.	0	0	0					The impacts on water are considered neutral due to the synthetic gypsum being generated at established power stations and the unlikely delivery of new ones over the planning period. The current effects on water are therefore considered to continue.
3.	0 -	0 -	?	✓		✓	✓	Currently, transportation of DSG[77] from Drax power station (the largest producer of synthetic gypsum) is undertaken by rail but elsewhere, there is a reliance on road transportation. This is likely to continue in the long-term. In the future, the production of DSG is uncertain as the support for coal fired power stations reduces which could mean more importation of the mineral with associated cumulative effects on road mileage. Also, processing plants such as plasterboard manufacturers are acknowledged to usually be located close to mines with the baseline showing a plaster works in Sherburn[78], which has positive implications for low transportation miles. On balance, the continued transportation may have both neutral and minor negative effects in comparison to the baseline position although it is acknowledged that this becomes more uncertain in the long-term.
4.	0	0	0	✓		✓		Continuing to support the production of synthetic gypsum is likely to have neutral to minor positive effects on

[77] Desulphogypsum (DSG) is a by-product from flue gas desulpherisation processes at Drax and Eggborough power stations.
[78] As per British Geological Survey (2013) Construction Aggregates: Mineral Planning Factsheet for Gypsum, Figure 3.

	+	+	+					air quality as it removes sulphur dioxide from flue gasses at coal fired power stations.
5.	0	0	0					The impacts on soils and land take are considered neutral due to the synthetic gypsum being generated at established power stations and the unlikely delivery of new ones over the planning period.
6.	0	0 -	0 -	✓		✓		The impacts on climate change are considered neutral to minor negative in the long-term due to the synthetic gypsum coming from established power stations and the unlikely delivery of new ones over the planning period.
7.	0	0	0					There is no clear link between this policy and the objective to adapt to climate change.
8.	+	+	+	✓		✓		This option would support the generation of synthetic gypsum, which is a by-product of generating energy at coal-fired power stations that would otherwise be wasted. Whilst it not renewable, it does save extraction from the ground and can be recycled for further use. This option is therefore likely to have a minor positive.
9.	+ +	+ +	+ +	✓		✓		Synthetic gypsum is a by-product of generating energy at coal-fired power stations that would otherwise be wasted. It is therefore a waste product that is being put to use and is therefore considered potentially positive against the waste hierarchy.
10.	0	0	0					The impacts on the historic environment are considered neutral due to the synthetic gypsum being generated at established power stations and the unlikely delivery of new ones over the planning period.
11.	0	0	0					The impacts on the historic environment are considered neutral due to the synthetic gypsum being generated at established power stations and the unlikely delivery of new ones over the planning period.
12.	+	+	+	✓		✓		The continued support for this type of gypsum production is likely to be positive overall. This would directly support both mineral production and also other associated functions such as the making of building materials.
13.	0	0	0					The impacts on the local communities are considered neutral due to the synthetic gypsum being generated at established power stations and the unlikely delivery of new ones over the planning period.
14.	0	0	0					There are no clear links between this policy and the objective for recreation and leisure.
15.	0	0	0					The impacts on health and well-being are considered neutral due to the synthetic gypsum being generated at established power stations and the health and safety routines already in place. There is also unlikely to be new power stations over the plan period to change the current situation.
16.	0	0	0					The impacts on flood risk are considered neutral due to the synthetic gypsum being generated at established power stations and the unlikely delivery of new ones over the planning period.
17.	0	0	0	✓		✓		The rise in house building and popularity of gypsum based building materials (plasterboard, plaster and cement) may give rise to new demand within the plan area for this material and this option would support continued production. This would be positive in enabling the wider development needs to be met.

Option 4
This option would operate independently of options 1 and 2 above and would not express support for the principle of continued supply of desulphogypsum (DSG) from power stations in the Joint Plan area.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					The impacts on biodiversity are considered neutral due to the synthetic gypsum being generated at established power stations regardless of planning policy. Any changes would be subject to national policy and planning policies set out within the plan.
2.	0	0	0					The impacts on water are considered neutral due to the synthetic gypsum being generated at established power stations regardless of planning policy. Any changes would be subject to national policy and planning policies set out within the plan.
3.	0	0	0 ?					The impacts on water are considered neutral due to the synthetic gypsum being generated at established power stations regardless of planning policy. Any changes would be subject to national policy and planning policies set out within the plan. Currently, transportation of DSG[79] from Drax power station (the largest producer of synthetic gypsum) is undertaken by rail but elsewhere, there is a reliance on road transportation. This is likely to continue in the long-term. In the future, the production of DSG is uncertain as the support for coal fired power stations reduces which could mean more importation of the mineral with associated cumulative effects on road mileage. Also, processing plants such as plasterboard manufacturers are acknowledged to usually be located close to mines with the baseline showing a plaster works in Sherburn[80], which has positive implications for low transportation miles.
4.	0	0	0	✓		✓		The impacts on air quality are considered due to the synthetic gypsum being generated at established power stations regardless of planning policy. This option would represent 'business as usual' on air quality which

[79] Desulphogypsum (DSG) is a by-product from flue gas desulpherisation processes at Drax and Eggborough power stations.
[80] As per British Geological Survey (2013) Construction Aggregates: Mineral Planning Factsheet for Gypsum, Figure 3.

	+	+	+					would continue the current extraction which removes sulphur dioxide from flue gasses at coal fired power stations, which is positive for air quality. Any changes would be subject to national policy and planning policies set out within the plan.
5.	0	0	0					The impacts on soils and land use are considered neutral effects due to the synthetic gypsum being generated at established power stations regardless of planning policy. Any changes would be subject to national policy and planning policies set out within the plan.
6.	0	0 -	0 -	✓		✓		The impacts on climate change are considered neutral to minor negative due to the synthetic gypsum being generated at established coal-fired power stations regardless of planning policy. Any changes would be subject to national policy and planning policies set out within the plan but overall the process is reliant on the burning of fossils fuels.
7.	0	0	0					There is no clear link between this policy and the objective to adapt to climate change.
8.	+	+	+	✓		✓		This option would not overtly support the generation synthetic gypsum, which is a by-product of generating energy at coal-fired power stations that would otherwise be wasted. National Policy would support this however, and whilst it not renewable, it does save extraction from the ground and can be recycled for further use. This option is therefore likely to have a minor positive.
9.	+	+	+	✓		✓		Whilst, this option would not overtly support the generation of synthetic gypsum, it is a by-product of generating energy at coal-fired power stations that would otherwise be wasted. It is therefore a waste product that is being put to use regardless of the planning process and is therefore considered potentially positive against the waste hierarchy. It is however a by-product of generating energy at coal-fired power stations that would otherwise be wasted. Whilst it not renewable, it does save extraction from the ground and can be recycled for further use.
10.	0	0	0					The impacts on the historic environment and heritage assets are considered neutral effects due to the synthetic gypsum being generated at established power stations regardless of planning policy. Any changes would be subject to national policy and planning policies set out within the plan.
11.	0	0	0					The impacts on the landscape are considered neutral due to the synthetic gypsum being generated at established power stations and is unlikely to change regardless of planning policy. Any changes would be subject to national policy and planning policies set out within the plan.
12.	0	0	0					Not overtly supporting the generation of synthetic gypsum is unlikely to change its production given that it is an established process at the power stations.
13.	0	0	0					The impacts on local communities are considered neutral effects due to the synthetic gypsum being generated at established power stations regardless of planning policy. Any changes would be subject to national policy and planning policies set out within the plan.
14.	0	0	0					There are no clear links between this policy and the objective for recreation and leisure.
15.	0	0	0					The impacts on the health and well-being of the population are considered neutral effects due to the synthetic

								gypsum being generated at established power stations regardless of planning policy, which should have existing HSE policies in place. Any changes would be subject to national policy and planning policies set out within the plan.
16.	0	0	0					The impacts on flood risk and drainage are considered neutral effects due to the synthetic gypsum being generated at established power stations regardless of planning policy. Any changes would be subject to national policy and planning policies set out within the plan.
17.	0	0	0					The rise in house building and popularity of gypsum based building materials (plasterboard, plaster and cement) may give rise to new demand within the plan area for this material irrespective of the planning policy. This option would not stop established supply chains from continuing.

Summary of assessment

Comparatively, options 1 and 2 result in similar effects given that over the last few years given that natural gypsum has not been extracted in the plan area. In the long-term, not overtly supporting the extraction of gypsum through option 2 may have a minor negative impact on the economy should demand increase while supporting option 1 would ensure that this is considered more favourably. The effects from the extraction of gypsum on environmental and social objectives would be location specific and commensurate to the scale of the building works/processing above ground as predominantly this mineral is mined underground.

Option 3 and 4 also have negligible effects given that synthetic gypsum is a by-product from existing fossil fuel power stations although would have positive effects in terms of air quality, reducing waste and supporting the power stations economically.

Recommendations

Option 1 should be pursued for natural gypsum. In relation to synthetic gypsum, it is likely that the planning processes cannot influence the process of extraction in the long-term given it is a by-product from coal-fired power stations; pursuing either option 3 or 4 in this case would present relatively the same sustainability outcomes.

Safeguarding Gypsum (id37)

Assumptions – The location for safeguarding would be based upon the permitted (but no longer operational) area for gypsum working in the Sherburn-in-Elmet area.

Option 1
This option would safeguard gypsum based on the area covered by the extant permission for gypsum in the Sherburn-in-Elmet area

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0	✓			✓	As safeguarding does not infer any gypsum extraction will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan and take into consideration the SSSI's within proximity of Sherburn-in-Elmet. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
2.	0	0	0	✓			✓	As safeguarding does not infer any gypsum extraction will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan and take into consideration that Sherburn-in-Elmet is within a nitrate vulnerable zone for ground and surface water. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
3.	0	0	0	✓			✓	As safeguarding does not infer any gypsum extraction will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. This would need to take into consideration existing infrastructure within proximity of Sherburn-in-Elmet and maximising links to existing processing plants. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
4.	0	0	0	✓			✓	As safeguarding does not infer any gypsum extraction will take place there is no predicted effect. Were

	?	?	?					development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
5.	+	+	+	✓		✓	✓	Safeguarding keeps open option of developing the known location of gypsum deposits within the plan area. This may help minimise land take when compared to considering other extraction options which may require new areas to be explored for extraction. Positive effects would occur when minerals are extracted, which may be some years in the future. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
6.	0	0	0	✓			✓	As safeguarding does not infer any gypsum extraction will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
7.	0	0	0	✓			✓	As safeguarding does not infer any gypsum extraction will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
8.	++	++	++	✓		✓		Safeguarding gypsum resources in the area of Sherburn-in-Elmet would enable the option of future extraction and thus strongly contribute to the safeguarding and wise use of minerals sub objective.
9.	0	0	0					As safeguarding does not infer any gypsum extraction will take place there is no predicted effect.
10.	0	0	0	✓			✓	As safeguarding does not infer any gypsum extraction will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
11.	0	0	0	✓			✓	As safeguarding does not infer any gypsum extraction will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
12.	+	++	++	✓		✓		Safeguarding gypsum in Sherburn-in-Elmet will keep open the future option of extraction as this option will prevent sterilisation of the resource or conflicting uses encroaching on areas which can be worked for this mineral in the future. This potentially retains a future economic opportunity.

13.	0	0	0	✓			✓	As safeguarding does not infer any gypsum extraction will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
14.	0	0	0	✓			✓	As safeguarding does not infer any gypsum extraction will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
15.	0	0	0	✓			✓	As safeguarding does not infer any gypsum extraction will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
16.	0	0	0	✓			✓	As safeguarding does not infer any gypsum extraction will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
17.	0	0	0	✓			✓	As safeguarding does not infer any gypsum extraction will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					

Option 2
This option would not seek not safeguard gypsum given the absence of expectation of significant additional working of natural gypsum during the plan period.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA obje	**Impact / timescale**	**Type of effect**	**Analysis**

	S	M	L	P	T	D	I	
1.	0 ?	0 ?	0 ?					There is no predicted effect from this option. Were development to take place it would need to accord with other policies in the plan regarding biodiversity and geodiversity which would cause some uncertainty.
2.	0 ?	0 ?	0 ?					There is no predicted effect from this option. Were development to take place it would need to accord with other policies in the plan regarding biodiversity and geodiversity which would cause some uncertainty.
3.	0 ?	0 ?	0 ?					There is no predicted effect from this option. Were development to take place it would need to accord with other policies in the plan regarding biodiversity and geodiversity which would cause some uncertainty.
4.	0 ?	0 ?	0 ?					There is no predicted effect from this option. Were development to take place it would need to accord with other policies in the plan regarding biodiversity and geodiversity which would cause some uncertainty.
5.	0 ?	- ?	- ?	✓		✓		Safeguarding keeps open option of developing where there are known deposits of gypsum. In comparison to option 1, this option would cause uncertainty as to future extraction in a known location. This may help minimise land take when compared to extraction from a sub optimum location (which may require more land take). Positive effects would occur when mineral are extracted, which may be some years in the future. So not safeguarding would effectively achieve the inverse effect.
6.	0 ?	0 ?	0 ?					There is no predicted effect from this option. Were development to take place it would need to accord with other policies in the plan regarding biodiversity and geodiversity which would cause some uncertainty.
7.	0 ?	0 ?	0 ?					There is no predicted effect from this option. Were development to take place it would need to accord with other policies in the plan regarding biodiversity and geodiversity which would cause some uncertainty.
8.	--	--	--	✓		✓		Under this option there is an increased risk that minerals will be sterilised thus detracting from the safeguarding and wise use of minerals sub objective.
9.	0	0	0					There is no predicted effect from this option.
10.	0 ?	0 ?	0 ?					There is no predicted effect from this option. Were development to take place it would need to accord with other policies in the plan regarding biodiversity and geodiversity which would cause some uncertainty.
11.	0 ?	0 ?	0 ?					There is no predicted effect from this option. Were development to take place it would need to accord with other policies in the plan regarding biodiversity and geodiversity which would cause some uncertainty.
12.	-	-	-	✓		✓		Not safeguarding gypsum will create a risk that the future option of extraction will not possible as sterilisation of the resource will occur or the locations will be lost possibly through encroaching development. In addition, whilst there is no expectation of need currently, the demand for gypsum may rise in line with the demand for building products in relation to increasing development. This potentially reduces future economic opportunity.
13.	0	0	0					There is no predicted effect from this option. Were development to take place it would need to accord with

	?	?	?					other policies in the plan regarding biodiversity and geodiversity which would cause some uncertainty.
14.	0	0	0					There is no predicted effect from this option. Were development to take place it would need to accord with other policies in the plan regarding biodiversity and geodiversity which would cause some uncertainty.
	?	?	?					
15.	0	0	0					There is no predicted effect from this option. Were development to take place it would need to accord with other policies in the plan regarding biodiversity and geodiversity which would cause some uncertainty.
	?	?	?					
16.	0	0	0					There is no predicted effect from this option. Were development to take place it would need to accord with other policies in the plan regarding biodiversity and geodiversity which would cause some uncertainty.
	?	?	?					
17.	0	0	0					There is no predicted effect from this option. Were development to take place it would need to accord with other policies in the plan regarding biodiversity and geodiversity which would cause some uncertainty.
	?	?	?					

Summary of assessment
As safeguarding does not infer gypsum extraction will take place there is generally no predicted direct effect. Were development to take place it would need to accord with other policies in the plan.

In most cases effects of other options are neutral. However, Option 1 shows positive effects associated with objectives soil/land, resource use, and sustainable economic growth. This is because minerals will not be sterilised r under threat under this option. The inverse is true for Option 2, with negative effects reported for the same objectives.

Under Option 1, effects from displacement of development which would have taken place are uncertain as this will depend upon the stringency of any policy approach applied.

Recommendations
The SA indicates that option 1 is the most sustainable option.

Safeguarding Deep Mineral Resources (id38)

Option 1
This option would include a policy which would require the developer to demonstrate that there would not be significant conflict with other areas and forms of deep minerals extraction.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓	✓	✓	✓	There may be benefits for biodiversity in the vicinity of extraction sites should the option preclude other extraction processes from that area. However, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
2.	+	+	+	✓	✓	✓	✓	There may be benefits for water quality in the vicinity of, or linked to, the areas round extraction should the option preclude other extraction processes in a particular area. However, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
3.	0	0	0	✓		✓	✓	Whilst there is no clear direct link, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
4.	0	0	0		✓	✓		Whilst there is no clear direct link, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
5.	+	+	+	✓		✓		There may be benefits in relation to agricultural land should the option preclude extraction in some areas or of some forms. However, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
6.	0	0	0	✓		✓	✓	Whilst there is no clear direct link, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
7.	0	0	0	✓		✓	✓	Whilst there is no clear direct link, some uncertainty of effects exists should this lead to the minerals extraction

	?	?	?					being displaced to another area where the resource exists.
8.	+	+	+	✓		✓		This option would provide robust safeguarding for minerals around areas already being extracted, although there may be scope for some uncertainty as issues would need to be addressed on a case by case basis at planning application stage. Clarity would be needed on the issues to be considered and how this information should be obtained and reported.
9.	0	0	0					No clear link.
10.	+ ?	+ ?	+ ?	✓		✓	✓	There may be benefits for heritage in the vicinity of extraction sites should the option preclude other extraction processes from that area. However, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
11.	+ ?	+ ?	+ ?	✓		✓	✓	There may be benefits for the landscape in the vicinity of extraction sites should the option preclude other extraction processes from that area. However, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
12.	0	0	0					This option may support jobs at existing sites whilst losing opportunities for job creation at others. On balance, it is considered that there would be a neutral effect against this objective as it is not apparent which processes would be excluded and which would be protected at this stage.
13.	0	0	0					This option may support jobs at existing sites whilst losing opportunities for job creation at others. On balance, it is considered that there would be a neutral effect against this objective as it is not apparent which processes would be excluded and which would be protected at this stage.
14.	+ ?	+ ?	+ ?	✓	✓	✓	✓	There may be benefits for recreation in the vicinity of extraction sites should the option preclude other extraction processes from that area. However, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
15.	+ ?	+ ?	+ ?	✓			✓	There may be benefits for communities in the vicinity of extraction sites should the option preclude other extraction processes from that area. However, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
16.	0 ?	0 ?	0 ?	✓		✓	✓	Whilst there is no clear direct link, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
17.	+ +	+ +	+ +	✓		✓		This option would support extraction where there would be no effect on extraction of other underground minerals which would enable optimum supply of these resources thus enabling sufficient resources to come forward to support the population.

Option 2
This option would identify 'exclusion zones' around areas of existing deep mineral extraction which would prevent the extraction of other resources where there is the potential for or there are known to be effects on these current areas of extraction.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓	✓	✓	✓	There may be benefits for biodiversity in the vicinity of extraction sites should the option preclude other extraction processes from that area. However, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
2.	+	+	+	✓	✓	✓	✓	There may be benefits for water quality in the vicinity of, or linked to, the areas round extraction should the option preclude other extraction processes in a particular area. However, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
3.	0	0	0	✓		✓	✓	Whilst there is no clear direct link, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
4.	0	0	0	✓		✓	✓	Whilst there is no clear direct link, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
5.	+	+	+	✓		✓		There may be benefits in relation to agricultural land should the option preclude extraction in some areas or of some forms. However, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
6.	0	0	0	✓		✓	✓	Whilst there is no clear direct link, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
7.	0	0	0	✓		✓	✓	Whilst there is no clear direct link, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
8.	++	++	++	✓		✓		This option would provide robust safeguarding for minerals already being extracted.

9.	0	0	0					No clear link
10.	+	+	+	✓		✓	✓	There may be benefits for heritage in the vicinity of extraction sites should the option preclude other extraction processes from that area. However, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
11.	+	+	+	✓		✓	✓	There may be benefits for the landscape in the vicinity of extraction sites should the option preclude other extraction processes from that area. However, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
12.	0	0	0					This option may support jobs at existing sites whilst losing opportunities for job creation at others. On balance, it is considered that there would be a neutral effect against this objective as it is not apparent which processes would be excluded and which would be protected at this stage.
13.	0	0	0					This option may support jobs at existing sites whilst losing opportunities for job creation at others. On balance, it is considered that there would be a neutral effect against this objective as it is not apparent which processes would be excluded and which would be protected at this stage.
14.	+	+	+	✓	✓	✓	✓	There may be benefits for recreation in the vicinity of extraction sites should the option preclude other extraction processes from that area. However, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
15.	+	+	+	✓			✓	There may be benefits for communities in the vicinity of extraction sites should the option preclude other extraction processes from that area. However, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
16.	0	0	0	✓		✓	✓	Whilst there is no clear direct link, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
17.	-	-	--	✓		✓	✓	The option would enable continued extraction of existing minerals but may preclude extraction of other minerals. Establishing exclusion zones may result in precluding more minerals extraction than is necessary and may therefore on balance have negative effects in terms of providing minerals to support the population. These effects may increase over time should more extraction be prevented.

Proposed alternative option 3 (or)
This option would expand option 1 to state that the greatest weight should be given to the mineral reserve which is scarcest and most economically significant (Option 1 -This option would include a policy which would require the developer to demonstrate that there would not be significant conflict with other areas and forms of deep minerals extraction).

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓	✓	✓	✓	There may be benefits for biodiversity in the vicinity of extraction sites should the option preclude other extraction processes from that area. However, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
2.	+	+	+	✓	✓	✓	✓	There may be benefits for water quality in the vicinity of, or linked to, the areas round extraction should the option preclude other extraction processes in a particular area. However, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
3.	0	0	0	✓		✓	✓	Whilst there is no clear direct link, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
4.	0	0	0		✓	✓		Whilst there is no clear direct link, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
5.	+	+	+	✓		✓		There may be benefits in relation to agricultural land should the option preclude extraction in some areas or of some forms. However, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
6.	0	0	0	✓		✓	✓	Whilst there is no clear direct link, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
7.	0	0	0	✓		✓	✓	Whilst there is no clear direct link, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
8.	+	+	+	✓		✓		This option would provide robust safeguarding for minerals around areas already being extracted, although

								there may be scope for some uncertainty as issues would need to be addressed on a case by case basis at planning application stage. Clarity would be needed on the issues to be considered and how this information should be obtained and reported.
9.	0	0	0					No clear link.
10.	+	+	+	✓		✓	✓	There may be benefits for heritage in the vicinity of extraction sites should the option preclude other extraction processes from that area. However, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
11.	+	+	+	✓		✓	✓	There may be benefits for the landscape in the vicinity of extraction sites should the option preclude other extraction processes from that area. However, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
12.	+	+	+	✓			✓	This option may support jobs at existing sites whilst losing opportunities for job creation at others. In terms of economic growth, giving greater weight to the scarcest and most economically significant resources is considered to have a minor positive impact.
13.	0	0	0					This option may support jobs at existing sites whilst losing opportunities for job creation at others. On balance, it is considered that there would be a neutral effect against this objective as it is not apparent which processes would be excluded and which would be protected at this stage.
14.	+	+	+	✓	✓	✓	✓	There may be benefits for recreation in the vicinity of extraction sites should the option preclude other extraction processes from that area. However, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
15.	+	+	+	✓			✓	There may be benefits for communities in the vicinity of extraction sites should the option preclude other extraction processes from that area. However, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
16.	0	0	0	✓		✓	✓	Whilst there is no clear direct link, some uncertainty of effects exists should this lead to the minerals extraction being displaced to another area where the resource exists.
	?	?	?					
17.	+ +	+ +	+ +	✓		✓		This option would support extraction where there would be no effect on extraction of other underground minerals which would enable optimum supply of these resources thus enabling sufficient resources to come forward to support the population. This option would also give weight to the scarcest resources ensuring a continuity of supply.

Summary of assessment
As safeguarding does not infer deep minerals extraction will take place there is generally no predicted direct effect. Were development to take place it would need to accord with other policies in the plan.

All options may indirectly provide protection for the environment and communities through potentially limiting the amount of extraction of deep minerals, although these benefits would be more certain and potentially greater under Option 2 whereby such development would definitely not be supported in certain locations. Whilst Option 2 may robustly safeguard existing extraction processes, it may unnecessarily lead to preclusion of extraction which could have been undertaken alongside existing extraction.

Option 3 (which would expand Option 1 to give weight to the scarcest and most economically significant resources) would lead to greater positive impacts in relation to economic growth and addressing the needs of a changing population by ensuring a continuity of supply.

Under each option, effects from displacement of development which would have taken place are uncertain as this will depend upon the stringency of any policy approach applied.

Recommendations
It is recommended that option 3 be pursued provided clarity is provided on how these issues will be considered through the planning application process and in what circumstances the policy may apply.

Supply of Vein Minerals (id39)

Option 1
This option would support the principle of the further development of resources of vein minerals in suitable locations and would identify criteria to be applied to the consideration of such applications, including the need to protect important habitats and wildlife, landscapes, heritage and tourism assets.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	-- +	✓		✓	✓	There is significant biodiversity and geodiversity interest in areas with potential for vein minerals, including geological SSSIs which have come about through previous minerals working, but also European SPA / SAC sites, SSSIs and local SINC sites around Greenhow Hill (fluorspar), with less designated sites close to Cononley (fluorspar). Elsewhere, in areas such as the North Pennines and wider Nidderdale AONB there is a high concentration of designations along with areas of priority habitat. However, criteria to protect habitats and wildlife should help protect biodiversity from more severe effects (though minor residual effects would appear inevitable if surface extraction in particular occurs). In the longer term cumulative effects may occur as active support may encourage operators to come forward, though given the low rate of activity in recent years this is considered a low risk. There may also be an opportunity to establish new geological sites in the future as a result of extraction.
2.	-	-	-	✓	✓	✓	✓	There are no Source Protection Zones in Greenhow Hill or Cononley and there are few in the wider resource area. However, vein mineral extraction itself may affect local hydrology, consume water and lead to water quality impacts (e.g. fluorine leaching). Much will depend on the location, but environmental permitting and the criteria identified by the option would be expected to deal with the most significant impacts. Particularly close to protected sites changes to the water table may have ramifications for Water Framework Directive objectives if controls are not correctly put in place or cumulative impacts occur locally.

3.	-	-	-		✓	✓		Vein minerals would generally be extracted in remote locations. While there may be some potential for transportation by rail or canal in the Cononley area, a generally supportive policy for vein minerals extraction increases the chances of significant vehicle miles being generated where sites also extract other minerals (e.g. limestone) or other vein minerals. There would be an opportunity under this option to include more sustainable forms of transport in the criteria.
4.	0 -	0 -	0 -	✓	✓	✓		Dust can be an issue associated with the extraction and processing of vein minerals. While unmitigated there may be some small scale local impacts on receptors given the possible extraction areas, the criteria to protect important habitats should help ensure that development does not result in impacts from dust of other air pollution on protected sites.
5.	0 -	0 -	0 -	✓		✓		Due to the upland character of areas where vein minerals would be extracted they are unlikely to result in a loss of best and most versatile land. Sites would however have a land take, which may result in the loss of some productive (and potentially not previously developed) land.
6.	--	--	--	✓		✓	✓	Due to the upland character of areas where vein minerals would be extracted this option may result in carbon emissions from energy used during construction and operation, transport (particularly if extraction takes place with other more bulky minerals) and as a result of soils that may have a high carbon content (such as peaty soils) being lost. The criteria as listed do little (other than as a possible indirect effect of protecting habitats) to prevent this.
7.	0	0	0					This option has no clear relationship to climate change adaptation.
8.	- --	- --	- --	✓		✓		At present this option simply enables the expenditure of the non-renewable resource of vein minerals.
9.	- --	- --	- --	✓		✓		Vein mineral extraction has the potential to generate a significant amount of waste rock. In practice extraction may be done in conjunction with other minerals which should reduce waste. However, a preference for sites which extract more than one material would help reduce waste.
10.	0 -	0 -	0 -	✓		✓		There are a number of listed building and listed industrial heritage in the Cononley area (less so around Greenhow, though there are some local scheduled ancient monuments), and in the wider resource area there tends to be occasional clusters of heritage assets, often close to settlements. This would suggest moderate prospects that the setting of heritage may be compromised, but also, as with any extraction technique that can involve surface extraction, there is the potential for archaeology to be lost. This option includes consideration of heritage criteria which will reduce the significance of effects.
11.	-	-	--	✓		✓		Surface mining, and to a lesser degree underground mining (both of which can occur with vein minerals

								extraction), can have significant landscape impacts. Given the sensitive landscapes that vein minerals can occur in (such as AONBs, close to National Parks or in valued upland areas) these impacts can be major in magnitude. While criteria should reduce the magnitude of effects it is likely that landscape impacts will remain at a significant level, given the nature of the terrain, which is conducive to long range vistas. Cumulative effects may also occur in the long term.
12.	+	+	+	✓	✓	✓	✓	Generally vein mineral extraction provides employment opportunities in extraction and transportation. They may also play an important role in supporting industry elsewhere (e.g. fluorspar's use in the smelting of steel). So this option would provide some economic benefits, though there are few 'sustainable' economic benefits.
13.	-	-	-	✓	✓	✓	✓	While there will be some benefits to community vitality from the increased potential for jobs, there will also be detractors from community vitality, such as the potential for views out of the Yorkshire Dales and Nidderdale AONB to be affected with knock on impacts on tourism (though this will be considered by the criteria)
	+	+	+					
14.	-	-	-	✓	✓	✓	✓	As this option promotes vein minerals activity there may be potential impacts on access routes in upland areas and potential effects on views out of the Yorkshire Dales (with knock on impacts on recreation).
15.	-	-	-		✓	✓	✓	Vein minerals extraction may generate a number of amenity and wellbeing impacts ranging from noise pollution, dust and traffic. Currently the listed criteria for this option do not include impacts on amenity, though local populations may be sparse. Impacts will be greatest where a number of minerals are extracted at the same site, or where sites occur close together.
16.	-	-	-		✓	✓		There may be some risk from groundwater or surface water flooding in the areas where extraction may occur depending on the location of sites. Vein minerals extraction would be considered 'less vulnerable' to flood risk using definitions in the Technical Guidance to the NPPF.
17.	0	0	0					There is no clear relationship between vein minerals extraction and this objective.

Option 2
This option would not indicate support in principle for the development of vein minerals but would identify criteria to be applied to the consideration of such applications. Criteria could include the need to protect important habitats and wildlife, landscapes, heritage and tourism assets.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0	✓		✓	✓	There is significant biodiversity and geodiversity interest in areas with potential for vein minerals, including geological SSSIs which have come about through previous minerals working, but also European SPA / SAC sites, SSSIs and local SINC sites around Greenhow Hill (fluorspar) with less designated sites close to Cononley (fluorspar). Elsewhere, in areas such as the North Pennines and wider Nidderdale AONB there is a high concentration of designations along with areas of priority habitat. However, criteria to protect habitats and wildlife should help protect biodiversity from more severe effects. There may also be an opportunity to establish new geological sites in the future as a result of extraction. As this option does not promote vein mineral extraction, but plans in any case for the potential for sites to be submitted in future, effects will be less significant than option 1 and will range from no effect (with no development) to minor negative (limited development).
	-	-	-					
2.	0	0	0	✓	✓	✓	✓	There are no Source Protection Zones in Greenhow Hill or Cononley and there are few in the wider resource area. However, vein mineral extraction itself may affect local hydrology, consume water and lead to water quality impacts. As this option does not promote vein mineral extraction, but plans in any case for the potential for sites to be submitted in future, effects will be less significant than option 1.
	-	-	-					
3.	0	0	0		✓	✓		As this option does not promote vein mineral extraction, but plans in any case for the potential for sites to be submitted in future, effects will be less significant from transport than option 1. There would be an opportunity under this option to include more sustainable forms of transport in the criteria.
	-	-	-					
4.	0	0	0	✓	✓	✓		Dust can be an issue associated with the extraction and processing of vein minerals. As this option does not promote vein mineral extraction, but plans in any case for the potential for sites to be submitted in future, effects will be less significant from air pollution than option 1 as development is less likely to occur.
	-	-	-					
5.	0	0	0	✓		✓		Due to the upland character of areas where vein minerals may be extracted they are unlikely to result in a loss of best and most versatile land. As this option does not promote vein mineral extraction, but plans in any case

	-	-	-					for the potential for sites to be submitted in future, effects will be less significant for soils / land than option 1, as development is less likely to occur.
6.	0 -	0 -	0 -	✓		✓	✓	Due to the upland character of areas where vein minerals will be extracted this option may result in carbon emissions from energy used during construction and operation, transport and as a result of soils that may have a high carbon content (such as peaty soils) being lost. The criteria as listed do little (other than as a possible indirect effect of protecting habitats) to prevent this. As this option does not promote vein mineral extraction, but plans in any case for the potential for sites to be submitted in future, effects will be less significant for climate change than option 1 as development is less likely to occur.
7.	0	0	0					This option has no clear relationship to climate change adaptation.
8.	0 -	0 -	0 -	✓		✓		As this option does not promote vein mineral extraction, but plans in any case for the potential for sites to be submitted in future, effects will be less significant for resource use than option 1 as development is less likely to occur.
9.	0 -	0 -	0 -	✓		✓		As this option does not promote vein mineral extraction, but plans in any case for the potential for sites to be submitted in future, waste generation will be less significant than option 1 as development is less likely to occur. As with option 1, a preference for sites which extract more than one material would help reduce waste.
10.	0 -	0 -	0 -	✓		✓		As this option does not promote vein mineral extraction, but plans in any case for the potential for sites to be submitted in future, effects will be less significant for heritage than option 1 as development is less likely to occur.
11.	0 -	0 -	0 -	✓		✓		As this option does not promote vein mineral extraction, but plans in any case for the potential for sites to be submitted in future, effects will be less significant for landscape than option 1 as development is less likely to occur. While criteria should reduce the magnitude of effects it is likely that landscape impacts will remain at a significant level if extraction occurs, given the nature of the terrain.
12.	0 +	0 +	0 +	✓	✓	✓	✓	As this option does not promote vein mineral extraction, but plans in any case for the potential for sites to be submitted in future, there will be less economic benefit than option 1, though it may still occur at a lower level.
13.	-	-	-	✓	✓	✓	✓	This option would reduce the potential for new direct jobs creation (particularly if no development occurs), though tourism may be maintained.
14.	0	0	0	✓	✓	✓	✓	As this option does not promote vein mineral extraction, but plans in any case for the potential for sites to be submitted in future, there will be less significant effects on recreation, leisure and learning as development is

	-	-	-					less likely to occur. However, there may still be potential impacts on access routes in upland areas and for views out of the Yorkshire Dales (with knock on impacts on recreation if development occurs.
15.	0	0	0		✓	✓	✓	As this option does not promote vein mineral extraction, but plans in any case for the potential for sites to be submitted in future, effects on amenity and wellbeing will be less significant than option 1, and may not happen at all if no sites are considered during the plan period.
	-	-	-					
16.	0	0	0		✓	✓		Under this option there would be less activity in relation to vein minerals, and consequently greater opportunity to avoid significant flood risk.
	-	-	-					
17.	0	0	0					There is no clear relationship between vein minerals extraction and this objective.

Summary of assessment
The assessment shows that there are numerous negative effects associated with both options, with Option 1 displaying the possibility of major negative effects for biodiversity / geodiversity, climate change, resource use, waste generation and landscape. This is largely because vein minerals occur close to sensitive receptors (such as wildlife sites and designated landscapes) and extraction techniques can utilise a significant area of land, and extraction is essentially non-renewable and energy intensive.

There are positive economic benefits associated with both options (with Option 1 performing the best), and Option 1 also has both positive and negative effects associated with community vitality.

Recommendations
While both options display broadly negative effects, option 2 performs more favourably against the SA framework. However, the assessment notes significant potential for development of more comprehensive criteria which could lessen environmental effects under both options.

Safeguarding Vein Minerals (id40)

Assumptions – Minerals safeguarding does not create any presumption that the mineral would be extracted and any proposals for extraction in a safeguarded area would still need to meet the same policy requirements as proposals for extraction in an area which is not safeguarded. Equally the presence of a safeguarding area would not preclude any other developments but would enable the presence of potentially important minerals to be considered as part of the usual planning process. Some uncertainty is noted throughout this assessment as the stringency of any eventual safeguarding policy is not known (e.g. whether safeguarding is likely to shift the spatial approach in a different plan). This will be considered at later stages of plan development.

Option 1 This option would safeguard the area of extant dormant permissions for vein minerals extraction.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0	✓			✓	As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
2.	0	0	0	✓			✓	As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
3.	0	0	0	✓			✓	As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.

	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
4.	0	0	0	✓			✓	As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
5.	0	0	+	✓		✓	✓	Safeguarding keeps open option of developing the optimum locations for vein minerals extraction. This may help minimise land take when compared to extraction from a sub optimum location (which may require more land take). Positive effects would occur when mineral are extracted, which may be some years in the future. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
6.	0	0	0	✓			✓	As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
7.	0	0	0	✓			✓	As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
8.	+ +	+ +	+ +	✓		✓	✓	Safeguarding vein minerals would enable the option of future extraction and thus strongly contribute to the safeguarding and wise use of minerals sub objective.
9.	0	0	0	✓			✓	As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.
	?	?	?					
10.	0	0	0	✓			✓	As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan.

	?	?	?					Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
11.	0	0	0	✓			✓	As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
12.	+	+	+	✓		✓		Safeguarding vein minerals will keep open the future option of extraction of there as this option will prevent sterilisation of the resource. This potentially retains a future economic opportunity.
13.	0	0	0	✓			✓	As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
14.	0	0	0	✓			✓	As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
15.	0	0	0	✓			✓	As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
16.	0	0	0	✓			✓	As safeguarding does not infer any minerals development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
	?	?	?					
17.	0	0	0					No clear link

Option 2 This option would not seek to safeguard vein minerals in the absence of sufficient information on the distribution of such resources, or commercial interest in their exploitation

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					There is no predicted effect from this option.
2.	0	0	0					There is no predicted effect from this option.
3.	0	0	0					There is no predicted effect from this option.
4.	0	0	0					There is no predicted effect from this option.
5.	0	0	-	✓		✓		Safeguarding keeps open option of developing the optimum locations for vein minerals extraction. This may help minimise land take when compared to extraction from a sub optimum location (which may require more land take). Positive effects would occur when mineral are extracted, which may be some years in the future. So not safeguarding would effectively achieve the inverse effect. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not known so displacement effects on development cannot yet be considered.
6.	0	0	0					There is no predicted effect from this option.
7.	0	0	0					There is no predicted effect from this option.
8.	--	--	--	✓		✓		Under this option there is an increased risk that minerals will be sterilised thus detracting from the safeguarding and wise use of minerals sub objective.
9.	0	0	0					There is no predicted effect from this option.
10.	0	0	0					There is no predicted effect from this option.
11.	0	0	0					There is no predicted effect from this option.

12.	-	-	-	✓		✓		Not safeguarding vein minerals will create a risk that the future option of extraction will not be possible as sterilisation of the resource will occur. This potentially reduces future economic opportunity.
13.	0	0	0					There is no predicted effect from this option.
14.	0	0	0					There is no predicted effect from this option.
15.	0	0	0					There is no predicted effect from this option.
16.	0	0	0					There is no predicted effect from this option.
17.	0	0	0					There is no predicted effect from this option.

Summary of assessment

As safeguarding does not infer minerals extraction will take place there is generally no predicted direct effect. Were development to take place it would need to accord with other policies in the Plan.

In most cases effects of both options are neutral. However, Option 1 shows positive effects associated with soil / land, resource use and sustainable economic growth. This is because minerals will not be sterilised under this option. The inverse is true for Option 2, with negative effects reported for the same objectives.

Under Option 1, effects from displacement of development which would have taken place are uncertain as this will depend upon the stringency of any policy approach applied.

Recommendations

The SA indicates that option 1 is the most sustainable option.

Borrow Pits (id41)

Assumptions – No assumptions have been made about the locations of development for which a borrow pit may be required – it is assumed this could be anywhere within the Joint Plan area.

Option 1

Support borrow pits where all the following criteria can be met:

- The site lies on, or immediately adjoins, the proposed construction scheme so that the mineral can be transported from the borrow pit to the point of use without transport on the public highway system
- The site can be landscaped and appropriately restored to an agreed end-use without the use of imported material other than that generated on the adjoining construction scheme
- The proposal meets all the criteria set out in other relevant Development Management policies

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	- +	✓		✓	✓	There are likely to be some effects on habitats and wildlife although the extent of these will depend on the location of the borrow pit. Effects are likely to be relatively minor as the scale of extraction tends to be smaller than for conventional quarries. It is considered that, across the Plan area, the extent of effects would roughly stay equal over time as older pits become restored and new ones open. There may be opportunities for enhancements for biodiversity through site reclamation in the longer term.
2.	-	-	-	✓		✓	✓	It is likely that borrow pits would have some level of impact on groundwater and/or surface water, either through disturbance of groundwater (depending on the location and the extent of the pit) or on run-off of particles or pollution from machinery. It is considered that, across the Plan area, the extent of effects would roughly stay equal over time as older pits become restored and new ones open.
3.	+ +	+ +	+ +		✓	✓		This option would reduce the need for minerals to be brought into construction sites from further away, thus reducing minerals related transport on the roads.

4.	- +	- +	- +		✓	✓	✓	Whilst there would be negative effects in the area immediately around the borrow pit due to dust and from fumes from machinery, there will be positive effects resulting from the reduced need to transport minerals.
5.	-	-	--	✓		✓		This option would result in the loss of soil at and around the locations of borrow pits which may cumulatively be greater than the loss would be if minerals were sources from fewer, larger quarries. The significance of any agricultural land lost would depend on the specific site – quality varies across the Plan area. Effects are likely to increase over time as more borrow pits are formed.
6.	+ + -	+ + -	+ + -		✓	✓		This option would reduce the need for minerals to be brought into construction sites from further away, thus reducing minerals related transport on the roads and the associated greenhouse gas emissions. There may however be negative effects in terms of loss of carbon sinks as the cumulative effect of a number of borrow pits could lead to the loss of significant areas of woodland, vegetation and/or peaty soils, depending on the location of the borrow pits.
7.	0	+	+	✓			✓	Depending on the location of the borrow pits, the option could provide a number of opportunities for rainwater storage in the medium to longer term, once minerals extraction has ceased.
8.	-	-	--	✓		✓		This option would not encourage the re-use of previously materials in construction projects. Negative effects may increase over time as more borrow pits are created.
9.	0	0	0					No clear link
10.	?	?	?	✓		✓		Whilst there is potential for effects on historic assets resulting from extraction, this would depend upon the location of any pits.
11.	- +	- +	- +	✓		✓		Borrow pits are likely to have some form of negative landscape impact whilst extraction is taking place but once restoration takes place there could be positive effects on the landscape. Providing support for borrow pits would enable an appropriate type of stone to be sourced thus reducing the impact of the development on the landscape.
12.	0	0	0					No clear link
13.	?	?	?		✓		✓	Depending on the location of borrow pits there could be effects on local tourism economies during the time extraction is taking place, due to visual and noise effects.
14.	?	?	?	✓		✓	✓	Depending on the location of borrow pits, there could be effects through either the loss of recreation assets such as rights of way or through harm to the visitor experience at nearby locations.
15.	+ -	+ -	+ -		✓	✓	✓	Whilst there may be positive effects on communities nearby due to removing the need to transport minerals, there may also be negative effects for any immediately adjacent communities through noise and dust from the extraction process.
16.	0	+	+	✓			✓	Depending on the location of the borrow pits, the option could provide a number of opportunities for rainwater storage in the medium to longer term, once minerals extraction has ceased.
17.	+	+	+	✓		✓		The option provides an opportunity to ensure sufficient supply of minerals whilst creating shortened supply

	+	+	+					chains.

Option 2

Only support borrow pits where the mineral cannot reasonably be supplied by existing quarries or alternative secondary or recycled sources within the area; or the supply from existing sources would be seriously detrimental to the amenities of the area due to the scale, location or timing of the development requiring the mineral and subject to criteria including:

- The site lies on, or immediately adjoins, the proposed construction scheme so that the mineral can be conveyed from the borrow pit to the point of use without transport on the public highway system
- The site can be landscaped and appropriately restored to an agreed end-use without the use of imported material other than that generated on the adjoining construction scheme
- The proposal meets all the criteria set out in other relevant development management policies

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	- +	✓		✓	✓	This option is likely to lead to some borrow pits and there could therefore be a degree of harm to habitats and wildlife although this would be to a lesser degree than any effects resulting from option 1. There may be opportunities for enhancements for biodiversity through site reclamation in the longer term.
2.	-	-	-	✓		✓	✓	This option is likely to lead to some borrow pits and there could therefore be a degree of harm to water quality, due to disturbance of groundwater and run-off from the area around extraction which may contain dust and particles, although this would be to a lesser degree than any effects resulting from option 1.
3.	+	+	+		✓	✓	✓	This option would reduce transport miles to an extent, but transport would still be required should the material be sourced from existing quarries or from alternative secondary or recycled sources.
4.	- +	- +	- +		✓	✓	✓	Whilst there will be negative effects in the area immediately around the borrow pit due to dust and from fumes from machinery, there will be positive effects resulting from the reduced need to transport minerals. These effects would be to a lesser degree than under option 1 as fewer borrow pits are likely to come forward.

5.	+	+	+	✓		✓		This option would help to protect soil and agricultural land by only supporting extraction from borrow pits where there are no other options for the supply of the mineral. Sourcing from existing quarries would require less land take than numerous small borrow pits across the Plan area.
6.	+	+	+		✓	✓	✓	This option would reduce greenhouse gas emissions to an extent where any borrow pits are approved, but transport would still be required should the material be sourced from existing quarries or from alternative secondary or recycled sources.
7.	0	+	+	✓			✓	Depending on the location of the borrow pits, the option could provide a number of opportunities for rainwater storage in the medium to longer term, once minerals extraction has ceased. Fewer flood storage areas could be created than under option 1.
8.	+ +	+ +	+ +	✓		✓		The option would reduce the need to use primary minerals resources by requiring consideration to be given to whether secondary or recycled resources could be used.
9.	+	+	+	✓		✓		By encouraging the use of secondary and recycled minerals this option will help to reduce the amount of these entering the waste streams.
10.	? -	? -	? -	✓		✓	✓	There may effects on the historic environment resulting from the creation of borrow pits although effects overall are likely to be lesser than under option 1. This option may however have negative effects in terms of sourcing the most appropriate material to ensure the development is appropriate to the area, particularly as the typical local material is likely to historically have been sourced from nearby.
11.	- +	- +	- +	✓		✓		This option may have some effects on the landscape should borrow pits come forward, although the impacts would be less than those under option 1 as fewer pits would be supported. Providing support for borrow pits would enable an appropriate type of stone to be sourced thus reducing the impact of the development on the landscape.
12.	+	+	+		✓		✓	This option would help to support jobs in existing quarries and in the secondary and recycled minerals industries.
13.	?	?	?		✓		✓	Depending on the location of borrow pits there could be effects on local tourism economies during the time extraction is taking place, due to visual and noise effects. Effects would be lesser than under option 1 as fewer borrow pits would come forward.
14.	?	?	?	✓		✓	✓	Depending on the location of borrow pits, there could be effects through either the loss of recreation assets such as rights of way or through harm to the visitor experience at nearby locations. Effects would be lesser than under option 1 as fewer borrow pits would come forward.
15.	+ -	+ -	+ -		✓	✓	✓	Whilst there may be positive effects on communities nearby due to removing the need to transport minerals, there may also be negative effects for any immediately adjacent communities through noise and dust from the extraction process. Effects would be lesser than under option 1 as fewer borrow pits would come forward.
16.	0	+	+	✓			✓	Depending on the location of the borrow pits, the option could provide a number of opportunities for rainwater storage in the medium to longer term, once minerals extraction has ceased. There would be fewer

								opportunities than under option 1.
17.	+ +	+ +	+ +	✓		✓		The option provides an opportunity to ensure sufficient supply of minerals whilst creating shortened supply chains in some instances.

Summary of assessment
The assessment has shown that option 1 would have positive effects in terms of reducing minerals transport miles and also in terms of ensuring that the most appropriate mineral can be sourced for the development. However, it would not help to reduce the overall use of minerals or to use more secondary and recycled minerals. Option 2 would have some, but fewer, benefits in terms of reducing minerals transport miles but would support the aim of reducing the use of primary minerals in favour of alternatives.

Recommendations
It is recommended that option 2 should be followed but should include support for borrow pits where this would enable the most appropriate type of mineral to be sourced for maintaining character.

Overall Approach to the Waste Hierarchy (id42)

Option 1
This option would give support in principle to proposals which enable the re-use, recycling and composting of waste and would support the principle of recovery of waste where it can be demonstrated that it is not practicable to manage the waste further up the hierarchy.

Provision of new capacity for the landfill of biodegradable waste would only be supported where it can be demonstrated that it is not practicable to manage the waste further up the hierarchy and there is sufficient landfill capacity in the area to meet identified needs. Incineration of waste without energy recovery would only be supported for the small scale incineration of specialised wastes arising in the area and where the scale for the development would mean that energy recovery is not viable.

In relation to inert waste, landfill would only be supported where it would facilitate a high standard of quarry reclamation in accordance with agreed reclamation objectives, or the substantial improvement of derelict or degraded land to a condition where it can be returned to agricultural productivity.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. However, there may be impacts on biodiversity as a result of waste processing in relation to the proximity of processing facilities to biodiversity / geo-diversity assets and the type of processing taking place. There may be adverse effects caused by noise and disturbance to wildlife or loss of habitat. The scale of these impacts is location and waste management type dependent. Any facilities would also be subject to additional policies specific to biodiversity. The effects from this strategic policy are therefore identified as neutral / uncertain.
	0	0	0					
2.	?	?	?	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. However, there may be effects on water as a result of waste development commensurate to its scale and type of processing. Some waste management operations require use of water which may increase the demand for

	-	-	-					water and affect supply. Other considerations could be impacts from run-off and leachate, which may be more significant should they be located in a nitrate vulnerable zone or source protection zone. However, processing waste higher up the hierarchy may also have positive effects on quality from reduced landfill. The scale of these impacts is location and waste management type dependent. The effects are therefore identified as both negative and uncertain.
3.	?	?	?	✓	✓	✓		The transportation of waste is usually undertaken by road. The effects of this strategic option would be dependent upon the locations for generation and processing of waste across the plan area (which would determine the length of journeys). The effects are therefore considered uncertain.
4.	?	?	?	✓	✓	✓	✓	There may be impacts on air quality through emissions from the transportation of waste or as a by-product from waste processing, such as composting or organic matter with landfill in terms of methane / bio-aerosols. However, processing waste higher up the hierarchy may also have indirect positive effects (e.g. reduced landfill may reduce impacts on air quality, as waste in landfill generates methane). The scale of these impacts is specific to the location and waste management type, which would also be subject to external regulation where emissions are emitted. The effects are therefore considered uncertain.
5.	- +	- +	- +	✓		✓		Several effects may be experienced on soils/land due to waste management. The intention to manage waste as high up the hierarchy as possible may have positive implications on the sub-objective for recovering nutrient value from biodegradable waste, through composting for example, and recovering energy from waste would help to maximise the use of land efficiently (as it would offset the need for deriving energy from other sources which require land). In the long-term, this option also supports turning degraded land back into agriculturally productive land which is positive. Conversely, forms of waste management higher up the waste hierarchy may result in some contamination of soils depending upon the type of processing due to leachate and/or spillage. There may also be significant negative impacts on 'land take' given that locations will be required to processes all different types of waste. On balance, there are both positive and negative effects associated with this option.
6.	+	+	+	✓		✓		Treatment of waste higher up the waste hierarchy is likely to help encourage re-use and recycling within the plan area which would be positive for climate change (through the reduction in materials required during product lifecycles and the overall carbon footprint of products). Techniques such as landfilling waste generate methane through allowing waste to degrade anaerobically. As this option would only support provision of new capacity for the landfill of biodegradable waste where it can be demonstrated that it is not practicable to manage the waste further up the waste hierarchy, it is considered that this approach is likely to minimise adverse effects and predominantly have net benefit for climate change.
7.	0	0	0					There is no clear link between the policy and the objective to adapt to climate change.
8.	+	+	+	✓		✓		This option is likely to encourage waste to be processed in line with the waste hierarchy resulting in the need

								for fewer primary resources. The significance of this will be commensurate to the level of re-use and recycling of materials across the plan area, which is uncertain through this policy but is positively encouraged.
9.	+	+	+	✓		✓		This policy would directly encourage the effective management of waste and prioritise management higher up the hierarchy. The option does, however, support the higher tiers of the hierarchy 'as a whole', rather than the highest practical tier. Options for waste management further down the hierarchy would only be considered should it be proved that it cannot be processed further up the hierarchy. Energy recovery is supported only where higher tiers are not practicable.
10.	? 0	? 0	? 0	✓			✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Impacts on the historic environment and heritage assets would be in connection to the location of waste treatment works and processing. This is not set out in this policy but is dependent upon the locations and type of waste management facility (indirect impact).
11.	? 0	? 0	? 0	✓			✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Impacts on the landscape would be in connection to the location of waste treatment works and processing. This is not set out in this policy but is dependent upon the locations and type of waste management facility (indirect impact). The landscapes that would be particularly vulnerable to waste management should it be visibly operational would be the AONB and National park which are both designated for their landscape value.
12.	+ + +	+ + +	+ + +	✓		✓		This option is likely to have economic benefits associated with different waste management techniques. The re-use, recycling and composting of materials can be sold for alternative uses as well as reduce the costs now associated with landfill through taxation and use of primary materials in other manufacturing processes. This option would support energy from waste, which would create an economic opportunity to help offset the costs of energy consumption. In addition, there is also likely to be a positive benefit for the local economy through employment.
13.	+ -	+ -	+ -	✓	✓		✓	Effects on local communities would be dependent on whether new facilities are provided and where they are located. There is the possibility for improved local access to recycling facilities, which would be positive. Conversely, there may be negative impacts should the sites be located in places which have an effect on the local economy or facilities. New jobs would be generated at new facilities supported by this option.
14.	? 0	? 0	? 0	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Recreation can be impacted by waste management depending on its location and interference with pedestrian Rights of Way given that during the operational stages of development there would be no access. This would be location specific however and therefore any impacts for this option are deemed uncertain.

15.	+ -	+ -	+ -	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective However, some benefits would be observed as the option would limit landfill and incineration, which may have a number of amenity impacts. There may be negative impacts on health and well-being as a result of waste processing in relation to the proximity of processing facilities to health receptors and the type of processing taking place. Particular effects to consider would be odour, noise and associated traffic movements.
16.	? 0	? 0	? 0	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective but any locations considered for the management of waste in this way would have to be considered in relation to flood risk and surface water management to avoid adverse effects.
17.	+	+	+	✓	✓		✓	There is no direct link between this policy and the objective to meet the needs of the population. However in some limited circumstances there may be community access to waste facilities further up the hierarchy but depends on location.

Option 2

The option would be similar to option 1 but would give stronger encouragement to dealing with waste further up the hierarchy by:

- Supporting in principle proposals which can demonstrate that the waste to be managed at the facility would be managed at the highest practicable level of the hierarchy appropriate to the type/s of waste to be dealt with;
- Supporting provision of new capacity for the landfill of biodegradable waste only in exceptional circumstances where it can be demonstrated that it is the only practicable management option for the waste to be managed and there is sufficient capacity available within or outside of the Plan area which could meet the need.
- Incineration of waste without energy recovery would only be supported for the small scale incineration of specialised waste arising in the area and where the scale of the development would mean that energy recovery is not viable.

In relation to inert waste, landfill would only supported where it would facilitate a high standard of quarry reclamation in accordance with agreed reclamation objectives, or the substantial improvement of derelict or degraded land to a condition where it can be returned to agricultural productivity.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. However, there may be impacts on biodiversity as a result of waste processing in relation to the proximity of processing facilities to biodiversity / geo-diversity assets and the type of processing taking place. There may be adverse effects caused by noise and disturbance to wildlife or loss of habitat. The scale of these impacts is location and waste management type dependent. The effects from this strategic policy are therefore identified as neutral / uncertain.
	0	0	0					
2.	?	?	?	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. However, there may be effects on water as a result of waste development commensurate to its scale and type of processing. Some waste management operations require use of water which may increase the demand for water and affect supply. Other considerations could be impacts from run-off and leachate, which may be more significant should they be located in a nitrate vulnerable zone or source protection zone. The scale of these impacts is location and waste management type dependent. The effects are therefore identified as both negative and uncertain.
	-	-	-					
3.	?	?	?	✓	✓	✓		The transportation of waste is usually undertaken by road. The effects of this strategic option would be dependent upon the locations for generation and processing of waste across the plan area which would determine the length of journeys. The effects are therefore considered uncertain.
4.	?	?	?	✓	✓	✓	✓	There may be impacts on air quality through emissions from the transportation of waste or as a by-product from waste processing, such as impacts from bio-aerosols from composting, or methane from landfill. However, processing waste higher up the hierarchy may also have positive effects (from reduced landfill through to processing in alternative ways which may reduce impacts on air quality). The scale of these impacts is specific to the location and waste management type, which would also be subject to external regulation where emissions are emitted. The effects are therefore considered uncertain and minor positive.
	+	+	+					
5.	-	-	-	✓		✓		Several effects may be experienced on soils/land due to waste management. The intention to manage waste as high up the hierarchy as possible may have positive implications on the sub-objective for recovering

	+	+	+					nutrient value from biodegradable waste, through composting for example, and recovering energy from waste would help to maximise the use the land efficiently (as it would offset the need for deriving energy from other sources which require land). In the long-term, this option also supports turning degraded land back into agriculturally productive land which is positive. Conversely, other forms of waste management higher up the waste hierarchy may result in some contamination of soils depending upon the type of processing due to leachate and/or spillage. There may also be significant negative impacts on land take given that locations will be required to processes all different types of waste. On balance, there are both positive and negative effects associated with this option.
6.	+ +	+ +	+ +	✓		✓		Treatment of waste higher up the waste hierarchy is likely to help encourage re-use and recycling within the plan area which would be positive for climate change through the reduction in materials required during and overall carbon footprint of product life-cycles. Techniques such as landfilling waste generate methane through allowing waste to degrade anaerobically, so there would be positive effects as landfill and incineration (which generates CO2) would be significantly less likely to be utilised. Overall, this approach should minimise adverse effects and predominantly have net benefit for climate change.
7.	0	0	0					There is no clear link between the policy and the objective to adapt to climate change.
8.	+ +	+ +	+ +	✓		✓		This option is likely to encourage waste to be processed in line with the waste hierarchy resulting in the need for fewer primary resources. The significance of this will be commensurate to the level of re-use and recycling of materials across the plan area, which is uncertain through this policy but is positively encouraged.
9.	+ +	+ +	+ +	✓		✓		This policy would directly encourage the effective management of waste and prioritise management as far up the hierarchy as possible but with a stronger emphasis on managing waste at the highest practicable level. This is likely to have significant positive effects for this objective. Options for waste management further down the hierarchy would only be considered should it be proved that they cannot be processed further up the hierarchy or exceptional circumstances can be demonstrated.
10.	? 0	? 0	? 0	✓			✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Impacts on the historic environment and heritage assets would be in connection to the location of waste treatment works and processing. This is not set out in this policy but is dependent upon the locations and type of waste management facility (indirect impact).
11.	? 0	? 0	? 0	✓			✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Impacts on the landscape would be in connection to the location of waste treatment works and processing. This is not set out in this policy but is dependent upon the locations and type of waste management facility (indirect effect). The landscapes that would be particularly vulnerable to waste management should it be visibly operational would be the AONB and National park which are both designated for their landscape value.
12.	+	+	+	✓		✓		This option is likely to have economic benefits associated with different waste management techniques and

	+ +	+ +	+ +					facilities. The re-use, recycling and composting of materials can be sold for alternative uses as well as reduce the costs now associated with landfill through taxation and use of primary materials in other manufacturing processes. This option would support energy from waste, which would create an economic opportunity to help offset the costs of energy consumption. In addition, there is also likely to be a positive benefit for the local economy through employment.
13.	+	+	+	✓	✓		✓	Effects on local communities would be dependent on whether new facilities are provided and where they are located. There is the possibility for improved local access to recycling facilities, which would be positive and jobs industries higher up the waste hierarchy would be generated. Conversely, there may be negative impacts should the sites be located in places which have an effect on the local economy, e.g. through affecting tourism.
	-	-	-					
14.	?	?	?	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Recreation can be impacted by waste management depending on its location and interference with Pedestrian Rights of Way or open success land given that during its operational stages there would be no access. This would be location specific however and therefore any impacts for this option are deemed uncertain.
	0	0	0					
15.	+ -	+ -	+ -	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. However, some benefits would be observed as the option would limit landfill and incineration, which may have a number of amenity impacts. There may be negative impacts on health and well-being as a result of waste processing in relation to the proximity of processing facilities and the type of processing taking place. Particular effects to consider would be odour, noise and associated traffic movements.
16.	?	?	?	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective but any locations considered for the management of waste in this way would have to consider its location in relation to flood risk and surface water management to avoid adverse effects.
	0	0	0					
17.	+	+	+	✓	✓		✓	The principle of managing waste further up the waste hierarchy may positively contribute towards a number of sub-objectives in relation to meeting the needs of the population including 'improving public access to facilities enabling sustainable waste management' (e.g. household waste recycling centres) and 'support community led waste management schemes'. It is considered that an emphasis on re-use, recycling, composting etc. would encourage more small scale community led schemes than would be the case if waste management processes at the lower tiers of the waste hierarchy such as landfill and incineration were supported.

Option 3

The option would provide support in principle for proposals for a range of waste management methods where it can be demonstrated that the facility would help to reduce reliance on landfill as a means of waste management.

Support in principle would also be provided for new landfill of waste where it can be demonstrated that the proposals would meet an unforeseen requirement for additional landfill capacity or it would facilitate a high standard of quarry reclamation in accordance with agreed reclamation objectives, or the substantial improvement of derelict or degraded land to a condition where it can be returned to agricultural productivity.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	? 0	? 0	? 0	✓	✓		✓	The principle of managing waste in alternative ways to landfill would not directly affect this objective. However, there may be impacts on biodiversity as a result of waste processing in relation to the proximity of processing facilities to biodiversity / geo-diversity receptors and the type of processing taking place. There may be adverse effects caused by noise and disturbance to wildlife or loss of habitat. The scale of these impacts is location and waste management type dependent. The effects from this strategic policy are therefore identified as neutral / uncertain.
2.	? -	? -	? -	✓	✓		✓	The principle of managing waste in alternative ways to landfill would not directly affect this objective. However, there may be effects on water as a result of waste development commensurate to its scale and type of processing. Some waste management operations require use of water which may increase the demand for water and affect supply. Other considerations could be impacts from run-off and leachate, which may be more significant should they be located in nitrate vulnerable zone or source protection zones. The scale of these impacts is location and waste management type dependent. The effects are therefore identified as both negative and uncertain.
3.	?	?	?	✓	✓	✓		The transportation of waste is usually undertaken by road. The effects of this strategic option would be dependent upon the locations for generation and processing of waste across the plan area to determine the length of journeys generated. The effects are therefore considered uncertain.

4.	? +	? +	? +	✓	✓	✓	✓	There may be impacts on air quality through emissions from the transportation of waste or as a by-product from waste processing, such as composting. The scale of these impacts is specific to the location and waste management type, which would also be subject to external regulation where emissions are emitted. Reducing reliance on landfill may reduce impacts on air quality in comparison to the baseline situation leading to a minor positive effect.
5.	- +	- +	- +	✓		✓		Several effects may be experienced on soils/land due to encouraging waste management to minimise landfill. This option would be more flexible and rely on waste managers to determine how to process waste but creates more uncertainty as to the effects which may come forward. It is likely that adverse effects on land take and from contamination would remain. Similarly to the other options however, this option also supports turning degraded land back into agriculturally productive land which is positive In the long-term. On balance, there are both positive and negative effects associated with this option.
6.	+	+	+	✓		✓		Treatment of waste in alternative ways to landfill may encourage re-use and recycling within the plan area which would be positive for climate change through the reduction in materials required and overall carbon footprint of product life-cycles.. By focusing on reducing landfill, this approach should minimise adverse effects arising from landfilling resulting in a net benefit for climate change in comparison to the baseline situation. However, although this option aims to discourage landfill, it does support in principle the provision of new landfill capacity in certain situations and would also indirectly provide support for other disposal and recovery technologies such as incineration, which are at the bottom of the waste hierarchy. For this reason it is considered that although minor benefits would result from the implementation of this option in comparison to the baseline situation, several other options would all result in greater positive effects in relation to this objective.
7.	0	0	0					There is no clear link between the policy and the objective to adapt to climate change.
8.	? -	? -	? -					It is not certain whether this option would minimise the use of resources as although landfill is avoided, it could be replaced by other waste management measures that are relatively low down on the waste hierarchy and do not 'close the loop' in relation to creating a circular economy for materials. Also, this option is less negative towards landfill than other options (so a minor negative is noted).
9.	? -	? -	? -					Although landfill is avoided, it could be replaced by other waste management measures that are relatively low down on the waste hierarchy.

10.	? 0	? 0	? 0	✓			✓	The principle of managing waste in alternative ways to landfill would not directly affect this objective. Impacts on the historic environment and heritage assets would be in connection to the location of waste treatment works and processing. This is not set out in this option but is dependent upon the locations and type of waste management facility (indirect effect).
11.	? 0	? 0	? 0	✓			✓	The principle of managing waste in alternative ways to landfill would not directly affect this objective. Impacts on the landscape would be in connection to the location of waste treatment works and processing. This is not set out in this option but is dependent upon the locations and type of waste management facility (indirect effect). The landscapes that would be particularly vulnerable to waste management should it be visibly operational would be the AONB and National park which are both designated for their landscape value.
12.	+ ?	+ ?	+ ?	✓		✓		This option is likely to have economic benefits associated with different waste management techniques. This option however, allows for more flexibility to choose the management technique as opposed to strictly encouraging waste processing according to the waste hierarchy. This may have economic benefits in reducing costs associated with implementing the other options, but may also reduce the opportunities for re-use, recycling and composting of materials which can be sold for alternative uses and use of primary materials in other manufacturing processes as this would be led by the waste industry/managers. The option would also however advocate landfill for unforeseen waste which may increase costs now associated with landfill through taxation. Opportunities for energy from waste, which would create an economic opportunity to help offset the costs of energy consumption, would be led via waste providers and may be sought only where there are significant benefits. There is still likely to be a positive benefit for the local economy through employment.
13.	+ -	+ -	+ -	✓	✓		✓	Effects on local communities would be dependent on whether new facilities are provided and where they are located. There is the possibility for improved local access to recycling facilities and the generation of new jobs, which would be positive. Conversely, there may be negative impacts should the sites be located in places which have an effect on the local tourism economy or facilities.
14.	? 0	? 0	? 0	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Recreation can be impacted by waste management depending on its location and interference with pedestrian Rights of Way or open access land given that during its operational stages there would be no access. This would be location specific however and therefore any impacts for this option are deemed uncertain.
15.	+ - --	+ - --	+ - --	✓	✓	✓	✓	The amenity impacts of landfill would be avoided under this option. However, the amenity impacts of other waste management types would not. These could range in severity from minor, to multiple concurrent impacts.

16.	? 0	? 0	? 0	✓	✓		✓	The principle of managing waste in alternative ways to landfill would not directly affect this objective but any locations considered for the management of waste in this way would have to consider its location in relation to flood risk and surface water management to avoid adverse effects.
17.	+	+	+	✓	✓		✓	The principle of managing waste in alternative ways to landfill may positively contribute towards a number of sub-objectives in relation to meeting the needs of the population including 'improving public access to facilities enabling sustainable waste management' (e.g. household waste recycling centres) and 'support community led waste management schemes'. It is considered that an emphasis on re-use, recycling, composting etc. would encourage more small scale community led schemes than would be the case if waste management processes at the lower tiers of the waste hierarchy such as landfill were supported.

Proposed alternative option 4: (Or) **[add option text]** This option would give support in principle to proposals which enable the re-use, recycling and composting of waste and would support the principle of recovery of waste where it can be demonstrated that it is not practicable to manage the waste further up the hierarchy.

Provision of new capacity for the landfill of biodegradable waste would only be supported where it can be demonstrated that it is not practicable to manage the waste further up the hierarchy and there is insufficient landfill capacity in the area to meet identified needs. Incineration of waste would only be supported if there are plans to use the heat generated.

In relation to inert waste, landfill would only be supported where it would facilitate a high standard of quarry reclamation in accordance with agreed reclamation objectives, or the substantial improvement of derelict or degraded land to a condition where it can be returned to agricultural productivity.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	? 0	? 0	? 0	✓	✓		✓	Assessment as option 1.
2.	? -	? -	? -	✓	✓		✓	Assessment as option 1.
3.	?	?	?					Assessment as option 1.
4.	?	?	?	✓	✓	✓		Assessment as option 1.

5.	- +	- +	- +	✓	✓	✓	✓	Assessment as option 1.
6.	+	+	+	✓		✓		Treatment of waste higher up the waste hierarchy is likely to help encourage re-use and recycling within the plan area which would be positive for climate change through the reduction in materials consumed (as materials are cycled back into the economy). This would lead to a reduction in the overall carbon footprint of the local economy. As this option would only support provision of new capacity for the landfill of biodegradable waste where it can be demonstrated that it is not practicable to manage the waste further up the waste hierarchy, and would only support the incineration of waste where it can be utilised for heat, it is considered that this approach is likely to minimise adverse effects and predominantly have net benefit for climate change.
7.	0	0	0					Assessment as option 1.
8.	+	+	+	✓		✓		Assessment as option 1.
9.	+ +	+ +	+ +	✓		✓		This policy would directly encourage the effective management of waste and prioritise management as far up the hierarchy as possible but with a stronger emphasis on managing waste at the highest practicable level. This is likely to have significant positive effects for this objective. Options for waste management further down the hierarchy would only be considered should it be demonstrated that it cannot be processed further up the hierarchy or, in the case of incineration, if it can be demonstrated that there are plans to utilise the heat generated.
10.	? 0	? 0	? 0	✓			✓	Assessment as option 1.
11.	? 0	? 0	? 0	✓			✓	Assessment as option 1.
12.	+ +	+ +	+ +	✓		✓		This option is likely to have economic benefits associated with different waste management techniques. The re-use, recycling and composting of materials can produce new products of value that can be sold, while managing waste higher up the waste hierarchy will reduce the costs now associated with landfill through taxation. This option would also support the utilisation of heat from waste incineration, which would create an economic opportunity to help offset the costs of energy consumption. In addition, there is also likely to be a positive benefit for the local economy through employment in waste management processes that can be more labour intensive than landfill.

13.	+ - 	+ -	+ -	✓	✓		✓	Effects on local communities would be dependent on whether new facilities are provided and where they are located. There is the possibility for improved local access to recycling facilities, which would be positive. In addition, some communities may benefit from the heat provided from incineration / energy from waste. Conversely, there may be negative impacts should the sites be located in places which have an effect on the local economy or facilities.
14.	? 0	? 0	? 0	✓	✓		✓	Assessment as option 1.
15.	+ -	+ -	+ -	✓	✓		✓	Assessment as option 1.
16.	? 0	? 0	? 0	✓	✓		✓	Assessment as option 1.
17.	+	+	+	✓	✓		✓	Assessment as option 1.

Proposed alternative option 5: (Or)

This option would be similar to Option 4 but would give stronger encouragement to dealing with waste further up the hierarchy by:

- Supporting in principle proposals which can demonstrate that the waste to be managed at the facility would be managed at the highest practicable level of the hierarchy appropriate to the type/s of waste to be dealt with.
- Supporting provision of new capacity for the landfill of bio-degradable waste only in exceptional circumstances where it can be demonstrated that it is the only practicable management option for the waste to be managed and there is insufficient capacity available within or outside the Plan area which could reasonably meet the need. **Incineration of waste would only be supported if there are plans to use the heat generated.**

- In relation to inert waste, landfill would only be supported where it would facilitate a high standard of quarry reclamation in accordance with agreed reclamation objectives, or the substantial improvement of derelict or degraded land to a condition where it can be returned to agricultural productivity or other beneficial use.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	? 0	? 0	? 0	✓	✓		✓	Assessment as option 4.
2.	? 0	? 0	? 0					Assessment as option 4.
3.	?	?	?	✓	✓		✓	Assessment as option 4.
4.	? +	? +	? +					Assessment as option 4.

5.	- +	- +	- +	✓	✓	✓		Assessment as option 4.
6.	+ +	+ +	+ +	✓	✓	✓	✓	Treatment of waste at the highest practicable level in the waste hierarchy is likely to strongly encourage re-use and recycling within the plan area which would be positive for climate change through the reduction in materials consumed (as materials are cycled back into the economy). This would lead to a reduction in the overall carbon footprint of the local economy. In addition, different waste management techniques may have positive or negative effects on greenhouse gas production (such as methane through an increase via biodegrading materials or decrease through anaerobic digestion). As this option would only support provision of new capacity for the landfill of biodegradable waste where it can be demonstrated that that it is the only practicable management option for the waste to be managed and there is insufficient capacity available within or outside the Plan area which could reasonably meet the need, and would only support the incineration of waste where it can be utilised for heat, it is considered that this approach is likely to minimise adverse effects and predominantly have net benefit for climate change.
7.	0	0	0					Assessment as option 4.
8.	+ +	+ +	+ +	✓		✓		Assessment as option 4.
9.	+ +	+ +	+ +					This option would directly encourage the effective management of waste and prioritise management as far up the hierarchy as possible but with a stronger emphasis on managing waste at the highest practicable level. This is likely to have significant positive effects for this objective. Options for waste management further down the hierarchy would only be considered should it be proven that it cannot be processed further up the hierarchy or demonstrated in exceptional circumstances. In addition, the fact that <u>incineration of waste would only be supported if there are plans to use the heat generated would also ensure that residual wastes would be managed in a way that is higher up the waste hierarchy than incineration on its own.</u>
10.	? 0	? 0	? 0	✓		✓		Assessment as option 4.
11.	? 0	? 0	? 0					Assessment as option 4.

12.	+ +	+ +	+ +	✓		✓		This option is likely to have economic benefits associated with different waste management techniques and facilities. The re-use, recycling and composting of materials can be sold for alternative uses as well as reduce the costs now associated with landfill through taxation. This option would support energy from waste, and put that energy to good use, which would create an economic opportunity to help offset the costs of energy consumption. In addition, there is also likely to be a positive benefit for the local economy through employment.
13.	+ -	+ -	+ -	✓		✓		Effects on local communities would be dependent on whether new facilities are provided and where they are located. There is the possibility for improved local access to recycling facilities, which would be positive. In addition, some communities may benefit from the heat provided from incineration / energy from waste. Conversely, there may be negative impacts should the sites be located in places which have an effect on the local economy e.g. through affecting tourism.
14.	? 0	? 0	? 0	✓			✓	Assessment as option 4.
15.	? 0	? 0	? 0					Assessment as option 4.
16.	+ -	+ -	+ -	✓			✓	Assessment as option 4.
17.	+	+	+					Assessment as option 4.

Proposed alternative option 6: (Or) This option would provide support in principle for facilities which enable re-use, recycling and composting of waste however facilities for incineration, energy recovery and disposal would not be supported.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA object	Impact / timescale	Type of effect	Analysis

	S	M	L	P	T	D	I	
1.	? +	? +	? +	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. However, there may be impacts on biodiversity as a result of waste processing in relation to the proximity of processing facilities to biodiversity / geo-diversity and the type of processing taking place, such as adverse effects caused by noise and disturbance to wildlife or loss of habitat. The scale of these impacts is location and waste management type dependent As this option would move waste to the higher tiers of the waste hierarchy, this could result in an indirect benefit for global biodiversity as it would support the move towards a more circular economy where waste is seen more as resource. This would, therefore reduce demand for new virgin materials to feed into product lifecycles with a net benefit to global biodiversity (as fewer resources such as wood, oils for plastics, minerals etc. will be demanded, the extraction of which is generally disruptive / damaging to biodiversity).
2.	- ?	- ?	- ?		✓		✓	The principle of managing waste at the upper end of the waste hierarchy would not directly affect this objective. However, there may be effects on water as a result of waste development commensurate to its scale and type of processing. Some waste management operations require use of water which may increase the demand for water and affect supply. Other considerations could be impacts from run-off and leachate, which may be more significant should they be located in nitrate vulnerable zone or source protection zones. The scale of these impacts is location and waste management type dependent. The effects are therefore identified as both negative and uncertain.
3.	-	-	-	✓			✓	There may still be residual wastes for which there exists little market for recycling, or neighbouring authorities may provide energy recovery or disposal facilities that may prove more able to handle waste streams than those in the plan area. This could drive demand for longer journeys.
4.	-	-	-	✓		✓	✓	There may still be residual wastes for which there exists little market for recycling, or neighbouring authorities may provide energy recovery or disposal facilities that may prove more able to handle waste streams than those in the plan area. This could drive demand for longer journeys which could lead to more air pollution from traffic.

	+	+	+					However, given that incinerators, energy from waste and landfill would not be supported, there are likely to be lower emissions from these processes in the plan area. These are likely to be relatively small scale benefits however, as modern facilities make a relatively small scale contribution to air quality[81].
5.	+	+	+	✓		✓	✓	The intention to manage waste high up the hierarchy would have positive implications on the sub-objective for recovering nutrient value from biodegradable waste, through composting for example. This option would also prevent the loss of land to landfill and incineration, though higher tiers of the waste hierarchy would also require land (however, these forms of development are likely to be more compatible with brownfield sites than landfill). Overall positive.
6.	+ + -	+ + -	+ + -	✓			✓	Managing waste at the higher tiers of the waste hierarchy is generally seen as very positive for climate change as the energy used in the lifecycle of recycled / re-used products is significantly lower than regular products. If, however, residual or other wastes need to travel further outside of the plan area to be processed then it may generate lengthier waste freight journeys with a higher carbon footprint.
7.	0	0	0					No clear link
8.	+ +	+ +	+ +	✓		✓		This option is likely to strongly support reduced resource use as it helps to promote the recycling and re-use of those resources.
9.	+ +	+ +	+ +	✓		✓		This option is likely to strongly support prioritising management of waste as high up the waste hierarchy as possible.
10.	? 0	? 0	? 0	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Impacts on the historic environment and heritage assets would be in connection to the location of waste treatment works and processing. This is not set out in this option but is dependent upon the locations and type of waste management facility. The net result is uncertain.
11.	? 0	? 0	? 0	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Impacts on the landscape would be in connection to the location of waste treatment works and processing (indirectly supported). This is not set out in this option but is dependent upon the locations and type of waste management facility.
12.	+ +	+ +	+ +	✓			✓	This option would help create a more circular economy where value would be derived from waste, opening up

[81] See House of Commons, 2011. Energy form Waste and Incineration [URL: www.parliament.uk/briefing-papers/SN05958.pdf]

								new business opportunities.
13.	+ + -	+ + -	+ + -	✓			✓	This option would have jobs benefits through the support for a circular economy where more waste is recycled and re-used. However, jobs may also be lost in the energy from waste / incineration industry. Communities would, presumably, be less likely to benefit from the heat or electricity derived from energy from waste.
14.	0 ?	0 ?	0 ?	✓			✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Recreation can be impacted by waste management depending on its location, e.g. by interference with Rights of Way given that during its operational stages there would be no access. This would be location specific however and therefore any impacts for this option are deemed uncertain.
15.	+ - ?	+ - ?	+ - ?	✓		✓		Avoiding energy from waste, incineration and landfill would benefit wellbeing as any concerns (whether they are founded or unfounded) that are associated with these types of facilities would be avoided. However, recycling / re-use / and composting facilities may generate their own amenity concerns, such as noise pollution or bio-aerosols, the magnitude of which will be dependent on location.
16.	? 0	? 0	? 0	✓			✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective but any locations considered for the management of waste in this way would have to consider its location in relation to flood risk and surface water management to avoid adverse effects.
17.	+	+	+	✓			✓	The principle of managing waste further up the waste hierarchy may positively contribute towards a number of sub-objectives in relation to meeting the needs of the population including 'improving public access to facilities enabling sustainable waste management' (e.g. household waste recycling centres) and 'support community led waste management schemes'. It is considered that an emphasis on re-use, recycling, composting etc. would encourage more small-scale community led schemes than would be the case if waste management processes at the lower tiers of the waste hierarchy such as landfill and incineration were supported

Proposed alternative option 7: (Or)

This option would help move waste up the waste hierarchy by:

- Supporting in principle proposals which enable the re-use, recycling and composting of waste and supporting the principle of recovery of waste where it can be demonstrated that it is not practicable to manage the waste further up the hierarchy.

- Supporting provision of new capacity for the landfill of biodegradable waste only where it can be demonstrated that it is not practicable to manage the waste further up the hierarchy and there is insufficient landfill capacity in the area to meet identified needs. Incineration of waste would only be supported where no other methods are possible.

- In relation to inert waste, landfill would only be supported where it would facilitate a high standard of quarry reclamation in accordance with agreed reclamation objectives, or the substantial improvement of derelict or degraded land to a condition where it can be returned to agricultural productivity or other beneficial use.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. However, there may be impacts on biodiversity as a result of waste processing in relation to the proximity of processing facilities to bio-diversity / geo-diversity assets and the type of processing taking place. There may be adverse effects caused by noise and disturbance to wildlife or loss of habitat. The scale of these impacts is location and waste management type dependent. Any facilities would also be subject to additional policies specific to biodiversity. The effects from this strategic policy are therefore identified as neutral / uncertain.
	0	0	0					
2.	?	?	?	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. However, there may be effects on water as a result of waste development commensurate to its scale and type of processing. Some waste management operations require use of water which may increase the demand for

	-	-	-					water and affect supply. Other considerations could be impacts from run-off and leachate, which may be more significant should they be located in a nitrate vulnerable zone or source protection zone. However, processing waste higher up the hierarchy may also have positive effects on water quality from reduced landfill. The scale of these impacts is location and waste management type dependent. The effects are therefore identified as both negative and uncertain.
3.	?	?	?	✓	✓	✓		The transportation of waste is usually undertaken by road. The effects of this strategic option would be dependent upon the locations for generation and processing of waste across the plan area to determine the length of journeys generated. The effects are therefore considered uncertain.
4.	-	-	-	✓	✓	✓	✓	There may be impacts on air quality through emissions from the transportation of waste or as a by-product from waste processing, such as composting or organic matter with landfill in terms of methane / bio-aerosols. However, processing waste higher up the hierarchy may also have positive effects from reduced landfill through processing in alternative ways which may reduce impacts on air quality. The scale of these impacts is specific to the location and waste management type, which would also be subject to external regulation where emissions are emitted. The effects are therefore considered uncertain.
	+	+	+					
5.	-	-	-	✓		✓		Several effects may be experienced on soils/land due to waste management. The intention to manage waste as high up the hierarchy as possible may have positive implications on the sub-objective for recovering nutrient value from biodegradable waste, through composting for example, and recovering energy from waste would help to maximise the use the land efficiently. In the long-term, this option also supports turning degraded land back into agriculturally productive land which is positive. Conversely, other forms of waste management may result in some contamination of soils depending upon the type of processing due to leachate and/or spillage. There may also be significant impacts on land take given that locations will be required to processes all different types of waste. On balance, there are both positive and negative effects associated with this option.
	+	+	+					
6.	+	+	+	✓		✓	✓	Treatment of waste higher up the waste hierarchy is likely to help encourage re-use and recycling within the plan area which would be positive for climate change through the reduction in materials required and overall carbon footprint of product life-cycles. As this option would only support provision of new capacity for the landfill of biodegradable waste where it can be demonstrated that it is not practicable to manage the waste further up the waste hierarchy, and only accepts incineration as a solution where other waste management measures are not possible it is considered that this approach is likely to minimise adverse effects and predominantly have net benefit for climate change.
7.	0	0	0					There is no clear link between the policy and the objective to adapt to climate change.
8.	+	+	+	✓		✓		This option is likely to encourage waste to be processed in line with the waste hierarchy resulting in the need for fewer primary resources. The significance of this will be commensurate to the level of re-use and recycling

								of materials across the plan area, which is uncertain through this policy but is positively encouraged.
9.	+	+	+	✓		✓		This policy would directly encourage the effective management of waste and prioritise management higher up the hierarchy. The option does, however, support the higher tiers of the hierarchy 'as a whole', rather than the highest practical tier. Options for waste management further down the hierarchy would only be considered should it be proved that it cannot be processed further up the hierarchy. Incineration is only supported where no other methods are possible.
10.	? 0	? 0	? 0	✓			✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Impacts on the historic environment and heritage assets would be in connection to the location of waste treatment works and processing (indirect effect). This is not set out in this policy but is dependent upon the locations and type of waste management facility.
11.	? 0	? 0	? 0	✓			✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Impacts on the landscape would be in connection to the location of waste treatment works and processing. This is not set out in this option but is dependent upon the locations and type of waste management facility (indirect effect). The landscapes that would be particularly vulnerable to waste management should it be visibly operational would be the AONB and National park which are both designated for their landscape value.
12.	+	+	+	✓		✓		This option is likely to have economic benefits associated with different waste management techniques. The re-use, recycling and composting of materials can be sold for alternative uses as well as reduce the costs now associated with landfill through taxation and use of primary materials in other manufacturing processes. This option would support energy from waste, which would create an economic opportunity to help offset the costs of energy consumption. In addition, there is also likely to be a positive benefit for the local economy through employment.
13.	+ -	+ -	+ -	✓	✓		✓	Effects on local communities would be dependent on whether new facilities are provided and where they are located. There is the possibility for improved local access to recycling facilities, which would be positive. Conversely, there may be negative impacts should the sites be located in places which have an effect on the local economy / tourist economy or facilities.
14.	? 0	? 0	? 0	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Recreation can be impacted by waste management depending on its location and interference with pedestrian Rights of Way given that during its operational stages there would be no access. This would be location specific however and therefore any impacts for this option are deemed uncertain.

15.	0 -	0 -	0 -	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. However, there may be impacts on health and well-being as a result of waste processing in relation to the proximity of processing facilities to human receptors and the type of processing taking place. Particular effects to consider would be odour, noise and associated traffic movements. As this option provides a steer away from landfill and incineration in particular, positive benefits are noted. However other amenity impacts from other waste management facilities would be negative.
16.	? 0	? 0	? 0	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective but any locations considered for the management of waste in this way would have to consider its location in relation to flood risk and surface water management to avoid adverse effects.
17.	+	+	+	✓	✓		✓	The principle of managing waste further up the waste hierarchy may positively contribute towards a number of sub-objectives in relation to meeting the needs of the population including 'improving public access to facilities enabling sustainable waste management' (e.g. household waste recycling centres) and 'support community led waste management schemes'. It is considered that an emphasis on re-use, recycling, composting etc. would encourage more small scale community led schemes than would be the case if waste management processes at the lower tiers of the waste hierarchy such as landfill and incineration were supported.

Proposed alternative option 8: (Or) [add option text]The option would be similar to proposed alternative option 7 but would give stronger encouragement to dealing with waste further up the hierarchy by:

- Supporting in principle proposals which can demonstrate that the waste to be managed at the facility would be managed at the highest practicable level of the hierarchy appropriate to the type/s of waste to be dealt with;
- Supporting provision of new capacity for the landfill of biodegradable waste only in exceptional circumstances where it can be demonstrated that it is the only practicable management option for the waste to be managed and there is insufficient capacity available within or outside of the Plan area which could reasonably meet the need.
- Incineration of waste would only be supported where no other methods are possible.
- In relation to inert waste, landfill would only be supported where it would facilitate a high standard of quarry reclamation in accordance with agreed reclamation objectives, or the substantial improvement of derelict or degraded land to a condition where it can be returned to agricultural productivity or other beneficial use.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. However, there may be impacts on biodiversity as a result of waste processing in relation to the proximity of processing facilities to biodiversity / geo-diversity receptors and the type of processing taking place. There may be adverse effects caused by noise and disturbance to wildlife or loss of habitat. The scale of these impacts is location and waste management type dependent. The effects from this strategic policy are therefore identified as neutral / uncertain.
	0	0	0					
2.	?	?	?	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. However, there may be effects on water as a result of waste development commensurate to its scale and type of processing. Some waste management operations require use of water which may increase the demand for water and affect supply. Other considerations could be impacts from run-off and leachate, which may be more significant should they be located in a nitrate vulnerable zone or source protection zone. The scale of these impacts is location and waste management type dependent. The effects are therefore identified as both negative and uncertain.
	-	-	-					
3.	?	?	?	✓	✓	✓		The transportation of waste is usually undertaken by road. The effects of this strategic option would be dependent upon the locations for generation and processing of waste across the plan area to determine the length of journeys generated. The effects are therefore considered uncertain.
4.	?	?	?	✓	✓	✓	✓	There may be impacts on air quality through emissions from the transportation of waste or as a by-product from waste processing, such as composting or organic matter with landfill in terms of methane. However, processing waste higher up the hierarchy may also have positive effects from reduced landfill through to processing in alternative ways which may reduce impacts on air quality. The scale of these impacts is specific to the location and waste management type, which would also be subject to external regulation where emissions are emitted. The effects are therefore considered uncertain and minor positive.
	+	+	+					
5.	-	-	-	✓		✓		Several effects may be experienced on soils/land due to waste management. The intention to manage waste as high up the hierarchy as possible may have positive implications on the sub-objective for recovering nutrient value from biodegradable waste, through composting for example, and recovering energy from waste would help to maximise the use of land efficiently. In the long-term, this option also supports turning degraded land back into agriculturally productive land which is positive. Conversely, other forms of waste management may result in some contamination of soils depending upon the
	+	+	+					

								type of processing due to leachate and/or spillage. There may also be significant impacts on land take given that locations will be required to processes all different types of waste. On balance, there are both positive and negative effects associated with this option.
6.	+ +	+ +	+ +	✓		✓	✓	Treatment of waste higher up the waste hierarchy is likely to help encourage re-use and recycling within the plan area which would be positive for climate change through the reduction in materials required and overall carbon footprint of product life-cycles. This option gives strong support dealing with waste higher up the waste hierarchy so overall, this approach should minimise adverse effects and predominantly have net benefit for climate change.
7.	0	0	0					There is no clear link between the policy and the objective to adapt to climate change.
8.	+ +	+ +	+ +	✓		✓		This option is likely to strongly encourage waste to be processed in line with the waste hierarchy resulting in the need for fewer primary resources. The significance of this will be commensurate to the level of re-use and recycling of materials across the plan area, which though uncertain is positively and strongly encouraged by this option.
9.	+ +	+ +	+ +	✓		✓		This policy would directly encourage the effective management of waste and prioritise management as far up the hierarchy as possible but with a stronger emphasis on managing waste at the highest practicable level. This is likely to have significant positive effects for this objective. Options for waste management further down the hierarchy would only be considered should it be proved that it cannot be processed further up the hierarchy or demonstrated in exceptional circumstances.
10.	? 0	? 0	? 0	✓			✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Impacts on the historic environment and heritage assets would be in connection to the location of waste treatment works and processing. This is not set out in this option but is dependent upon the locations and type of waste management facility (indirect effect).
11.	? 0	? 0	? 0	✓			✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Impacts on the landscape would be in connection to the location of waste treatment works and processing. This is not set out in this policy but is dependent upon the locations and type of waste management facility. The landscapes that would be particularly vulnerable to waste management should it be visibly operational would be the AONB and National park which are both designated for their landscape value.
12.	+	+ +	+ +	✓		✓		This option is likely to have economic benefits associated with different waste management techniques and facilities. The re-use, recycling and composting of materials can be sold for alternative uses as well as reduce the costs now associated with landfill through taxation and use of primary materials in other manufacturing processes. Strong encouragement to deal with waste as far up the waste hierarchy as possible is likely to

								lead to opportunities for economic development through business innovation in green technologies for waste management[82] (and associated job creation). . In addition, there is also likely to be a positive benefit for the local economy through employment.
13.	+ -	+ -	+ -	✓	✓		✓	Effects on local communities would be dependent on whether new facilities are provided and where they are located. There is the possibility for improved local access to recycling facilities, which would be positive. Conversely, there may be negative impacts should the sites be located in places which have an effect on the local economy or facilities. Communities would also benefit from jobs associated with this option.
14.	? 0	? 0	? 0	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Recreation can be impacted by waste management depending on its location and interference with pedestrian Rights of Way or open access land given that during its operational stages there would be no access. This would be location specific however and therefore any impacts for this option are deemed uncertain.
15.	+ -	+ -	+ -	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. However, there may be impacts on health and well-being as a result of waste processing in relation to the proximity of processing facilities and the type of processing taking place. Particular effects to consider would be odour, noise and associated traffic movements. The steer away from incineration and landfill would be positive in terms of amenity impacts.
16.	? 0	? 0	? 0	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective but any locations considered for the management of waste in this way would have to consider its location in relation to flood risk and surface water management to avoid adverse effects.
17.	+	+	+	✓	✓		✓	The principle of managing waste further up the waste hierarchy may positively contribute towards a number of sub-objectives in relation to meeting the needs of the population including 'improving public access to facilities enabling sustainable waste management' (e.g. household waste recycling centres) and 'support community led waste management schemes'. It is considered that an emphasis on re-use, recycling, composting etc. would encourage more small scale community led schemes than would be the case if waste management processes at the lower tiers of the waste hierarchy such as landfill and incineration were supported.

[82] Office of the Deputy Prime Minister. Full Regulatory Impact Assessment for Planning Policy Statement 10 Planning for Sustainable Waste Management. Available at: http://collections.europarchive.org/tna/20060515072154/odpm.gov.uk/pub/837/FullRegulatoryImpactAssessmentForPPS10PDF157Kb_id1143837.pdf .

Proposed alternative option 9: (Or)

This option would provide support in principle for proposals for a range of waste management methods where it can be demonstrated that the facility would help to reduce reliance on landfill as a means of waste management. Incineration of waste would only be supported where no other methods are possible.

Support in principle would also be provided for new landfill of waste where it can be demonstrated that the proposal would meet a need for additional landfill capacity not identified at the time of preparation of the Plan, or it would facilitate a high standard of quarry reclamation in accordance with agreed reclamation objectives, or the substantial improvement of derelict or degraded land to a condition where it can be returned to agricultural productivity or other beneficial use.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	? 0	? 0	? 0	✓	✓		✓	The principle of managing waste in alternative ways to landfill would not directly affect this objective. However, there may be impacts on biodiversity as a result of waste processing in relation to the proximity of processing facilities to biodiversity / geo-diversity receptors and the type of processing taking place. There may be adverse effects caused by noise and disturbance to wildlife or loss of habitat. The scale of these impacts is location and waste management type dependent. The effects from this strategic policy are therefore identified as neutral / uncertain.
2.	? -	? -	? -	✓	✓		✓	The principle of managing waste in alternative ways to landfill would not directly affect this objective. However, there may be effects on water as a result of waste development commensurate to its scale and type of processing. Some waste management operations require use of water which may increase the demand for water and affect supply. Other considerations could be impacts from run-off and leachate, which may be more significant should they be located in a nitrate vulnerable zone or source protection zone. The scale of these impacts is location and waste management type dependent. The effects are therefore identified as both negative and uncertain.
3.	?	?	?	✓	✓	✓		The transportation of waste is usually undertaken by road. The effects of this strategic option would be

								dependent upon the locations for generation and processing of waste across the plan area to determine the length of journeys generated. The effects are therefore considered uncertain.
4.	? +	? +	? +	✓	✓	✓	✓	There may be impacts on air quality through emissions from the transportation of waste or as a by-product from waste processing, such as bio-aerosols from composting or methane / bio-aerosols from landfill. The scale of these impacts is specific to the location and waste management type, which would also be subject to external regulation where emissions are emitted. Reducing reliance on landfill and only supporting incineration where no other methods are possible may reduce many of these impacts on air quality. . The effects from this option are therefore considered uncertain and minor positive.
5.	- +	- +	- +	✓		✓		Similarly to a number of other options several effects may be experienced on soils/land due to encouraging waste management to minimise landfill. This option would be more flexible in terms of the methods that it would allow to come forward through planning applications to manage waste, but creates more uncertainty as to the effects which may arise Therefore it is likely that a range of adverse effects on land take and from contamination would be possible. Similarly to the other options however, this option also supports turning degraded land back into agriculturally productive land which is positive in the long-term. On balance, there are both positive and negative effects associated with this option.
6.	+	+	+	✓		✓	✓	Treatment of waste in alternative ways to landfill may encourage re-use and recycling within the plan area which would be positive for climate change through the reduction in the materials required and overall carbon footprint of product life-cycles. By focusing on reducing landfill and only supporting incineration where no other methods are possible, this approach should minimise adverse effects and predominantly have net benefit for climate change in comparison to the baseline situation. However, although this option aims to discourage landfill, it does support in principle the provision of new landfill capacity in certain situations and does not specifically prioritise those waste treatment processes at the top of the waste hierarchy. For this reason it is considered that although minor benefits would result from the implementation of this option in comparison to the baseline situation, several other options would all result in greater positive effects in relation to this objective.
7.	0	0	0					There is no clear link between the policy and the objective to adapt to climate change.
8.	+ ?	+ ?	+ ?	✓		✓		This option discourages disposal in the form of landfilling resulting in the need for fewer primary resources. The significance of this will be commensurate to the level of re-use and recycling of materials across the plan area, which is uncertain through this option given that it focuses on minimising landfill and incineration as opposed to processing waste as high up the waste hierarchy as possible.

9.	+	+	+	✓		✓		This option would discourage the use of landfill as a disposal method. In comparison to several other options this option offers more flexibility for determining which method of processing as alternative to landfill should be used. However, it does not strongly emphasise that this should be as far up the waste hierarchy as possible meaning that it could be less effective in sustainably managing waste. This option would also consider new landfill where requirements are unforeseen which could conflict with this objective should it not require an assessment of whether the waste could be treated in a more sustainable way. On balance, the net benefits from reducing landfill would still be positive (more so than the other iterations of this policy assessed under, for example, option 3 and 12, as incineration would also not be supported under this option) however it should be noted that several other options would be more effective in terms of prioritising waste management as high up the waste hierarchy as practicable.
10.	? 0	? 0	? 0	✓			✓	The principle of managing waste in alternative ways to landfill would not directly affect this objective. Impacts on the historic environment and heritage assets would be in connection to the location of waste treatment works and processing. This is not set out in this policy but is dependent upon the locations and type of waste management facility.
11.	? 0	? 0	? 0	✓			✓	The principle of managing waste in alternative ways to landfill would not directly affect this objective. Impacts on the landscape would be in connection to the location of waste treatment works and processing. This is not set out in this policy but is dependent upon the locations and type of waste management facility. The landscapes that would be particularly vulnerable to waste management should it be visible would be the AONB and National park which are both designated for their landscape value.
12.	+ ?	+ ?	+ ?	✓		✓		Like a number of other options this option is likely to have economic benefits associated with different waste management techniques. This option however, allows for more flexibility to choose the management techniques as opposed to strictly encouraging waste processing according to the waste hierarchy. This may have economic benefits in reducing costs associated with implementing the other options, but may also reduce the opportunities for re-use, recycling and composting of materials which can be sold for alternative uses and do little to reduce use of primary materials in other manufacturing processes. The option would also however advocate landfill for unforeseen waste which may increase costs now associated with landfill through taxation. Opportunities for energy from waste, which would create an economic opportunity to help offset the costs of energy consumption, may be sought only where there are significant benefits. There is still likely to be a positive benefit for the local economy through employment.
13.	+ -	+ -	+ -	✓	✓		✓	Effects on local communities would be dependent on whether new facilities are provided and where they are located. There is the possibility for improved local access to recycling facilities, which would be positive. Conversely, there may be negative impacts should the sites be located in places which have an effect on the local economy or facilities.

14.	? 0	? 0	? 0	✓	✓		✓	The principle of reducing reliance on landfill would not directly affect this objective. Recreation can be impacted by waste management depending on its location and interference with pedestrian Rights of Way or open access land given that during its operational stages there would be no access. This would be location specific however and therefore any impacts for this option are deemed uncertain.
15.	+ - -- ?	+ - -- ?	+ - -- ?	✓	✓	✓	✓	The amenity impacts of landfill and incineration would largely be avoided under this option (though the option may allow some in appropriate circumstances). However, the amenity impacts of other waste management types would not. These could range from minor to more significant amenity impacts.
16.	? 0	? 0	? 0	✓	✓		✓	The principle of managing waste in alternative ways to landfill would not directly affect this objective but any locations considered for the management of waste in this way would have to consider its location in relation to flood risk and surface water management to avoid adverse effects.
17.	+	+	+	✓	✓		✓	The principle of managing waste in alternative ways to landfill may positively contribute towards a number of sub-objectives in relation to meeting the needs of the population including 'improving public access to facilities enabling sustainable waste management' (e.g. household waste recycling centres) and 'support community led waste management schemes'. It is considered that an emphasis on re-use, recycling, composting etc. would encourage more small scale community led schemes than would be the case if waste management processes at the lower tiers of the waste hierarchy such as landfill were supported.

Proposed alternative option 10: (Or)

This option would help move waste up the waste hierarchy by:

- Supporting in principle proposals which enable the re-use, recycling and composting of waste and supporting the principle of recovery of waste where it can be demonstrated that it is not practicable to manage the waste further up the hierarchy.

- Landfill of biodegradable waste would not be supported. Incineration of waste without energy recovery would only be supported for the small scale incineration of specialised wastes arising in the area and where the scale of the development would mean that energy recovery is not viable.

- In relation to inert waste, landfill would only be supported where it would facilitate a high standard of quarry reclamation in accordance with agreed reclamation objectives, or the substantial improvement of derelict or degraded land to a condition where it can be returned to agricultural productivity or other beneficial use.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. However, there may be impacts on biodiversity as a result of waste processing in relation to the proximity of processing facilities to biodiversity / geo-diversity assets and the type of processing taking place. There may be adverse effects caused by noise and disturbance to wildlife or loss of habitat. The scale of these impacts is location and waste management type dependent. Any facilities would also be subject to additional policies specific to biodiversity. The effects from this strategic policy are therefore identified as neutral / uncertain.
	0	0	0					
2.	?	?	?	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. However, there may be effects on water as a result of waste development commensurate to its scale and type of processing. Some waste management operations require use of water which may increase the demand for

	-	-	-					water and affect supply. Other considerations could be impacts from run-off and leachate, which may be more significant should they be located in a nitrate vulnerable zone or source protection zone. However, processing waste higher up the hierarchy may also have positive effects on quality from reduced landfill. The scale of these impacts is location and waste management type dependent. The effects are therefore identified as both negative and uncertain.
3.	?	?	?	✓	✓	✓		The transportation of waste is usually undertaken by road. The effects of this strategic option would be dependent upon the locations for generation and processing of waste across the plan area to determine the length of journeys generated. The effects are therefore considered uncertain.
4.	-	-	-	✓	✓	✓	✓	There may be impacts on air quality through emissions from the transportation of waste or as a by-product from waste processing, such as composting (bio-aerosols) or landfill in terms of methane / bio-aerosols. However, processing waste higher up the hierarchy may also have positive effects from reduced landfill through processing in alternative ways which may reduce impacts on air quality. The scale of these impacts is specific to the location and waste management type, which would also be subject to external regulation where emissions are emitted. The effects are therefore considered uncertain.
	+	+	+					
5.	-	-	-	✓		✓		Several effects may be experienced on soils/land due to waste management. The intention to manage waste as high up the hierarchy as possible may have positive implications on the sub-objective for recovering nutrient value from biodegradable waste, through composting for example, and recovering energy from waste would help to maximise the use the land efficiently. In the long-term, this option also supports turning degraded land back into agriculturally productive land which is positive. Conversely, other forms of waste management may result in some contamination of soils depending upon the type of processing due to leachate and/or spillage. There may also be significant impacts on land take given that locations will be required to processes all different types of waste. On balance, there are both positive and negative effects associated with this option.
	+	+	+					
6.	+ +	+ +	+ +	✓		✓	✓	Treatment of waste higher up the waste hierarchy is likely to help encourage re-use and recycling within the plan area which would be positive for climate change through the reduction in materials required and overall carbon footprint of product lifecycles. As this option would not support the landfill of biodegradable waste, it is considered that this approach is likely to minimise adverse effects and predominantly have a strong net benefit for climate change.
7.	0	0	0					There is no clear link between the policy and the objective to adapt to climate change.
8.	+ +	+ +	+ +	✓		✓		This option is likely to encourage waste to be processed in line with the waste hierarchy resulting in the need for fewer primary resources. The significance of this will be commensurate to the level of re-use and recycling of materials across the plan area, which is uncertain through this policy but is positively encouraged.

9.	+ + +	+ + +	+ + +	✓		✓		This policy would directly encourage the effective management of waste and prioritise management higher up the hierarchy. The option does, however, support the higher tiers of the hierarchy 'as a whole', rather than the highest practicable tier. Landfill of biodegradable waste would not be supported however landfill of inert waste and incineration would be allowed under certain circumstances. It is therefore considered that this option would result in a minor to major positive contribution to the objective
10.	? 0	? 0	? 0	✓			✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Impacts on the historic environment and heritage assets would be in connection to the location of waste treatment works and processing. This is not set out in this option but is dependent upon the locations and type of waste management facility.
11.	? 0	? 0	? 0	✓			✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Impacts on the landscape would be in connection to the location of waste treatment works and processing. This is not set out in this option but is dependent upon the locations and type of waste management facility. The landscapes that would be particularly vulnerable to waste management should it be visibly operational would be the AONB and National park which are both designated for their landscape value.
12.	+ + +	+ + +	+ + +	✓		✓		This option is likely to have economic benefits associated with different waste management techniques. The re-use, recycling and composting of materials can be sold for alternative uses as well as reduce the costs now associated with landfill through taxation and use of primary materials in other manufacturing processes. This option would support energy from waste, which would create an economic opportunity to help offset the costs of energy consumption. In addition, there is also likely to be a positive benefit for the local economy through employment.
13.	+ -	+ -	+ -	✓	✓		✓	Effects on local communities would be dependent on whether new facilities are provided and where they are located. There is the possibility for improved local access to recycling facilities, which would be positive, and waste management development is likely to supply jobs. Conversely, there may be negative impacts should the sites be located in places which have an effect on the local economy or facilities.
14.	? 0	? 0	? 0	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Recreation can be impacted by waste management depending on its location and interference with pedestrian Rights of Way given that during its operational stages there would be no access. This would be location specific however and therefore any impacts for this option are deemed uncertain.

15.	+ - --	+ - --	+ - --	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. However, there may be impacts on health and well-being as a result of waste processing in relation to the proximity of processing facilities to human receptors and the type of processing taking place. Particular effects to consider would be odour, noise and associated traffic movements. As the option would not support landfill, though seemingly leaves the door open for energy from waste, there would be some positive effects but other effects which vary in negative significance (unless mitigated).
16.	? 0	? 0	? 0	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective but any locations considered for the management of waste in this way would have to consider its location in relation to flood risk and surface water management to avoid adverse effects.
17.	+	+	+	✓	✓		✓	The principle of managing waste further up the waste hierarchy may positively contribute towards a number of sub-objectives in relation to meeting the needs of the population including 'improving public access to facilities enabling sustainable waste management' (e.g. household waste recycling centres) and 'support community led waste management schemes'. It is considered that an emphasis on re-use, recycling, composting etc. would encourage more small scale community led schemes than would be the case if waste management processes at the lower tiers of the waste hierarchy such as landfill and incineration were supported.

Proposed alternative option 11: (Or) The option would be similar to proposed alternative option 10 but would give stronger encouragement to dealing with waste further up the hierarchy by:

- Supporting in principle proposals which can demonstrate that the waste to be managed at the facility would be managed at the highest practicable level of the hierarchy appropriate to the type/s of waste to be dealt with;
- Landfill of biodegradable waste would not be supported. Incineration of waste without energy recovery would only be supported for the small scale incineration of specialised wastes arising in the area and where the planning authority can be satisfied that the scale of the development would mean that energy recovery is not viable.
- In relation to inert waste, landfill would only be supported where it would facilitate a high standard of quarry reclamation in accordance with agreed reclamation objectives, or the substantial improvement of derelict or degraded land to a condition where it can be returned to agricultural productivity or other beneficial use.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. However, there may be impacts on biodiversity as a result of waste processing in relation to the proximity of processing to biodiversity / geodiversity facilities and the type of processing taking place. There may be adverse effects caused by noise and disturbance to wildlife or loss of habitat. The scale of these impacts is location and waste management type dependent. The effects from this strategic policy are therefore identified as neutral / uncertain.
	0	0	0					
2.	?	?	?	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. However, there may be effects on water as a result of waste development commensurate to its scale and type of processing. Some waste management operations require use of water which may increase the demand for water and affect supply. Other considerations could be impacts from run-off and leachate, which may be more significant should they be located in a nitrate vulnerable zone or source protection zone. As this option does not support landfill of biodegradable waste, impacts in relation to run-off and leachate are likely to be reduced. The scale of these impacts is location and waste management type dependent. The effects are therefore identified as both negative and uncertain.
	-	-	-					
3.	?	?	?	✓	✓	✓		The transportation of waste is usually undertaken by road. The effects of this strategic option would be dependent upon the locations for generation and processing of waste across the plan area to determine the length of journeys. The effects are therefore considered uncertain.
4.	?	?	?	✓	✓	✓	✓	There may be impacts on air quality through emissions from the transportation of waste or as a by-product from waste processing, such as composting. However, processing waste higher up the hierarchy may also have positive effects from reduced landfill (particularly through not supporting landfill of biodegradable waste which releases methane) through to processing in alternative ways which may reduce impacts on air quality. The scale of these impacts is specific to the location and waste management type, which would also be subject to external regulation where emissions are emitted. The effects are therefore considered uncertain and minor positive.
	+	+	+					
5.	-	-	-	✓		✓		Several effects may be experienced on soils/land due to waste management. The intention to manage waste as high up the hierarchy as possible and the lack of support for landfill of biodegradable waste may have

	+	+	+					positive implications on the sub-objective for recovering nutrient value from biodegradable waste, through composting for example, and recovering energy from waste would help to maximise the use of land efficiently. In the long-term, this option also supports turning degraded land back into agriculturally productive land which is positive. Conversely, other forms of waste management may result in some contamination of soils depending upon the type of processing due to leachate and/or spillage. There may also be significant impacts on land take given that locations will be required to processes all different types of waste. On balance, there are both positive and negative effects associated with this option.
6.	+ +	+ +	+ +	✓		✓		Treatment of waste higher up the waste hierarchy is likely to help encourage re-use and recycling within the plan area which would be positive for climate change through the reduction in materials required and overall carbon footprint of product life-cycles. As this option does not support the landfilling of biodegradable waste, this is also considered to have a positive impact in relation to minimising greenhouse gas emissions. Overall, this approach should minimise adverse effects and predominantly have net benefits for climate change.
7.	0	0	0					There is no clear link between the option and the objective to adapt to climate change.
8.	+ +	+ +	+ +	✓		✓		This option is likely to strongly encourage waste to be processed in line with the waste hierarchy resulting in the need for fewer primary resources. The significance of this will be commensurate to the level of re-use and recycling of materials across the plan area. While the magnitude of this effect is uncertain, this option is likely to strongly support resource minimisation.
9.	+ +	+ +	+ +	✓		✓		This policy would directly encourage the effective management of waste and prioritise management as far up the hierarchy as possible but with a stronger emphasis on managing waste at the highest practicable level. This is likely to have significant positive effects for this objective. Options for waste management further down the hierarchy would only be considered should it be proved that it cannot be processed further up the hierarchy or demonstrated in exceptional circumstances.
10.	? 0	? 0	? 0	✓			✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Impacts on the historic environment and heritage assets would be in connection to the location of waste treatment works and processing. This is not set out in this policy but is dependent upon the locations and type of waste management facility.
11.	? 0	? 0	? 0	✓			✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Impacts on the landscape would be in connection to the location of waste treatment works and processing. This is not set out in this policy but is dependent upon the locations and type of waste management facility. The landscapes that would be particularly vulnerable to waste management should it be visibly operational would be the AONB and National park which are both designated for their landscape value.
12.	+	+	+	✓		✓		This option is likely to have economic benefits associated with different waste management techniques and

		+	+					facilities. The re-use, recycling and composting of materials can be sold for alternative uses as well as reduce the costs now associated with landfill through taxation and use of primary materials in other manufacturing processes. Strong encouragement to deal with waste as far up the waste hierarchy as possible is likely to lead to opportunities for economic development through business innovation in green technologies for waste management[83] (and associated job creation). In addition, there is also likely to be a positive benefit for the local economy through employment.
13.	+	+	+	✓	✓		✓	Effects on local communities would be dependent on whether new facilities are provided and where they are located. There is the possibility for improved local access to recycling facilities, which would be positive. Conversely, there may be negative impacts should the sites be located in places which have an effect on the local economy or facilities. Communities would also benefit from jobs.
	-	-	-					
14.	?	?	?	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Recreation can be impacted by waste management depending on its location and interference with pedestrian Rights of Way or open access land given that during its operational stages there would be no access. This would be location specific however and therefore any impacts for this option are deemed uncertain.
	0	0	0					
15.	+	+	+	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. However, there may be impacts on health and well-being as a result of waste processing in relation to the proximity of processing facilities and the type of processing taking place. Particular effects to consider would be odour, noise and associated traffic movements. The amenity impacts of landfill and to a large degree incineration would largely be avoided under this option. However, the amenity impacts of other waste management types would not.
	-	-	-					
16.	?	?	?	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective but any locations considered for the management of waste in this way would have to consider its location in relation to flood risk and surface water management to avoid adverse effects.
	0	0	0					
17.	+	+	+	✓	✓		✓	The principle of managing waste further up the waste hierarchy may positively contribute towards a number of sub-objectives in relation to meeting the needs of the population including 'improving public access to facilities enabling sustainable waste management' (e.g. household waste recycling centres) and 'support community led waste management schemes'. It is considered that an emphasis on re-use, recycling, composting etc. would encourage more small scale community led schemes than would be the case if waste management processes at the lower tiers of the waste hierarchy such as landfill and incineration were supported.

[83] Office of the Deputy Prime Minister. Full Regulatory Impact Assessment for Planning Policy Statement 10 Planning for Sustainable Waste Management. Available at: http://collections.europarchive.org/tna/20060515072154/odpm.gov.uk/pub/837/FullRegulatoryImpactAssessmentForPPS10PDF157Kb_id1143837.pdf .

Proposed alternative option 12: (Or)

This option would provide support in principle for proposals for a range of waste management methods where it can be demonstrated that the facility would help to reduce reliance on landfill as a means of waste management. Landfill of biodegradable waste would not be supported.

Support in principle would also be provided for new landfill of waste where it can be demonstrated that the proposal would meet a need for additional landfill capacity not identified at the time of preparation of the Plan, or it would facilitate a high standard of quarry reclamation in accordance with agreed reclamation objectives, or the substantial improvement of derelict or degraded land to a condition where it can be returned to agricultural productivity or other beneficial use.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?	✓	✓		✓	The principle of managing waste in alternative ways to landfill would not directly affect this objective. However, there may be impacts on biodiversity as a result of waste processing in relation to the proximity of processing facilities to biodiversity / geo-diversity receptors and the type of processing taking place. There may be adverse effects caused by noise and disturbance to wildlife or loss of habitat. The scale of these impacts is location and waste management type dependent. The effects from this strategic policy are therefore identified as neutral / uncertain.
	0	0	0					
2.	?	?	?	✓	✓		✓	The principle of managing waste in alternative ways to landfill would not directly affect this objective. However, there may be effects on water as a result of waste development commensurate to its scale and type of processing. Some waste management operations require use of water which may increase the demand for water and affect supply. Other considerations could be impacts from run-off and leachate, which may be more significant should they be located in a nitrate vulnerable zone or source protection zone. As this option does not support landfill of biodegradable waste, impacts in relation to run-off and leachate are likely to be reduced. The scale of these impacts is location and waste management type dependent. The effects are therefore identified as both negative and uncertain.
	-	-	-					

3.	?	?	?	✓	✓	✓		The transportation of waste is usually undertaken by road. The effects of this strategic option would be dependent upon the locations for generation and processing of waste across the plan area to determine the length of journeys generated. The effects are therefore considered uncertain.
4.	? +	? +	? +	✓	✓	✓	✓	There may be impacts on air quality through emissions from the transportation of waste or as a by-product from waste processing, such as composting. Reducing reliance on landfill (particularly through not supporting landfill of biodegradable waste which releases methane and bio-aerosols) may reduce impacts on air quality. The scale of these impacts is specific to the location and waste management type, which would also be subject to external regulation where emissions are emitted. The effects from this option are therefore considered uncertain and minor positive.
5.	- +	- +	- +	✓		✓		Like a number of other options several effects may be experienced on soils/land due to the option's emphasis on minimising landfill rather than supporting other tiers of the waste hierarchy. This option would be more flexible in terms of the types of waste management that it would encourage, but creates more uncertainty as to the effects which may come forward. It is likely that adverse effects on land take and from contamination would remain. Similarly to the other options however, this option also supports turning degraded land back into agriculturally productive land which is positive in the long-term. On balance, there are both positive and negative effects associated with this option.
6.	+	+	+	✓		✓		Treatment of waste in alternative ways to landfill may encourage re-use and recycling within the plan area which would be positive for climate change through the reduction in materials required and overall carbon footprint of product life-cycles. By focusing on reducing landfill, particularly by not supporting the landfilling of biodegradable waste, this approach should minimise adverse effects arising from landfilling resulting in a net benefit for climate change in comparison to the baseline situation. However, although this option aims to discourage landfill, it does support in principle the provision of new landfill capacity in certain situations and could also indirectly provide support for other disposal and recovery technologies such as incineration, which are towards the bottom of the waste hierarchy. For this reason it is considered that although minor benefits would result from the implementation of this option in comparison to the baseline situation, options 1, 2, 7, 8, 10 and 11 would all result in greater positive effects in relation to this objective.

7.	0	0	0					There is no clear link between the policy and the objective to adapt to climate change.
8.	+	+	+	✓		✓		This option discourages disposal in the form of landfilling resulting in the need for fewer primary resources. The significance of this will be commensurate to the level of re-use and recycling of materials across the plan area, which is uncertain through this policy given that it focuses on minimising landfill as opposed to processing waste as high up the waste hierarchy as possible.
	?	?	?					
9.	+	+	+	✓		✓		This policy would discourage the use of landfill as a disposal method. In comparison to several other options this option offers more flexibility for determining which method of processing as alternative to landfill should be used. However, it does not strongly emphasise that this should be as far up the waste hierarchy as possible meaning that it could be less effective in sustainably managing waste. This option would also consider new landfill where requirements are unforeseen which could conflict with this objective should it not impose an assessment of whether the waste could be treated in a more sustainable way. On balance, the net benefits from reducing landfill would still be positive however it should be noted that other options, for example options 2, 8 and 11 would be more effective in terms of prioritising waste management as high up the waste hierarchy as practicable.
10.	?	?	?	✓			✓	The principle of managing waste in alternative ways to landfill would not directly affect this objective. Impacts on the historic environment and heritage assets would be in connection to the location of waste treatment works and processing. This is not set out in this policy but is dependent upon the locations and type of waste management facility.
	0	0	0					
11.	?	?	?	✓			✓	The principle of managing waste in alternative ways to landfill would not directly affect this objective. Impacts on the landscape would be in connection to the location of waste treatment works and processing. This is not set out in this policy but is dependent upon the locations and type of waste management facility. The landscapes that would be particularly vulnerable to waste management should it be visible would be the AONB and National park which are both designated for their landscape value.
	0	0	0					
12.	+	+	+	✓		✓		This option is likely to have economic benefits associated with different waste management techniques. This option however, allows for more flexibility to choose the management technique as opposed to strictly encouraging waste processing according to the waste hierarchy. This may have economic benefits in reducing costs associated with implementing the other options, but may also reduce the opportunities for re-use, recycling and composting of materials which can be sold for alternative uses as well as use of primary materials in other manufacturing processes. The option would also however advocate landfill for unforeseen waste which may increase costs now associated with landfill through taxation. Opportunities for energy from waste, which would create an economic opportunity to help offset the costs of energy consumption, may be sought only where there are significant benefits. There is still likely to be a positive benefit for the local economy through employment.
	?	?	?					

13.	+ -	+ -	+ -	✓	✓		✓	Effects on local communities would be dependent on whether new facilities are provided and where they are located. There is the possibility for improved local access to recycling facilities, which would be positive. Conversely, there may be negative impacts should the sites be located in places which have an effect on the local economy or facilities.
14.	? 0	? 0	? 0	✓	✓		✓	The principle of reducing reliance on landfill would not directly affect this objective. Recreation can be impacted by waste management depending on its location and interference with public Rights of Way or open access land given that during its operational stages there would be no access. This would be location specific however and therefore any impacts for this option are deemed uncertain.
15.	+ - -- ?	+ - --	+ - --	✓	✓	✓	✓	The amenity impacts of landfill would largely be avoided under this option. However, the amenity impacts of other waste management types would not. These could range from minor to more significant amenity impacts.
16.	? 0	? 0	? 0	✓	✓		✓	The principle of managing waste in alternative ways to landfill would not directly affect this objective but any locations considered for the management of waste in this way would have to consider its location in relation to flood risk and surface water management to avoid adverse effects.
17.	+	+	+	✓	✓		✓	The principle of managing waste in alternative ways to landfill may positively contribute towards a number of sub-objectives in relation to meeting the needs of the population including 'improving public access to facilities enabling sustainable waste management' (e.g. household waste recycling centres) and 'support community led waste management schemes'. It is considered that an emphasis on re-use, recycling, composting etc. would encourage more small scale community led schemes than would be the case if waste management processes at the lower tiers of the waste hierarchy such as landfill were supported.

Proposed alternative option 13: (Or) Under this option the level of carbon emissions expected to be produced would be a key consideration, whilst also aiming to manage waste as far up the waste hierarchy as possible

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	? +	? +	? +	✓	✓		✓	The principle of managing waste high up the waste hierarchy and considering carbon emissions would not directly affect this objective. However, there may be impacts on biodiversity as a result of waste processing in relation to the proximity of processing facilities to biodiversity / geo-diversity and the type of processing taking place, such as adverse effects caused by noise and disturbance to wildlife or loss of habitat. The scale of these impacts is location and waste management type dependent As this option would move waste to the higher tiers of the waste hierarchy, this could result in an indirect benefit for global biodiversity as it would support the move towards a more circular economy where waste is seen more as resource. This would, therefore reduce demand for new virgin materials to feed into product lifecycles with a net benefit to global biodiversity (as fewer resources such as wood, oils for plastics, minerals etc. will be demanded, the extraction of which is generally disruptive / damaging to biodiversity).
2.	- ?	- ?	- ?		✓		✓	The principle of managing waste at the upper end of the waste hierarchy and considering climate change would not directly affect this objective. However, there may be effects on water as a result of waste development commensurate to its scale and type of processing. Some waste management operations require use of water which may increase the demand for water and affect supply. Other considerations could be impacts from run-off and leachate, which may be more significant should they be located in nitrate vulnerable zone or source protection zones. The scale of these impacts is location and waste management type dependent. The effects are therefore identified as both negative and uncertain.
3.	+ +	+ +	+ +	✓			✓	As this objective considers carbon emissions as well as supporting the higher levels of the waste hierarchy it would help promote facilities that are either close to sources or waste or can be accessed via sustainable freight transit. This would reduce the amount of waste on the roads at any one time.

4.	+	+	+	✓			✓	As this objective considers carbon emissions as well as supporting the higher levels of the waste hierarchy it would help promote facilities that are either close to sources or waste or can be accessed via sustainable freight transit. This would reduce the amount of waste on the roads at any one time, thus reducing air pollution.
5.	+	+	+	✓		✓	✓	The intention to manage waste high up the hierarchy would have positive implications on the sub-objective for recovering nutrient value from biodegradable waste, through composting for example. This option would also help prevent the loss of land to lower levels of the waste hierarchy such as landfill and incineration, though higher tiers of the waste hierarchy would also require land (however, these forms of development are likely to be more compatible with brownfield sites). Overall positive.
6.	++	++	++	✓			✓	Managing waste at the higher tiers of the waste hierarchy is generally seen as very positive for climate change as the energy used in the lifecycle of recycled / re-used products is significantly lower than regular products. In addition, considering carbon emissions would help to ensure that short or sustainable freight journeys are undertaken, or that the buildings that process waste are sustainable. This would further reduce carbon emissions.
7.	0	0	0					No clear link
8.	++	++	++	✓		✓		This option is likely to strongly support reduced resource use as it helps to promote the recycling and re-use of those resources.
9.	++	++	++	✓		✓		This option is likely to strongly support prioritising management of waste as high up the waste hierarchy as possible.
10.	? 0	? 0	? 0	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Impacts on the historic environment and heritage assets would be in connection to the location of waste treatment works and processing which are ultimately supported through the option. While the detail of this is not set out in this option it is dependent upon the locations and type of waste management facility. The net result is uncertain.
11.	? 0	? 0	? 0	✓	✓		✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. Impacts on the landscape would be in connection to the location of waste treatment works and processing (indirectly supported). This is not set out in this option but is dependent upon the locations and type of waste management facility.
12.	++	++	++	✓			✓	This option would help create a more circular economy where value would be derived from waste, opening up new business opportunities.
13.	+	+	+	✓			✓	This option would have jobs benefits through the support for a circular economy where more waste is recycled

	+	+	+					and re-used. However, jobs may also be lost in the waste industries at the lower end of the waste hierarchy. Presumably, energy form waste would be seen as worthy of support (if the alternative was incineration without energy recovery) under this option. As a result some communities would be likely to benefit from the heat or electricity derived from energy from waste.
14.	0 ?	0 ?	0 ?	✓			✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective. However, recreation can be impacted by waste management depending on its location, e.g. by interference with Rights of Way given that during its operational stages there would be no access. This would be location specific however and therefore any impacts for this option are deemed uncertain.
15.	+ - ?	+ - ?	+ - ?	✓		✓		Avoiding the lower tiers of the waste hierarchy would benefit wellbeing as any concerns (whether they are founded or unfounded) that are associated with these types of facilities would be avoided. However, recycling / re-use / and composting facilities, or facilities such as energy from waste may generate their own amenity concerns, such as noise pollution or bio-aerosols, the magnitude of which will be dependent on location.
16.	? 0	? 0	? 0	✓			✓	The principle of managing waste high up the waste hierarchy would not directly affect this objective but any locations considered for the management of waste in this way would have to consider its location in relation to flood risk and surface water management to avoid adverse effects.
17.	+	+	+	✓			✓	The principle of managing waste further up the waste hierarchy may positively contribute towards a number of sub-objectives in relation to meeting the needs of the population including 'improving public access to facilities enabling sustainable waste management' (e.g. household waste recycling centres) and 'support community led waste management schemes'. It is considered that an emphasis on the higher tiers of the waste hierarchy would encourage more small-scale community led schemes than would be the case if waste management processes at the lower tiers of the waste hierarchy such as landfill and incineration were supported.

Proposed alternative option 14: (Or) **This option would support diverting all waste away from landfill to be dealt with by other waste management methods.**

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	- ?	- ?	- ?	✓			✓	The principle of diverting all waste from landfill would not directly affect this objective. However, there may be impacts on biodiversity as a result of waste processing in relation to the proximity of alternative processing facilities to biodiversity / geo-diversity and the type of processing taking place, such as adverse effects caused by noise and disturbance to wildlife or loss of habitat. The scale of these impacts is location and waste management type dependent If this option were to move waste to the higher tiers of the waste hierarchy, this could result in an indirect benefit for global biodiversity as it would support the move towards a more circular economy where waste is seen more as resource, preventing habitat loss through materials extraction etc. However, equally likely is that measures lower down the waste hierarchy but above landfill are supported. As such this may work against the circular economy in materials (e.g. if incineration or energy from waste were used).
2.	- ?	- ?	- ?		✓		✓	The principle of managing waste away from landfill would not directly affect this objective. However, there may be effects on water as a result of waste development commensurate to its scale and type of processing. Some waste management operations require use of water which may increase the demand for water and affect supply. Other considerations could be impacts from run-off and leachate, which may be more significant should they be located in nitrate vulnerable zone or source protection zones. The scale of these impacts is location and waste management type dependent. The effects are therefore identified as both negative and uncertain.
3.	0	0	0					Although individual waste management facilities can have greater or lesser effects on transport depending on location, it is felt that the balance of effects with this option would be fairly neutral.
4.	0	0	0					Although individual waste management facilities can have greater or lesser effects on transport depending on location, it is felt that the balance of effects with this option would be fairly neutral. Therefore the effects on air pollution would also be neutral.
5.	+ ?	+ ?	+ ?	✓		✓	✓	The intention to manage waste in ways other than landfill may have positive implications on the sub-objective for recovering nutrient value from biodegradable waste, through composting for example (though it is uncertain the extent to which composting would be utilised under this option). This option would also help prevent the loss of land to landfill, though higher tiers of the waste hierarchy too would also require land (however, these forms of development are likely to be more compatible with brownfield sites).

6.	+	+	+					Although not landfilling waste will, through preventing the anaerobic degradation of waste and subsequent release of methane, reduce greenhouse gas emissions, the effect will not be as great as other options which place an emphasis on higher tiers of the waste hierarchy.
7.	0	0	0					No clear link
8.	?	?	?					It is not certain whether this option would minimise the use of resources as although landfill is avoided, it could be replaced by other waste management measures that are relatively low down on the waste hierarchy and do not 'close the loop' in relation to creating a circular economy for materials.
9.	? -	? -	? -					Although landfill is avoided, it could be replaced by other waste management measures that are relatively low down on the waste hierarchy.
10.	? 0	? 0	? 0	✓	✓		✓	The principle of avoiding landfill would not directly affect this objective. Impacts on the historic environment and heritage assets would be in connection to the location of waste treatment works and processing which are ultimately supported through the option. While the detail of this is not set out in this option it is dependent upon the locations and type of waste management facility. The net result is uncertain.
11.	? 0	? 0	? 0	✓	✓		✓	The principle of avoiding landfill would not directly affect this objective. Impacts on the landscape would be in connection to the location of waste treatment works and processing (indirectly supported). This is not set out in this option but is dependent upon the locations and type of waste management facility.
12.	+	+	+	✓		✓		This option would allow considerable flexibility over future waste management while at the same time encouraging a shift away from landfill. This would be advantageous to a number of businesses. However, it would not achieve the additional benefits for business that could be achieved through managing waste higher up the waste hierarchy.
13.	+	+	+	✓			✓	This option would allow considerable flexibility over future waste management while at the same time encouraging a shift away from landfill. This would be advantageous to a number of businesses which would ultimately secure jobs. However, it would not achieve the additional benefits for business and jobs that could be achieved through managing waste higher up the waste hierarchy.
14.	0 ?	0 ?	0 ?	✓			✓	The principle of avoiding landfill would not directly affect this objective. However, recreation can be impacted by waste management depending on its location, e.g. by interference with Rights of Way given that during its operational stages there would be no access. This would be location specific however and therefore any impacts for this option are deemed uncertain.
15.	+ -	+ -	+ -	✓	✓	✓	✓	The amenity impacts of landfill would be avoided under this option. However, the amenity impacts of other waste management types would not. These could range in severity from minor, to multiple concurrent impacts.

	--	--	--					
16.	? 0	? 0	? 0	✓			✓	The principle of avoiding landfill would not directly affect this objective but any locations considered for the management of waste in this way would have to consider its location in relation to flood risk and surface water management to avoid adverse effects.
17.	+	+	+	✓	✓		✓	The principle of managing waste in alternative ways to landfill may positively contribute towards a number of sub-objectives in relation to meeting the needs of the population including 'improving public access to facilities enabling sustainable waste management' (e.g. household waste recycling centres) and 'support community led waste management schemes'. It is considered that an emphasis on re-use, recycling, composting etc. would encourage more small scale community led schemes than would be the case if waste management processes at the lower tiers of the waste hierarchy such as landfill were supported.

Summary of assessment

Most of the options put forward would encourage more sustainable waste management, to varying degrees, by managing waste higher up the waste hierarchy. This tends to result in a range of positive effects on the climate change, material resources and waste hierarchy objectives. There are also potential economic benefits, particularly where waste is managed higher up the waste hierarchy as this promotes a more 'circular economy' where waste is used as an economic resource. Other objectives often display more uncertain effects, as the waste facilities that might come on stream as a result of different options being pursued have effects that are dependent on location.

Key exceptions to this pattern of impacts include options 3, 12 and 14, which although they seek to avoid landfilling waste, do not offer specific support for higher levels of the waste hierarchy (option 9 is similar, though this includes a steer against incineration). As such it is considered that some of the benefits associated with other options, such as the promotion of a more circular materials economy, become more uncertain, and the capacity for amenity impacts becomes greater.

Recommendations

The SA considers that the most sustainable approach would be to pursue option 5. Option 13 could also be combined with option 5 or other options to maximise sustainability. .

Strategic Role of the Plan Area in the Management of Waste (id43)

Option 1
This option would seek to ensure that capacity is provided across the Plan area at a level sufficient to meet identified needs for waste arising in the area (i.e. a level that would allow net self-sufficiency to be achieved where practicable) whilst allowing for current known levels of imports to continue. This would exclude more specialised management needs including capacity for landfilling and/or treatment of hazardous waste and low level non-nuclear radioactive waste and other specialised provision which can only be met on a wider geographical basis.

Note: Adopting the principle of net self-sufficiency would require additional facilities needed to ensure total capacity is equivalent to total arisings

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	--	✓	✓	✓	✓	Although it is uncertain precisely where any facilities would be provided it is logical to conclude that under this option there would be effects on biodiversity, and potentially on geodiversity depending on location, and that over time these may become more significant due to the need for increased numbers of facilities. The types of sites, habitats or species to be affected is uncertain.
2.	-	-	--	✓		✓	✓	Although it is uncertain precisely where any facilities would be provided it is possible that under this option there would be effects on water quality. Assuming the environmental permitting regime works satisfactorily this should not be significant. Waste management operations also require use of water and under this option, increasing the amount of waste managed in the Plan area would increase the demand for water and therefore affect supply, thus resulting in a more significant negative over time. Whether or not there would be any effects on Nitrate Vulnerable Zones or Groundwater Source Protection Zones is not known.
3.	+ +	+ +	+ +	✓		✓		Becoming more self-sufficient in the management of waste could lead to less distance in transportation of waste, compared to it being transported to locations outside of the Plan area. This effect would, cumulatively improve over time.

4.	-	-	-	✓		✓		Although it is uncertain precisely where any facilities would be provided it is possible that under this option there would be effects on air quality due to the potential for increased numbers of facilities. Assuming the environmental permitting regime works satisfactorily this should not be at significant levels for health and the environment, though we have noted minor negative impacts in this assessment to record that there would be some deterioration of the baseline (albeit at safe levels). Emissions from transport would improve cumulatively.
	+	+	+ +					
5.	-	-	--	✓		✓		Within the Plan area this option would result in additional loss of soil and potentially loss of the best and most versatile agricultural land, depending on the location of any new facilities. This impact would be cumulative as the drive towards self-sufficiency consumes more land
6.	+	+	+	✓		✓		Becoming more self-sufficient in the management of waste would be likely to lead to less distance in transportation of waste and thus lower emission from vehicles, compared to it being transported to locations outside of the Plan area. However, the option may also result in a greater number of waste management facilities which may contribute to climate change, for instance through greater use of construction materials and land (though as waste output does not change the net effect of emissions is expected to be broadly neutral)[84]. There is considerable uncertainty in this assessment.
	-	-	-					
	?	?	?					
7.	-	-	-	✓			✓	Additional waste developments may have implications for adapting to climate change should these result in increased areas of hard surfacing (thus exacerbating run-off).
8.	--	--	--					As this option would be likely to mean the building of new waste facilities (and less taking advantage of larger facilities outside of the plan area, thus avoiding economies of scale) this option is likely to consume more resources.
9.	0	0	0	✓		✓	✓	This option would not directly lead to waste being managed further up the waste hierarchy. It may lead to increased awareness of waste management issues (through a greater presence of facilities) which may encourage greater rates of recycling amongst the public, though this effect is expected to be at a low level.
10.	-	-	--	✓	✓	✓	✓	Although it is uncertain precisely where any facilities would be provided it is possible that under this option there would be effects on cultural heritage depending on location, and that over time these may become more significant due to the need for increased numbers of facilities.
11.	-	-	--	✓	✓	✓	✓	Although it is uncertain precisely where any facilities would be provided it is logical to conclude that under this option there would be effects on the landscape and that over time these may become more significant due to the need for increased numbers of facilities. Whether or not protected landscapes would be affected would be uncertain and any proposals would need to accord with policies coming forward under other sets of options.

[84] See footnote 28 for a discussion of where carbon emissions may fall when economies of scale are considered.

12.	+ +	+ +	+ +	✓		✓	✓	Under this option there is the potential for job creation in the waste management sector along with knock-on effects to the local economy in terms of spend and for businesses supporting the waste management sector. Lower transport costs may also benefit the wider business sector.
13.	?	?	?	✓	✓	✓	✓	Whilst the option may provide positive effects in terms of job creation (as detailed under objective 12) it may have negative effects on the vitality of a community depending on the location and scale of any development. The overall effect is uncertain and would depend on the circumstances of each case.
14.	-	-	--	✓	✓	✓	✓	Although it is uncertain precisely where any facilities would be provided it is possible that under this option there would be effects on recreational assets depending on location, and that over time these may become more significant due to the need for increased numbers of facilities.
15.	--	--	--	✓	✓	✓	✓	The development of a greater number of waste management facilities is likely to have negative effects on the safety and wellbeing of communities in terms of both construction (traffic, noise, dust etc.) and operation (traffic, activity etc.). It is assumed that noise and emissions would be controlled to standards required under permitting regimes but there may still be residual effects and effects from traffic.
16.	-	-	-	✓			✓	Additional waste developments may have implications for flooding should these result in increased areas of hardsurfacing (thus exacerbating run-off).
17.	+	+	+	✓		✓		The needs of the population in terms of waste management would be met through this option.

Option 2

This option would acknowledge that significant export movements of waste already take place across the Plan area boundary and, for those waste streams or facility types for which a potential capacity gap has been identified, would assume that existing cross-border export movements would continue to operate in conjunction with existing and planned capacity in the area. Where necessary, this approach could also seek opportunities to use existing or planned capacity elsewhere in order to meet any additional un-met requirements. This option would assume that imports of waste into the area would continue broadly in line with recent levels.

Assumptions: As this option assumes that imports and exports would continue in line with recent levels and that waste would be dealt with in existing and planned for facilities, this option is broadly in line with the capacity that is currently planned for.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					This option would largely reflect current waste management practices and the capacity of waste that is currently planned for and so it is not anticipated that any additional effects over those that are already extant would result.
2.	0	0	0					This option would largely reflect current waste management practices and the capacity of waste that is currently planned for and so it is not anticipated that any additional effects over those that are already extant would result.
3.	0 ?	0 ?	0 ?	✓		✓		Under this option it is assumed that imports and exports will continue in line with recent levels and that only facilities that are extant or planned for would be utilised in the management of waste. Therefore it is anticipated that effects relating to this objective would remain largely as they currently are. There is some uncertainty in this assessment as the option states that where there are unmet requirements within the plan area, waste will be dealt with at existing or planned facilities elsewhere. As it is not yet known which facilities would be utilised in this situation (and how far these facilities lie from waste arisings/facilities within the plan area there) is some uncertainty as to the impact this would have on transport miles and emissions.
4.	0 ?	0 ?	0 ?	✓		✓	✓	For the same reasons as objective 3, it is considered that effects would be largely neutral but with some uncertainty.
5.	0	0	0					This option would largely reflect current waste management practices and would utilise waste management facilities that are already existing or planned for. It is therefore not anticipated that any additional effects over those that are already happening would result.
6.	0 ?	0 ?	0 ?	✓		✓		Under this option it is assumed that imports and exports will continue in line with recent levels and that only facilities that are extant or planned for would be utilised in the management of waste. Therefore it is anticipated that effects relating to this objective would remain largely as they currently are. There is some uncertainty in this assessment as the option states that where there are unmet requirements within the plan area, capacity will be sought elsewhere. As it is not yet known which facilities would be utilised in this situation (and how far these facilities lie from waste arisings/facilities within the plan area there is some uncertainty as

								to the impact this would have on transport miles and emissions and therefore the climate change objective.
7.	0	0	0					It is not considered that this option would have an impact upon this objective.
8.	0-?	0-?	+-?	✓			✓	As this option utilises existing and planned for facilities within and outside of the plan area it is considered that it would contribute towards minimising the use of resources (as it would not involve the construction of any new currently unplanned facilities and would allow the operation of economies of scale). This may result in a minor positive impact in relation to this objective in the long term.
9.	0?	- ?	- ?	✓			✓	This option relies on use of existing and currently planned facilities, as well as relying on the ability of neighbouring authorities to deliver facilities serving regional markets. In the medium to long term it is considered that this approach may restrict flexibility, as although existing facilities may be fit for purpose at present, over time as the waste mix changes and new technologies are developed, the movement of waste up the waste hierarchy may be impeded by the legacy of existing sites. It is therefore considered that effects may be neutral in the short term as this option is essentially a continuation of current arrangements (and facilities are utilising the technologies that are available at this time) and minor negative in the medium to long term. There is some uncertainty in this assessment as it is not currently know how well current facilities would have the capacity to change to enable management of waste as high up the waste hierarchy as practicable in the future.
10.	0	0	0					This option would largely reflect current waste management practices and the capacity of waste that is currently planned for and so it is not anticipated that any additional effects over those that already exist would result.
11.	0	0	0					This option would largely reflect current waste management practices and the capacity of waste that is currently planned for and so it is not anticipated that any additional effects over those that already exist would result.
12.	+	+	+	✓		✓		This option requires the use of existing and planned facilities within the Plan area and surrounding areas. This is likely to contribute towards the continuing viability of these facilities throughout the plan period. This option also allows for economies of scale to be utilised effectively as it accounts for export and import of waste and treatment of waste in specialist facilities outside of the plan area where a capacity gap exists. This is likely to

		?	?					result in economic benefits as economies of scale can maximise efficiency and keep costs down. In the medium to long term, it is however considered that the requirement to deal with waste in existing facilities may restrict flexibility (e.g. existing facilities may not be suitable to accommodate new innovations and more efficient technologies that may bring economic benefits to the plan area). There is therefore an element of uncertainty in the medium and long term.
13.	0	0	0					This option would largely reflect current waste management practices and the capacity of waste that is currently planned for and so it is not anticipated that any additional effects over those that already exist would result.
14.	0	0	0					This option would largely reflect current waste management practices and the capacity of waste that is currently planned for and so it is not anticipated that any additional effects over those that already exist would result.
15.	- 0-	0	0	✓		✓	✓	This option would largely reflect current waste management practices and the capacity of waste that is currently planned for and so it is not anticipated that any additional effects over those that already exist would result within the plan area. As this option states that where there are unmet requirements within the plan area, waste could be dealt with at existing or planned facilities elsewhere, it may possibly lead to wellbeing, health and safety impacts upon communities outside of the plan area close to existing facilities, should it be required that these are utilised.
	?	?	?					
16.	0	0	0					This option would largely reflect current waste management practices and the capacity of waste that is currently planned for and so it is not anticipated that any additional effects over those that already exist would result.
17.	0 ?	?	?	✓		✓		The needs of the population in terms of waste management are expected to be met through this option in the short term (as this option essentially continues current waste management practices). There is, however, some uncertainty in the medium to long term as the plan area would not be self-sufficient in terms of waste management under this approach and so whether future capacity will continue to be met will be reliant upon the waste policies/capacity of facilities of the surrounding authorities. It is therefore possible that this option could lead to a capacity gap if neighbouring authorities do not work together effectively.

Option 3

This option would follow the same approach as for Option 1 or 2 but would in addition make an express commitment that the Plan would make provision for the management of waste arising within that part of the Yorkshire Dales National Park falling within NYCC (other than for local scale re-use and recycling facilities which it may be practicable to provide in the National Park area).

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis *Note that for this option we have considered effects on the Plan Area and the Yorkshire Dales taken as a whole
	S	M	L	P	T	D	I	
1.	0 +	0 +	0 +	✓	✓	✓	✓	Over and above the effects of options 1 and 2 this option would represent little change from the present situation as most waste is already collected by District Councils in the National Park and disposed of outside the National Park boundary. It would however secure a longer term continuation of the status quo, which already benefits biodiversity by limiting land loss in an area rich in biodiversity assets.
2.	0	0	0					Over and above the effects of options 1 and 2 this option would represent little change from the present situation as most waste is already collected by District Councils in the National Park and disposed of outside the National Park boundary.
3.	0	0	0					Over and above the effects of options 1 and 2 this option would represent little change from the present situation as most waste is already collected by District Councils in the National Park and disposed of outside the National Park boundary.
4.	0	0	0					Over and above the effects of options 1 and 2 this option would represent little change from the present situation as most waste is already collected by District Councils in the National Park and disposed of outside the National Park Boundary.
5.	0	0	0	✓		✓		Over and above the effects of options 1 and 2 this option would represent little change from the present situation as most waste is already collected by District Councils in the National Park and disposed of outside

	-	-	-					the National Park Boundary. . It would however secure a longer term continuation of the status quo, which arguably increases demand for waste management administered by the Plan, and may drive a portion of the demand for either larger or more facilities which demand land. This effect would be small scale due to the low population and spread of Dales communities, and in practice may not 'tip the balance' at any one particular facility.
6.	0 +	0 +	0 +	✓		✓	✓	Over and above the effects of options 1 and 2 this option would represent little change from the present situation as most waste is already collected by District Councils in the National Park and disposed of outside the National Park Boundary. It would however secure a longer term continuation of the status quo, which already benefits climate change by limiting land loss in an area with large tracts of carbon rich soil.
7.	0	0	0					No likely significant effects.
8.	0	0	0					No effects as it assumed the final waste management method would be the same – it is the location that is being considered.
9.	0	0	0					This option would not directly lead to waste being managed further up the waste hierarchy.
10.	0 +	0 +	0 +	✓	✓	✓	✓	Over and above the effects of options 1 and 2 this option would represent little change from the present situation as most waste is already collected by District Councils in the National Park and disposed of outside the National Park boundary. It would however secure a longer term continuation of the status quo, which already benefits the historic environment by limiting land loss or other damage in an area rich in historic assets.
11.	0 +	0 +	0 +	✓		✓		As very little waste is currently managed within the National Park this option is unlikely to have positive or negative effects on landscape assets. It would however secure a longer term continuation of the status quo, which already benefits the landscape by limiting land loss or other damage in an area of high landscape value.
12.	0	0	0	✓		✓	✓	Over and above the effects of options 1 and 2 this option would represent little change from the present situation as most waste is already collected by District Councils in the National Park and disposed of outside the National Park boundary. This option would, however, secure a long term continuation of the status quo

	+	+	+					which would support the economy by continuing to direct waste management jobs into the Plan area and also by allowing more sustainable options for waste management in relative proximity to the National Park (which will help keep costs down).
13.	0 +	0 +	0 +	✓		✓	✓	Over and above the effects of options 1 and 2 this option would represent little change from the present situation as most waste is already collected by District Councils in the National Park and disposed of outside the National Park boundary. This option would, however, secure a long term continuation of the status quo which would support waste management jobs in the Plan area.
14.	0 +	0 +	0 +	✓		✓	✓	Over and above the effects of options 1 and 2 this option would represent little change from the present situation as most waste is already collected by District Councils in the National Park and disposed of outside the National Park boundary. This option would, however, secure a long term continuation of the status quo which would continue to avoid detrimental recreational impacts on this important recreational asset.
15.	0 -	0 -	0 -	✓		✓		Over and above the effects of options 1 and 2 this option would represent little change from the present situation as most waste is already collected by District Councils in the National Park and disposed of outside the National Park boundary. This option would, however, secure a long term continuation of the status quo which may have small scale negative effects on communities in the Plan area as it may require larger (or busier) facilities generating more impacts such as noise or odour, thus having potential effects on the health, safety and well-being of local communities.
16.	0	0	0					No likely significant effects.
17.	0	0	0					No likely significant effects.

Proposed alternative option 4: (Or) This option would seek to increase the amount of waste exported and would only support the development of new facilities in the Plan area where it can be shown that the waste cannot be managed at facilities elsewhere and where the facility is of a scale to meet local needs.								
SA objective	**Impact / timescale**			**Type of effect**				**Analysis**
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	+	+ -	-	✓	✓	✓	✓	While it is expected that, as a result of less waste facilities in the Plan Area, the biodiversity and geo-diversity of the Area would benefit due to a lower rate of construction of waste facilities, this option would indirectly increase pressure in the long term to build or expand facilities elsewhere. This would happen because where capacity exists outside of the Plan Area the option would seek to export waste. However, this additional waste would contribute to the using up of spare capacity in those areas. This would then lead to either new waste facilities being constructed in the Plan Area, or new / expanded waste facilities being built elsewhere to meet demand for the Plan Area and elsewhere. So the effects would be positive in the short term as fewer facilities are built while spare capacity is sought elsewhere; while in the medium to long term effects become increasingly negative for the area outside of the plan area as capacity is used up, while inside the Plan Area in the long term negative effects begin to occur as capacity gaps begin to appear that must be met within the Plan Area.
2.	+ -	+ -	-	✓	✓	✓	✓	Although it depends on location, waste facilities can consume significant water and affect water quality if inappropriately sited / mitigated for. So the effects would be positive in the Plan Area in the short term as fewer facilities are built while spare capacity is sought elsewhere (which would experience negative effects on water consumption at least); while in the medium to long term effects become increasingly negative for the area outside of the plan area as capacity is used up, while inside the Plan Area in the long term negative effects begin to occur as capacity gaps begin to appear that must be met within the Plan Area.
3.	--	--	- --	✓	✓	✓		Seeking to manage waste outside the Plan Area will be likely to lead to longer journeys, though in the long term more capacity may be required within the Plan Area due to shortfalls elsewhere, thus lessening affects.
4.	--	--	- --		✓	✓		Air pollution will rise due to the expected longer journeys described in objective 3.
5.	+	+	-	✓	✓	✓	✓	The effects would be positive in the short term as fewer facilities are built while spare capacity is sought

		-						elsewhere; while in the medium to long term effects become increasingly negative for the area outside of the Plan Area as capacity is used up, while inside the Plan Area in the long term negative effects begin to occur as capacity gaps begin to appear that must be met within the Plan Area.
6.	--	--	- --		✓	✓		CO2 pollution will rise due to the longer journeys described in objective 3. There may however be some element of carbon saving as waste management buildings outside of the Plan Area achieve economies of scale.
7.	0	0	0					No clear link
8.	0 ?	0 ?	0 ?	✓		✓	✓	In the main this option will have a neutral effect on resource use. However, there will be some minor positive effects which arise through waste management buildings elsewhere achieving economies of scale and thus using fewer resources. There will also be some negative effects that occur because more fuel resources are used to move waste to its destination. It is not possible, without use of detailed life cycle assessment to establish the overall impact which depends on the balance between transport energy use and building energy and water use.
9.	0	0	0					This option is about where waste is managed, not how.
10.	+	+ -	-	✓	✓	✓	✓	As with objective 1 the effects would be positive in the short term as fewer facilities are built while spare capacity is sought elsewhere; while in the medium to long term effects become increasingly negative for the area outside of the Plan Area as capacity is used up and new sites are sought (with potential historic environment impacts), while inside the Plan Area in the long term negative effects begin to occur as capacity gaps begin to appear that must be met within the Plan Area.
11.	+	+ -	-	✓	✓	✓	✓	As with objective 1 the effects would be positive in the short term as fewer facilities are built while spare capacity is sought elsewhere; while in the medium to long term effects become increasingly negative for the area outside of the Plan Area as capacity is used up and new sites are sought (with potential landscape / townscape impacts), while inside the Plan Area in the long term negative effects begin to occur as capacity gaps begin to appear that must be met within the Plan Area.
12.	+	+ -	+ -		✓	✓	✓	Outside of the plan are this option would be likely to support jobs. Inside of the Plan Area while jobs may increase for waste haulage (and potentially for staff at the transfer stations needed to export waste) this option would essentially export jobs that otherwise would have been located in the Plan Area.
13.	+	+ -	-	✓	✓	✓	✓	As with objective 1 the effects would be positive in the short term as fewer facilities are built while spare capacity is sought elsewhere; while in the medium to long term effects become increasingly negative for the area outside of the Plan Area as capacity is used up and new sites are sought (with potential community impacts), while inside the Plan Area in the long term negative effects begin to occur as capacity gaps begin to appear that must be met within the Plan Area.

14.	+	+ -	-	✓	✓	✓	✓	As with objective 1 the effects would be positive in the short term as fewer facilities are built while spare capacity is sought elsewhere; while in the medium to long term effects become increasingly negative for the area outside of the Plan Area as capacity is used up and new sites are sought (with potential access / recreation impacts), while inside the Plan Area in the long term negative effects begin to occur as capacity gaps begin to appear that must be met within the Plan Area.
15.	+	+ -	-	✓	✓	✓	✓	As with objective 1 the effects would be positive in the short term as fewer facilities are built while spare capacity is sought elsewhere; while in the medium to long term effects become increasingly negative for the area outside of the Plan Area as capacity is used up and new sites are sought (with potential amenity / wellbeing impacts), while inside the Plan Area in the long term negative effects begin to occur as capacity gaps begin to appear that must be met within the Plan Area.
16.	?	?	?					Impacts on flooding are unknown and dependent on location
17.	-	-	-					This option is likely to make waste sites more remote from communities and would therefore reduce opportunities to allow public access to facilities or to shorten supply chains for recycled building materials.

Proposed alternative option 5: (Or) This option would be similar to Option 2 but, with the exception of waste from the Yorkshire Dales National Park, would not make any allowance for imports to the plan area.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	+ -	+ -	+ -	✓		✓	✓	As this option would not plan capacity for the import of waste to the plan area (other than from the YDNP), there would be a smaller capacity requirement which may result in a reduction in waste facility development and a minor positive impact on this objective in the Plan area (as biodiversity and geo-diversity of the Area would benefit due to a lower rate of construction of waste facilities). Outside of the Plan area, this option may mean that new facilities are required to be built or that waste is

								required to be transported further as there would no longer be capacity for waste that was previously imported to the Plan area from surrounding authorities. This could lead to minor negative impacts in relation to this objective for areas outside of the Plan area.
2.	+	+	+	✓		✓	✓	As this option would not plan capacity for the import of waste to the plan area (other than from the YDNP), there would be a smaller capacity requirement which may result in a reduction in waste facility development. This may result in a minor positive impact on this objective in the Plan area as it would be likely to result in a reduction in water required for waste treatment and to reduce opportunity for contamination of water through the transport and treatment of waste from outside of the Plan Area. It should however be noted that these issues of water usage and the potential for pollution may be displaced to areas outside of the plan area as the waste that would have been imported to the plan area will need to be dealt with elsewhere.
	-	-	-					
3.	?	?	?	✓		✓		It is considered that not making any allowance for imports to the plan area when planning for waste capacity would have an uncertain impact upon this objective. This is because under this option waste that previously would have been imported to the plan area, may subsequently be dealt with closer to its source should sufficient capacity exist or may require to be transported further afield to another facility.
4.	?	?	?	✓		✓		It is considered that the impacts upon air pollution from transportation would be uncertain due to the reasons outlined under objective 3. A reduction in capacity required within the Plan area may lead to a reduction in air quality impacts from construction and from the operation of certain waste facilities however it should be noted that these impacts may be displaced elsewhere outside of the Plan area.
5.	+	+	+	✓		✓		Should this option result in a reduction in waste facility development within the Plan area this may lead to a minor positive impact on this objective due to a reduction in loss of soil and agricultural land/land that could be more efficiently used. It should however be noted that unless available capacity exists elsewhere, these effects may be displaced to areas outside of the plan area as the waste that would have been imported will need to be dealt with elsewhere.
	-	-	-					
6.	0	0	0	✓		✓		There would be an element of uncertainty relating to climate change due to transportation emissions as outlined under objective 3. Should this option result in a reduction in waste facility development within the Plan area this may lead to a reduction in greenhouse gasses generated from construction and operation of waste facilities. It should however be noted that unless available capacity exists elsewhere, these effects may be displaced to areas
	?	?	?					

								outside of the plan area as the waste that would have been imported will need to be dealt with elsewhere. It is therefore considered that a neutral effect on this objective would result (as the option deals with where waste will be managed rather than the amount of waste that will be managed and by what method).
7.	0	0	0					It is not considered that this option would have an impact upon this objective.
8.	- ?	- ?	- ?	✓			✓	In the main this option is considered to have a neutral effect on resource use. However, there may be some minor negative effects which arise through inhibiting the achievement of economies of scale by not allowing for the import of waste in waste capacity calculations for the plan area which may result in the use of more resources as more local scale facilities are required. It is not possible, without use of detailed life cycle assessment to establish the overall impact which depends on the balance between transport energy use and building energy and water use.
9.	0	0	0					This option considers where waste is managed, rather than how.
10.	+ -	+ -	+ -	✓		✓	✓	As this option would not plan capacity for the import of waste to the plan area (other than from the YDNP), there would be a smaller capacity requirement which may result in a reduction in waste facility development. This may result in a minor positive impact on this objective in the Plan area as a reduction in construction may result in less direct and indirect (setting/visual) impacts upon the historic environment. It should however be noted that unless available capacity exists elsewhere, these effects may be displaced to areas outside of the plan area as the waste that would have been imported will need to be dealt with elsewhere.
11.	+ -	+ -	+ -	✓		✓	✓	As this option would not plan capacity for the import of waste to the plan area (other than from the YDNP), there would be a smaller capacity requirement which may result in a reduction in waste facility development. This may result in a minor positive impact on this objective in the Plan area as a reduction in construction may result in less direct and indirect impacts upon landscapes and townscapes. It should however be noted that unless available capacity exists elsewhere, these effects may be displaced to areas outside of the plan area as the waste that would have been imported will need to be dealt with elsewhere.
12.	+	+	+	✓		✓		Not making any allowance for imports in to the plan area when planning for waste capacity may reduce demand for waste facilities therefore reducing the potential for job creation and economic benefits for the plan area. Although the market and waste operators will ultimately determine where waste is sourced from, not

	--	--	--					making allowances for imports when planning capacity requirements may hinder the development of regional economies of scale which can be economically beneficial. Conversely this option may lead to creation of jobs and economic benefits outside of the plan area as the waste that would have been imported will need to be dealt with elsewhere.
13.	+	+	+	✓		✓	✓	As this option would not plan capacity for the import of waste to the plan area (other than from the YDNP), there would be a smaller capacity requirement which may result in a reduction in waste facility development. This may result in a minor positive impact on this objective in the Plan area as a reduction in construction may result in less amenity impacts upon local communities. It should however be noted that these effects may be displaced to areas outside of the plan area as the waste that would have been imported will need to be dealt with elsewhere.
	-	-	-					
14.	+	+	+	✓		✓	✓	As this option would not plan capacity for the import of waste to the plan area (other than from the YDNP), there would be a smaller capacity requirement which may result in a reduction in waste facility development. This may result in a minor positive impact on this objective in the plan area due to a possible decrease in access/recreation impacts from development. It should however be noted that these effects may be displaced to areas outside of the plan area as the waste that would have been imported will need to be dealt with elsewhere.
	-	-	-					
15.	+	+	+	✓		✓	✓	As this option would not plan capacity for the import of waste to the plan area (other than from the YDNP), there would be a smaller capacity requirement which may result in a reduction in waste facility development. This may result in a minor positive impact on this objective in the Plan area as a reduction in construction may result in less amenity, health and safety impacts upon local communities. It should however be noted that these effects may be displaced to areas outside of the plan area as the waste that would have been imported will need to be dealt with elsewhere.
	-	-	-					
16.	+	+	+	✓		✓		Should this option result in a reduction in waste facility development within the Plan area this may lead to a minor positive impact on this objective due to a reduction in impermeable surfaces which can exacerbate flooding. It should however be noted that unless available capacity exists elsewhere, these effects may be displaced to areas outside of the plan area as the waste that would have been imported will need to be dealt with elsewhere.
	-	-	-					
17.	?	?	?	✓		✓		Impacts upon this objective would be uncertain as the plan area would not be self-sufficient in terms of waste management under this approach (as this option would factor in a continuation of export of waste in line with

								recent levels) and so whether future capacity will continue to be met will be reliant upon the waste policies/capacity of facilities of the surrounding authorities. It is therefore possible that this option could lead to a capacity gap if neighbouring authorities do not work together effectively.

Summary of assessment

Whilst Option 1 would have positive effects in the Plan Area in terms of reducing transport miles and associated emissions (particularly in comparison to Option 2) and in supporting the economy and jobs, it is likely to have negative effects on most of the environment and community SA objectives. This is because it may require additional facilities with additional impacts. Option 2 essentially would maintain the status quo in terms of how waste is dealt with in the Plan Area as it would assume that exports and imports would continue in line with current levels. This would largely result in neutral effects on the Plan area and would derive a greater benefit from achieving economies of scale in waste management than would be achieved under option 1.

Option 3 would largely maintain the status quo in terms of how waste is managed from the National Park, and this would have mainly neutral effects on the Plan Area and modest benefits for the Yorkshire Dales as it will allow the special qualities of the National Park to be maintained. .

Option 4 would have some benefits for the Plan Area in the short and medium term, but would also export a range of negative impacts to areas outside of the Plan Area. Some benefits in terms of resource use might be achieved through greater economies of scale through this option, while effects of major negative significance would be likely to occur in relation to transport, air pollution and climate change. The option would also export jobs to other areas.

Option 5 may result in some benefits for the plan area in terms of the environmental and community SA objectives due to the reduced requirement for waste management facilities in the plan area. These impacts may however be displaced to authorities outside of the plan area.

Recommendations

It is recommended that a combination of Options 1 and 2 which would enable facilities to be provided for in the plan area where this would lead to sustainability benefits such as reduced transportation distances) be followed along with Option 3.

Meeting Waste Management Capacity Requirements – Local Authority Collected Waste (id44)

Option 1.[85]

This option would support provision of adequate capacity for management of LACW through:

- Identifying the Allerton Park and Harewood Whin sites as strategic locations over the plan period for the management of LACW, including supporting the principle of an extension of time for disposal of waste via landfill in order to ensure utilisation of remaining capacity. In the case of the Harewood Whin site any proposals for new capacity involving built development would need to be judged against any relevant national and local green belt policy.
- Supporting the delivery of additional transfer station capacity for LACW to serve the needs of the City of York, Selby and Ryedale districts and, in addition, for Harrogate Borough if the Allerton Waste Recovery Park permission is not implemented.
- Providing support in principle for proposals which would deliver increased capacity for the recycling, reprocessing and composting of LACW where this would reduce reliance on export of waste from the Plan area for recycling or reprocessing and subject to compliance with locational and other relevant policies to be identified in the Plan.
- Supporting improvements to the Household Waste Recycling Centre network subject to compliance with locational and other relevant policies to be identified in the Plan.

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SA objective	Impact / timescale			Type of effect				Analysis[86]
	S	M	L	P	T	D	I	
1.	-	-	-	✓	✓	✓	✓	The Harewood Whin site is the subject of an active planning application so the effects of that application must be considered uncertain as the final form of that development is not yet decided. In general terms however, the general area of Harewood Whin is considered to contain no nationally or locally designated sites though local habitats may contain some protected species (e.g. bats). In the case of Allerton Park, planning permission has already been granted so the biodiversity / geodiversity impacts of this have already been considered, so additional significant effects are not considered to occur during the plan period.

[85] The assessment assumes Allerton Waste Recovery Park will go ahead

[86] For a detailed analysis of LACW statistics the WasteDataFlow website provides a web based system which reports municipal waste data by local authority, to the Govenmennt. It also provides links to the latest Defra waste statistics. The website can be accessed at: http://www.wastedataflow.org/.

								Additional transfer station capacity will have uncertain effects dependent on location, though as these developments will have a land take they will inevitably cause some disturbance to wildlife. Greater uncertainty would be noted without Allerton Park as this may increase pressure for transfer station capacity on the relatively biodiversity rich Harrogate Borough. Supporting the principal of recycling, reprocessing and composting may also generate new facilities with potential biodiversity / geodiversity effects (though this may be largely mitigated by other policies in the plan). Similarly, supporting improvements to the Household Waste Recycling network may result in new development. Again, the effects of this development are considered to involve at least some minor and temporary biodiversity / geodiversity effects, but the full magnitude of effects cannot be known until locations are considered.
2.	-	-	-	✓	✓	✓	✓	As with objective 1 any potential effects of Allerton Park on water have been dealt with through the approved planning permission and environmental permitting regime, so are considered neutral in this assessment. At Harewood Whin effects of the current application are considered uncertain (as the final form of that development is not yet decided). However, the SA notes that the area is not in a groundwater source protection zone, though is within a nitrate vulnerable zone, which if a different application were proposed might have some effects if they were not mitigated (e.g. under the terms of an environmental permit). Additional transfer station capacity will have uncertain effects on water dependent on location (although much of the City of York, Selby and Ryedale district areas are nitrate vulnerable zone so there may be a slightly greater chance of a negative effect occurring here than elsewhere). Greater uncertainty would be noted without Allerton Park as the NVZ extends into Harrogate Borough. Supporting the principal of recycling, reprocessing and composting may also generate new facilities with potential water effects. Similarly, supporting improvements to the Household Waste Recycling network may result in new development in sensitive locations for water, though this is unknown until locations are considered. However, effects will be moderated by consideration of other policies in the plan.
3.	+ + ?	+ + ? 	+ + ?	✓		✓		As strategic locations for waste management, both Allerton Park and Harewood Whin are reasonably well located (Allerton Park close to the A1 and Harrogate and Harewood Whin close to York). Supporting the delivery of additional transfer station capacity for LACW to serve the needs of the City of York, Selby and Ryedale districts would also take traffic off the roads.

								It is not known where other facilities supported by this option will be located, though consideration of other policies in the plan may help moderate any negative transport effects.
4.	0 + ?	- + ?	- + ?	✓	✓	✓	✓	On-going operation of Allerton Park is controlled via various controls such as a Continuous Emissions Monitoring System and an Environmental Permit, while at Harewood Whin airborne emissions such as odours, bio-aerosols, and dust particles are potentially possible, but uncertain as the final format of the current application and any mitigation, or the format of possible future alternatives, is not known. Both sites are considered to be reasonably located so continuing air pollution from traffic is considered to be negligible[87] to uncertain. Supporting the delivery of additional transfer station capacity for LACW to serve the needs of the City of York, Selby and Ryedale districts would also take traffic off the roads and reduce air pollution. Additional transfer station capacity and supporting the principal of recycling, reprocessing and composting may also generate new facilities with potential air pollution effects. Similarly, supporting improvements to the Household Waste Recycling network may result in new development in sensitive locations for air pollution, though this is unknown until locations are considered (and consideration of other policies in the plan may moderate this). Each development is likely to generate traffic, so as a whole impacts here are considered to be minor negative in the longer term.
5.	-	-	-	✓		✓		In the case of Allerton Park, planning permission has already been granted so the soil / land use impacts of this have already been considered, so additional significant effects are not considered to occur during the plan period. At Harewood Whin the position is uncertain in relation to the current application as this is yet to be decided. However, inevitably sites in this area will have an agricultural land take and so cannot be said to positively impact on the SA objective. Additional transfer station capacity, HWRCs and supporting the principal of recycling, reprocessing and

[87] The Allerton Waste Recovery Park Environmental Statement considered traffic pollution alongside other pollutants and as a whole concluded impacts on air quality were negligible (see chapter 10 of the Amey Cespa's Environment Statement [URL: https://onlineplanningregister.northyorks.gov.uk/register/PlanAppDisp.aspx?recno=8124])

								composting may also generate new facilities with potential to affect land. Similarly, supporting improvements to the Household Waste Recycling network may result in new development. Again, the effects of this development are considered to involve at least some minor effects on land. However, other policies in the plan may moderate these impacts. The full magnitude of effects cannot be known until locations are considered.
6.	+	+ + +	+ + +	✓		✓	✓	The environmental statement for Allerton Park concluded minor positive effects on climate change[88]. The effects of the current application at Harewood Whin are uncertain, through in general terms MRF facilities move waste up the waste hierarchy, which lessens the global warming potential of waste. Other transfer, recycling, reprocessing and composting and HWRC facilities are likely to have significant positive effects in terms of their contribution to moving waste up the waste hierarchy and thus reducing its global warming potential[89]. This may be offset to a degree by issues such as transport and landtake. Effects are therefore considered to range from minor to major positive over time. .
7.	0	0	0					No clear link
8.	+	+	+	✓		✓		Supporting adequate capacity for management of Local Authority Collected Waste through the measures proposed will help improve capacity for re-use of materials (though lower tiers of the waste hierarchy, such as recycling, will also be promoted).
9.	+ +	+ +	+ +	✓		✓		Supporting adequate capacity for management of Local Authority Collected Waste, including through recycling, reprocessing and composting will help move waste up the waste hierarchy with a major positive effect on this objective.

[88] See Amey Cespa, 2012. Sustainability Assessment {URL: : https://onlineplanningregister.northyorks.gov.uk/register/PlanAppDisp.aspx?recno=8124]

[89] It is worth pointing out that in broad terms the higher up the waste hierarchy waste is managed at, the less its global warming potential is likely to be. For example UNEP (2010) point out that the bottom rung of the waste hierarchy, landfill, represents the largest source of greenhouse gas emissions from the waste sector, contributing about 700 Mt of CO2 equivalent emissions from methane globally each year (UNEP, 2011. Waste and Climate Change: Global Trends and Strategy Framework). Life cycle assessments highlight differences in the environmental benefits associated with different waste types and their management. WRAP (2010) summarise LCAs in relation to different waste streams and highlight that for paper and cardboard landfilling is clearly the least preferable option for climate change, though the comparison between recycling and incineration is more complex and depends on the energy mix used in recycling. For food waste anaerobic digestion performs particularly well, while recycling plastics shows particular benefits (across all indicators) arising through avoiding virgin plastics production (WRAP, 2010. Environmental Benefits of Recycling). Higher tiers of the waste hierarchy are generally the best levels. The Chartered Institute for Waste and Environmental Management suggest that "waste prevention is at the top of the revised waste hierarchy and represents the most effective way to reduce greenhouse gas emissions because this reduces the consumption of raw materials and the need to expend further energy in managing the waste down the line…….tacking waste at source would in CIWEM's view be the most effective way of significantly reducing waste-associated carbon emissions further"(CIWEM, 2010. UK Waste Management Options and Climate Change). .

10.	-	-	-	✓	✓	✓	✓	The Harewood Whin site is the subject of an active planning application so the effects of that application must be considered uncertain as the final form of that development is not yet decided. In general terms however, the general area of Harewood Whin is considered to contain no scheduled monuments or conservation areas though there are some non-designated archaeological remains in the vicinity (and the proposed development site itself)[90]. In the case of Allerton Park, planning permission has already been granted so the historic environment impacts of this have already been considered, so additional significant effects are not considered during the plan period. Additional transfer station capacity will have uncertain effects dependent on location, though as these developments will inevitably have a land take and will in all likelihood cause some disturbance, even while this may be mitigated, temporary effects are considered to be at least negative. These temporary effects may happen throughout the plan period and may be moderated by other policies in the plan. Supporting the principal of recycling, reprocessing and composting may also generate new facilities with potential historic environment effects. Similarly, supporting improvements to the Household Waste Recycling network may result in new development. Again, the effects of this development are considered to involve at least some minor and temporary historic environment effects, but the full magnitude of effects cannot be known until locations are considered (though they are likely to be moderated by other policies in the plan).
11.	-	-	-	✓	✓	✓	✓	The Harewood Whin site is the subject of an active planning application so the effects of that application must be considered uncertain as the final form of that development is not yet decided. In general terms however, the general area of Harewood Whin is considered to contain no nationally designated landscapes but local effects on landscape character are likely to occur[91].The site is also in the green belt. In the case of Allerton Park, planning permission has already been granted so the landscape impacts of this have already been considered, so additional significant effects are not considered to occur during the plan period. Additional transfer station capacity will have uncertain effects dependent on location. However, as these developments will inevitably cause some disturbance if they are located outside of industrial areas, temporary effects (e.g. during construction) are considered to be at least negative, and change to character will inevitably occur in the longer term.

[90] Golder Associates, 2013. Harewood Whin Materials Recovery Facility and Transfer ES Non-Technical Summary [http://www.yorwaste.co.uk/wp-content/uploads/2012/04/Ch-0-Non-Technical-Summary-A_01.pdf]

[91] Golder Associates, 2013. Harewood Whin Materials Recovery Facility and Transfer ES Non-Technical Summary [http://www.yorwaste.co.uk/wp-content/uploads/2012/04/Ch-0-Non-Technical-Summary-A_01.pdf]

								Supporting the principal of recycling, reprocessing and composting may also generate new facilities with potential landscape impacts. Similarly, supporting improvements to the Household Waste Recycling network may result in new development. Again, the effects of this development are considered to involve at least some minor landscape effects, but the full magnitude of effects cannot be known until locations are considered (though they are likely to be moderated by other policies in the plan).
12.	+ +	+ +	+ +	✓		✓		This option is likely to have strong benefits on the sustainable economy SA objective. It will generate jobs and promote low carbon resources from what previously would have been considered waste. It will also reduce the costs associated with alternative disposal in landfill.
13.	+ -	+ -	+ -	✓		✓		The employment benefits of this objective are likely to benefit communities. However, because the location of future recycling, reprocessing, composting, transfer and HWRC sites is uncertain under this option then there may also be uncertain effects on communities that are dependent on, for instance, tourism spend, where sites are inappropriately located.
14.	+	+	+	✓		✓		Educational facilities are to be provided at Allerton Park. It is uncertain what the final format (and thus recreational impacts) of Harewood Whin will be (though any site here may be visible from nearby rights of way). Other future sites' locations are unknown and can only be considered at a site scale.
15.	?	?	?	✓		✓		While residual impacts on health were concluded as being insignificant at Allerton Park[92], impacts at other sites are unknown. The range of sites considered can be associated with a range of impacts, though such impacts are generally managed through planning and permitting controls. Much will depend on the proximity of sites to receptors, which is not detailed with this option.
16.	?	?	?		✓	✓	✓	As most sites are not known there are uncertain effects on the flood risk objective (although the format of the Harewood Whin site is undecided it is in flood zone 1).
17.	0	0	0					No clear link

[92] See Amey Cespa, 2012. Sustainability Assessment {URL: : https://onlineplanningregister.northyorks.gov.uk/register/PlanAppDisp.aspx?recno=8124

Option 2.
This option would represent a less targeted approach and would seek to provide more flexibility for the delivery of any new capacity required for managing LACW. This would be achieved by providing support in principle for the development of new capacity identified as necessary by the relevant Waste Management Authorities. It would need to be demonstrated that any such capacity is consistent with relevant national policy as well as any relevant policies in the Plan relating to moving waste up the hierarchy and the strategic role of the Plan in the management of waste, as well as relevant locational and development control policies in the Plan.

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	-	✓	✓	✓	✓	This option supports new development in principal where it satisfies national and local policy and seeks to move waste up the waste hierarchy. This is likely to result in more waste related development, which will inevitably have some type of biodiversity impact, though this will be moderated by other policies in the plan so is likely to be minor.
2.	-	-	-	✓	✓	✓	✓	This option supports new development in principal where it satisfies national and local policy and seeks to move waste up the waste hierarchy. This is likely to result in more waste related development, which may have a water quality impact, though this will be moderated to some degree by other policies in the plan. Effects are therefore uncertain, though are likely to be of minor negative magnitude.
3.	+	+	+	✓		✓		Because this option provides greater flexibility it may, particularly where it operates in combination with option 1, enable more flexibility in where transfer stations in particular are located. Over time this may allow a better match between the places where waste is collected and where it is transferred, reducing unnecessarily long journeys.
4.	0	-	- +	✓	✓	✓	✓	Because this option provides greater flexibility it may, particularly where it operates in combination with option 1, enable more flexibility in where transfer stations in particular are located. Over time this may allow a better match between the places where waste is collected and where it is transferred, reducing unnecessarily long journeys. This may reduce some air pollution impacts. So effects are considered as option 1, with greater potential for improvement in the long term.
5.	-	-	-	✓		✓		Like option 1, transfer station capacity, HWRCs and supporting the principal of recycling, reprocessing and composting may generate new facilities with potential to affect land. Similarly, supporting improvements to the Household Waste Recycling network may result in new development. The effects of this development are considered to involve at least some minor effects on land. However, other policies in the plan may moderate

								these impacts. The full magnitude of effects cannot be known until locations are considered.
6.	+	+	+ +	✓		✓	✓	Like option 1, transfer, recycling, reprocessing and composting and HWRC facilities are likely to have significant positive effects in terms of their contribution to moving waste up the waste hierarchy and thus reducing its global warming potential[93], which may be offset to a degree by issues such as transport and land take (though the transport benefits set out in objective 3 may increase the positive effect on climate change over time). Effects are therefore considered to range from minor to major positive over time.
	+ +	+ +						
7.	0	0	0					No clear link
8.	+	+	+	✓		✓		Supporting adequate capacity for management of Local Authority Collected Waste through the measures proposed will help improve capacity for re-use of materials (though lower tiers (e.g. recycling) of the waste hierarchy will also be promoted).
9.	+ +	+ +	+ +	✓		✓		Supporting adequate capacity for management of Local Authority Collected Waste, including through recycling reprocessing and composting will help move waste up the waste hierarchy with a major positive effect on this objective. The flexibility of this option may enable this strong benefit to be more cost effectively maintained in a wider part of the plan area in the long term as waste management authorities can build their own case for locating in a particular area.
10.	-	-	-	✓	✓	✓	✓	This option supports new development in principal where it satisfies national and local policy and seeks to move waste up the waste hierarchy. This is likely to result in more waste related development, which may have a historic environment impact, though this will be moderated by other policies in the plan so is likely only to be a minor effect. More flexibility may allow a greater spread of waste transfer facilities. This may reduce traffic, which may protect some historic assets from the effects of vehicles, such as dust vibration and pollution. However, again this is a relatively minor impact, so effects are considered to not differ substantively to option 1.
11.	-	-	-	✓	✓	✓	✓	This option supports new development in principal where it satisfies national and local policy and seeks to move waste up the waste hierarchy. This is likely to result in more waste related development, which will inevitably have a landscape impact, though this will be moderated by other policies in the plan so is likely only to be a minor effect. More flexibility may allow a greater spread of waste transfer facilities. This may reduce traffic, which may have some tranquillity benefits in the long term. However, this is a relatively minor impact, so effects are considered to not differ substantively to option 1.
12.	+ +	+ +	+ +	✓		✓		This option is likely to have strong benefits on the sustainable economy SA objective as it will generate jobs and promote low carbon resources from what previously would have been considered waste. It will also reduce the costs associated with alternative disposal in landfill. If anything the positive effect is stronger under this option, as greater flexibility allows greater potential for the most viable applications to come forward.

[93] See footnote 31

13.	+	+	+	✓		✓		The employment benefits of this objective are likely to benefit communities. However, because the location of future recycling, reprocessing, composting, transfer and HWRC sites is uncertain under this option then there may also be uncertain negative effects on communities that are dependent on, for instance, tourism spend, where sites are inappropriately located.
	-	-	-					
14.	+	+	+	✓		✓		Assuming Allerton Waste Recovery Park is completed under this option, effects will be broadly the same as option 1.
15.	?	?	?	✓		✓		The range of sites considered can be associated with a range of impacts, though such impacts are generally managed through planning and permitting controls. Much will depend on the proximity of sites to receptors, which is not detailed with this option (though these impacts may be moderated by other policies in the plan).
16.	?	?	?		✓	✓	✓	As most sites are not known there are uncertain effects on the flood risk objective.
17.	0	0	0					No clear link

Proposed alternative option 3: (Or) [94]

This option would combine Options 1 and 2 to give support to permitted facilities but also provide an element of flexibility of some of the permitted facilities were not operational.

This option would support provision of adequate capacity for, and promote community responsibility in, management of LACW through:

- Identifying the Allerton Park and Harewood Whin sites as strategic locations over the plan period for the management of LACW, including supporting the principle of an extension of time for disposal of waste via landfill in order to ensure utilisation of remaining capacity. In the case of the Harewood Whin site any proposals for new capacity involving built development would need to be judged against any relevant national and local green belt policy.
- Supporting the delivery of additional transfer station capacity for LACW to serve the needs of the City of York, Selby and Ryedale districts and, in addition, for Harrogate Borough if the Allerton Waste Recovery Park permission is not implemented.
- Providing support in principle for proposals which would deliver increased capacity for the recycling, reprocessing and composting of LACW where this would reduce reliance on export of waste from the Plan area for recycling or reprocessing and subject to compliance with locational and other relevant policies to be identified in the Plan.
- Supporting improvements to the Household Waste Recycling Centre network subject to compliance with locational and other relevant policies to be identified in the Plan.

Support in principle would also be given for the development of other new capacity identified as necessary by the relevant Waste Management Authorities. It would need to be demonstrated that any such capacity is consistent with relevant national policy as well as any relevant policies in the Plan relating to moving waste up the hierarchy and the strategic role of the Plan in the management of waste, as well as relevant locational and development control policies in the plan.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale	Type of effect	Analysis[95]

[94] The assessment assumes Allerton Waste Recovery Park will go ahead

[95] For a detailed analysis of LACW statistics the WasteDataFlow website provides a web based system which reports municipal waste data by local authority, to the Government. It also provides links to the latest Defra waste statistics. The website can be accessed at: http://www.wastedataflow.org/.

	S	M	L	P	T	D	I	
1.	-	-	-	✓	✓	✓	✓	The effects outlined under option 1 and option 2 would be combined under this option.
2.	-	-	-	✓	✓	✓	✓	The effects outlined under option 1 and option 2 would be combined under this option.
3.	+	+	+	✓		✓		The effects outlined under option 1 and option 2 would be combined under this option.
4.	0	-	-	✓	✓	✓	✓	The effects outlined under option 1 and option 2 would be combined under this option.
	?	?	?					
			+					
5.	-	-	-	✓		✓		The effects outlined under option 1 and option 2 would be combined under this option.
6.	+	+	+	✓		✓	✓	The effects outlined under option 1 and option 2 would be combined under this option. .
	++	++	++					

7.	0	0	0					No clear link.
8.	+	+	+	✓		✓		The effects outlined under option 1 and option 2 would be combined under this option.
9.	+ +	+ +	+ +	✓		✓		The effects outlined under option 1 and option 2 would be combined under this option.
10.	-	-	-	✓	✓	✓	✓	The effects outlined under option 1 and option 2 would be combined under this option.
11.	-	-	-	✓	✓	✓	✓	The effects outlined under option 1 and option 2 would be combined under this option.
12.	+ +	+ +	+ +	✓		✓		The effects outlined under option 1 and option 2 would be combined under this option.
13.	+	+	+	✓		✓		The effects outlined under option 1 and option 2 would be combined under this option.
	-	-	-					
14.	+	+	+	✓		✓		The effects outlined under option 1 and option 2 would be combined under this option.
15.	?	?	?	✓		✓		The effects outlined under option 1 and option 2 would be combined under this option.
16.	?	?	?		✓	✓	✓	The effects outlined under option 1 and option 2 would be combined under this option.
17.	0	0	0					No clear link.

Summary of assessment

There is some uncertainty as to the sustainability effects of all 3 options. This is largely because it is not known where all local authority collected waste management facilities will be located under the options.

Although uncertain, there is potential for minor negative effects in relation to biodiversity, water, soils, air, the historic environment, landscape and community vitality under all options. In some cases, however, Options 2 and 3 may slightly lessen negative effects as they will potentially result in lower transport impacts as there is potentially more locational flexibility.

There are also a number of positive effects. In particular, all options make a strong positive contribution to sustainable waste management and achieving sustainable economic growth, and there are climate change benefits associated with providing the supporting capacity to move waste up the waste hierarchy.
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Recommendations
The sustainability appraisal has observed a slight preference for Option 3 as this combines the benefits of Option 1 and Option 2.

Meeting Waste Management Capacity Requirements – Commercial and Industrial Waste (Including Hazardous C&I Waste) (id45)

Option 1

This option would support provision of adequate capacity for, and promote self-sufficiency in, management of C&I waste through:

1. Providing support in principle for proposals which would deliver increased capacity for the recycling and/reprocessing and the treatment of C&I waste where this would reduce reliance on export of waste from the Plan area for recycling or reprocessing and subject to compliance with locational and other relevant policies to be identified in the plan;
2. Supporting the delivery of additional transfer station capacity for C&I waste where it can be demonstrated that additional provision would contribute to the objective of dealing with waste in proximity to where it arises;
3. Providing capacity for recovery of energy from C&I waste through a combination of spare capacity within the Allerton Waste Recovery Park facility if developed and supporting in principle the delivery of additional energy recovery capacity for suitable C&I waste where it can be demonstrated that the facility would be appropriately scaled to meet the needs for management of residual C&I waste arising in the area and it can be demonstrated that the waste to be recovered cannot be practicably dealt with further up the waste hierarchy. The scale of any additional capacity required will be dependent on the implementation of the AWRP facility as well as assumptions made about waste growth but is unlikely to require provision of more than one additional facility.
4. No specific additional provision for landfill capacity for non-hazardous C&I waste will be made although support would be provided in principle for an extension of the time period for the utilisations of remaining void space at existing sites subject of time limited permissions;
5. Landfill capacity for hazardous C&I waste requiring landfill would be met though provision outside the Plan area.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	-	✓	✓	✓	✓	Support for new facilities is likely to result in a level of harm to biodiversity and geodiversity although the degree of harm would depend on the location and type of any new facilities. Any development would also be subject to alternative policies within the plan to specifically minimise impacts on this biodiversity. Enabling a high standard of quarry reclamation could have positive effects in terms of biodiversity in the long-term depending on the final reclamation use. In addition, any new facilities would need to demonstrate that they minimise environmental effects against other policies in the plan.
	+	+	+					

2.	- ?	- ?	- ?	✓		✓	✓	The developments supported under these options could have effects on water quality from run-off from all developments listed, and from leachate from landfill. Whether there would be effects on NVZs or SPZs would be dependent on the location of any facilities. Waste management processes require the use of water, particularly in recycling, which may have effects on supply. In addition, any new facilities would need to demonstrate that they minimise environmental effects against other policies in the plan.
3.	?	?	?					Effects in terms of transport are uncertain as this would depend on the location of any new facilities in relation to commercial and industrial waste generators. However, by ensuring sufficient provision within the Plan area and reducing the reliance on exporting waste for management and processing, this will reduce the need for transportation over further distances. Longer journeys may be required for dealing with hazardous waste outside of the plan area, depending on the location of suitable facilities but the impacts of this are likely to be reduced and offset by dealing with more waste in locations where it arises.
4.	- ?	- ?	- ?	✓	✓	✓	✓	Assuming that emissions permitting regimes operate effectively it is still likely that would be some residual effects on air quality including bioaerosols from landfill and traffic emissions from other forms of management. The scale of this would be determined in association with the type of waste processing and licensing parameters.
5.	-	-	- +	✓		✓	✓	The provision of new facilities is likely to result in loss of soils and land due to the development of new facilities. The extent to which any best and most versatile agricultural land is lost would depend upon scale and location of any new facilities. Different waste processing techniques can also have adverse effects through contaminating soils through leachate from landfill, poor reception handling and processing on site. Positively, enabling a high standard of quarry reclamation could have positive effects in terms of land and soil quality in the long-term following successful reclamation of any sites.
6.	+ -	+ -	+ -	✓		✓	✓	Management of commercial and industrial waste through this option is likely to encourage re-use and recycling within the plan area which would be positive for climate change through the reduction in materials required and overall carbon footprint as a result of consumption. In addition, different techniques may have positive or negative effects on greenhouse gas production such as methane through landfill and recycling processes or a decrease through anaerobic digestion. Any emissions are assumed to be within required limits but may still have residual adverse effects. Overall, this approach should minimise adverse effects and predominantly have net benefit for climate change.
7.	0	0	0	✓		✓		There are no clear links between this policy and the objective for adapting to climate change.
8.	++	++	++	✓		✓		The option would have strong positive effects against this objective by dealing with C&I waste as high up the hierarchy as possible and only landfilling where it cannot be dealt with in any other way. This will help to reduce the demand for primary resources through the provision of more recycled materials. The scale of this is likely to increase over the plan period due to the support for further capacity. This could be significantly positive but would be determined upon application. The policy does not directly refer to re-use of resources

								but could be more positive should this be amended.
9.	+ +	+ +	+ +	✓		✓		The option would have strong positive effects against this objective by dealing with C&I waste as high up the hierarchy as possible and only landfilling where it cannot be dealt with in any other way. The scale of this is likely to increase over the plan period due to the support for further capacity and implementation of any proposals. This could be significantly positive but would be determined upon application. The policy does not directly refer to re-use of resources but could be more positive should this be amended.
10.	?	?	?					Support for new facilities could result in a level of harm to the historic environment although the degree of harm would depend on the location of any new facilities. The sites named specifically, Allerton park, is not anticipated to have significant effects for example, due to its location. Enabling a high standard of quarry reclamation could have positive effects in terms of the historic environment depending on the type and success of reclamation.
11.	?	?	? +	✓		✓		Support for new facilities is likely to result in a level of harm to the landscape although the degree of harm would depend on the location and design of any new facilities. Significant adverse effects may be experienced if new facilities are proposed within the National Park and AONB where they are visible given that these are designated for their landscape value. Enabling a high standard of quarry reclamation could have positive effects in terms of landscape in the long-term.
12.	+	+	+	✓		✓	✓	This option will have positive effects on the economy by providing employment in the waste management sector, with knock-on effects for local businesses and for businesses which support the waste management sector. In addition, this option would support energy recovery from waste which would help to offset any costs associated with energy consumption/processing of waste although this is reliant on Allerton Waste Recovery Park gaining consent primarily.
13.	?	?	?	✓	✓	✓	✓	Whilst the option may provide positive effects in terms of job creation (as detailed under objective 12) it may have negative effects on the vitality of a community depending on the location and scale of any development. The overall effect is uncertain and would depend on the circumstances of each case.
14.	?	?	? +	✓		✓	✓	Support for new facilities could result in a level of harm to the recreational assets although the degree of harm would depend on the location of any new facilities. Enabling a high standard of quarry reclamation could have positive effects in terms of recreation opportunities subject to the type of reclamation in the long-term.
15.	- ?	- ?	- ?	✓	✓	✓	✓	There may be negative impacts on communities in terms of noise, odour and traffic. The option is not clear as to whether hazardous waste would be handled inside or outside of the plan area (only that provision for hazardous landfill would be outside of the plan area) While any facilities handling hazardous waste would require stringent environmental permits to deal with that waste, which would help ensure health is not compromised, there may be some uncertainty as to whether perceptions of facilities that may handle hazardous waste may be altered and affect wellbeing. The scale of the impacts would depend upon the location and type of waste processing facility.

16.	?	?	?	✓		✓	✓	Any new development would need to adhere to other policies within the plan to ensure the location minimises any flood risk or adverse surface run-off. It is possible that additional run-off may be caused through further development.
17.	+	+	+	✓			✓	This option could result in ensuring that construction materials continue to circulate in the economy within the plan area thus ensuring sufficient supply for the development needs of the population.

Option 2

The option would be the same as Option 1 but would, additionally, provide support in principle for proposals for the management of C&I waste arising outside the area where it can be demonstrated that the development would be consistent with the locational and other relevant policies in the plan and additionally, for proposals for recovery of waste, it can be demonstrated that the facility in the location proposed would represent the nearest appropriate installation for the waste to be dealt with.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	-	-	-	✓	✓	✓	✓	Support for new facilities is likely to result in a level of harm to biodiversity and geodiversity although the degree of harm would depend on the location and type of any new facilities. Any development would also be subject to alternative policies within the plan to specifically minimise impacts on this biodiversity. Enabling a high standard of quarry reclamation could have positive effects in terms of biodiversity in the long-term depending on the final reclamation use. In addition, any new facilities would need to demonstrate that they minimise environmental effects against other policies in the plan.
	+	+	+					
2.	-	-	-	✓		✓	✓	The developments supported under these options could have effects on water quality from run-off from all developments listed, and from leachate from landfill. Whether there would be effects on NVZs or SPZs would be dependent on the location of any facilities. Waste management processes require the use of water, particularly in recycling, which may have effects on supply. In addition, any new facilities would need to demonstrate that they minimise environmental effects against other policies in the plan.
	?	?	?					

3.	? +	? +	? +	✓	✓	✓	✓	Similarly to option 1, there are some still some uncertain effects in terms of transport as they would depend on the location of any new facilities in relation to commercial and industrial waste generators. However, by ensuring sufficient provision within the Plan area and reducing the reliance on exporting waste for management and processing, this will reduce the need for transportation over further distances. Longer journeys may be required for dealing with hazardous waste outside of the plan area, depending on the location of suitable facilities but the impacts of this are likely to be reduced and offset by dealing with more waste in locations near where it arises. Additionally, this policy would help minimise transport mileage of materials and waste across boundaries should it be the nearest and most appropriate facility for the waste to be dealt with. This is likely to have positive cross-boundary effects.
4.	- ?	- ?	- ?	✓		✓		Assuming that emissions permitting regimes operate effectively it is still likely that would be some residual effects on air quality including bio-aerosols from landfill and traffic emissions from other forms of management. The scale of this would be determined in association with the type of waste processing and licensing parameters. This option may reduce transport emissions by aiming to reduce mileage to suitable waste processing facilities to locations which are the nearest suitable facility.
5.	-	-	- +	✓		✓	✓	The provision of new facilities is likely to result in loss of soils and land due to the development of new facilities. The extent to which any best and most versatile agricultural land is lost would depend upon scale and location of any new facilities which in comparison to option 1, may be increased. Different waste processing techniques can also have adverse effects through contaminating soils through leachate from landfill, poor reception handling and processing on site. Positively, enabling a high standard of quarry reclamation could have positive effects in terms of land and soil quality in the long-term following successful reclamation of any sites.
6.	+ -	+ -	+ -	✓		✓	✓	Management of commercial and industrial waste through this option is likely to encourage re-use and recycling within the plan area which would be positive for climate change through the reduction in materials required and overall carbon footprint as a result of consumption. In addition, different techniques may have positive or negative effects on greenhouse gas production such as methane through landfill and recycling processes or a decrease through anaerobic digestion. Any emissions are assumed to be within required limits but may still have residual adverse effects. Overall, this approach should minimise adverse effects and predominantly have net benefit for climate change.
7.	0	0	0	✓		✓		There are clear links between this policy and the objective for adapting to climate change.
8.	+ +	+ +	+ +	✓		✓		The option would have strong positive effects against this objective by dealing with C&I waste as high up the hierarchy as possible and only landfilling where it cannot be dealt with in any other way. This will help to reduce the demand for primary resources through the provision of more recycled materials. The scale of this is likely to increase over the plan period due to the support for further capacity. This could be significantly positive but would be determined upon application. The policy does not directly refer to re-use of resources

								but could be more positive should this be amended.
9.	+ +	+ +	+ + ? ?	✓		✓		The option would have strong positive effects against this objective by dealing with C&I waste as high up the hierarchy as possible and only landfilling where it cannot be dealt with in any other way. The scale of this is likely to increase over the plan period due to the support for further capacity and implementation of any proposals. This option particularly would allow the dealing of waste from outside of the plan area as well subject to it being demonstrated against the locational principles and other policy criteria set out within the Plan. This could have mixed effects by proving more facilities to be viable for the processing of C&I but may also impact on capacity in the long-term. On balance, it is still anticipated this would have a significant positive effects but with some uncertainty in the long-term. The policy does not directly refer to re-use of resources but could be more positive should this be amended.
10.	?	?	?					Similarly to option 1, support for new facilities could result in a level of harm to the historic environment although the degree of harm would depend on the location of any new facilities.
11.	?	?	? +	✓		✓		Similarly to option 1, support for new facilities is likely to result in a level of harm to the landscape although the degree of harm would depend on the location and design of any new facilities. Further effects may be experienced in this option due to the transportation of waste into the plan area. The effects of this would also depend on the routes used.
12.	+	+	+	✓		✓	✓	Similarly to option 1, this option will have positive effects on the economy by providing employment in the waste management sector, with knock-on effects for local businesses and for businesses which support the waste management sector as well as supporting energy recovery from waste which would help to offset any costs associated with energy consumption/processing of waste.
13.	?	?	?	✓	✓	✓	✓	Whilst the option may provide positive effects in terms of job creation (as detailed under objective 12) it may have negative effects on the vitality of a community depending on the location and scale of any development. The overall effect is uncertain and would depend on the circumstances of each case.
14.	?	?	? +	✓		✓	✓	Support for new facilities could result in a level of harm to the recreational assets although the degree of harm would depend on the location of any new facilities. Enabling a high standard of quarry reclamation could have positive effects in terms of recreation opportunities subject to the type of reclamation in the long-term.
15.	- ?	- ?	- ?	✓	✓	✓	✓	There may be negative impacts on communities in terms of noise, odour and traffic. The option is not clear as to whether hazardous waste would be handled inside or outside of the plan area (only that provision for hazardous landfill would be outside of the plan area) While any facilities handling hazardous waste would require stringent environmental permits to deal with that waste, which would help ensure health is not compromised, there may be some uncertainty as to whether perceptions of facilities that may handle hazardous waste may be altered and affect wellbeing. The scale of the impacts would depend upon the location and type and waste processing facility.

16.	?	?	?	✓		✓	✓	Any new development would need to adhere to other policies within the plan to ensure the location minimises any flood risk or adverse surface run-off. It is possible that additional run-off may be caused through further development.
17.	+	+	+	✓			✓	This option could result in ensuring that construction materials continue to circulate in the economy within the plan area thus ensuring sufficient supply for the development needs of the population.

Proposed alternative option 3: (Or) Under this option new facilities for managing C & I waste would not be supported.

This option assumes that the planning permission for Allerton Waste Recovery Park will be implemented, and other facilities currently dealing with C & I waste will continue to operate in line with existing permissions, and the physical effects arising from this development are part of the baseline situation.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	- ?	- ?	- ?	✓		✓	✓	Under this option generation of C & I waste would continue, but facilities for managing it would find it much harder to get approval. This would, in effect, lead to a need to export waste to nearby areas driving demand. The consequences for this on biodiversity / geo-diversity are that land will be used up for sites outside the plan area affecting the habitats that are currently located there (so much would depend on location, though there would inevitably be some effects). Assuming Allerton Park Waste Recovery Park is developed and other sites in the Plan Area continue to operate some of this waste would be managed in the short and medium term within the plan area, though in the longer term effects are more uncertain.
2.	- ?	- ?	-- ?	✓		✓	✓	As with objective 1 the consequences for this on water are that land will be used up for sites outside the plan area affecting the water resources that are currently located there (so much would depend on location, though there would inevitably be some effects). Assuming Allerton Park Waste Recovery Park is developed and other sites in the Plan Area continue to operate some of this waste would be managed in the short and medium

								term within the Plan Area, though in the longer term effects would be magnified as more significant gaps in capacity would begin to emerge.
3.	-	-	--	✓		✓		While some C & I waste would likely be managed in the Plan Area in the short and medium term, over time more and more C&I waste would be likely to be exported, meaning more traffic would be generated.
4.	-	-	--	✓		✓		While some C & I waste would likely be managed in the Plan Area in the short and medium term, over time more and more C&I waste would be likely to be exported, meaning more traffic would be generated. This would lead to more air pollution
5.	- ?	- ?	-- ?	✓		✓	✓	As with objective 1 the consequences for this on soils / land are that land will be used up for sites outside the plan area which may be of varied quality (so much would depend on location, though there would inevitably be some effects). Assuming Allerton Waste Recovery Park is developed and other sites in the Plan Area continue to operate some of this waste would be managed in the short and medium term within the Plan Area, though in the longer term effects would be magnified as more significant gaps in capacity would begin to emerge.
6.	-	-	--	✓		✓		While some C & I waste would likely be managed in the Plan Area in the short and medium term, over time more and more C&I waste would be exported, meaning more traffic would be generated. This would mean that more carbon dioxide would be emitted.
7.	0	0	0					No clear link
8.	0 ?	0 ?	0 ?	✓		✓	✓	In the main this option will have a neutral effect on resource use. However, there will likely be some minor positive effects which arise through waste management buildings elsewhere achieving economies of scale and thus using fewer resources. There will also likely be some negative effects that occur because more fuel resources are used to move waste to its destination. It is not possible, without use of detailed life cycle assessment to establish the overall impact which depends on the balance between transport energy use and building energy and water use.
9.	0	0	0					There is no significant effect as this option is about location of facilities rather than where waste will be dealt with on the waste hierarchy.
10.	- ?	- ?	- ?	✓		✓	✓	As with objective 1 the consequences for this on the historic environment are that land will be used up for sites outside the plan area which may contain important historic assets or affect the character of nearby assets (so much would depend on location, though there would inevitably be some effects). Assuming Allerton Park Waste Recovery Park is developed and other sites in the Plan Area continue to operate some of this waste would be managed in the short and medium term within the Plan Area, though in the longer term effects would be magnified as more significant gaps in capacity would begin to emerge.
11.	- ?	- ?	-- ?	✓		✓	✓	As with objective 1 the consequences for this on the landscape are that land will be used up for sites outside the plan area which may be within important landscape areas or affect the character of nearby areas (so much would depend on location, though there would inevitably be some effects). Assuming Allerton Park Waste

								Recovery Park is developed and other sites in the Plan Area continue to operate some of this waste would be managed in the short and medium term within the Plan Area, though in the longer term effects would be magnified as more significant gaps in capacity would begin to emerge.
12.	-	-	--	✓		✓	✓	This may raise costs to businesses as waste would need to travel further. Jobs that would have gone to the plan area will also be lost to other areas.
13.	+ -	+ -	--	✓		✓	✓	The Plan Area would benefit from a reduced need to manage C & I waste within its boundaries, which could benefit tourism in those communities that would have been near to waste management facilities as they may become more attractive to tourists or investors (though those effects would simply be transplanted to locations outside of the Plan Area). Jobs would, however, also be lost to communities in the Plan Area as waste related employers and supporting industries would, particularly in the long term, go elsewhere.
14.	- ?	- ?	- ?	✓		✓	✓	As with objective 1 the consequences for this on recreation leisure and learning are that land may possibly be used up for sites outside the plan area (unless spare capacity is used up instead), this land which may contain rights of way or public access, or may affect views from nearby public access points (so much would depend on location, though there would inevitably be some effects). Assuming Allerton Park Waste Recovery Park is developed and other sites in the Plan Area continue to operate some C&I waste would be managed in the short and medium term within the Plan Area (keeping effects relatively low), though in the longer term effects are more uncertain.
15.	- ?	- ?	-- ?	✓		✓	✓	As with objective 1 the consequences for this option on wellbeing, health and safety are that there will be less amenity and wellbeing issues associated with C & I waste sites within the plan area as less waste will need to be managed here. However, outside these effects will simply be exported outside of the Plan Area, though much would depend on location (though there would inevitably be some effects). Assuming Allerton Park Waste Recovery Park is developed and other sites in the Plan Area continue to operate some C&I waste would be managed in the short and medium term within the Plan Area (keeping of dealing with C&I waste relatively low), though in the longer term effects would be magnified as more significant gaps in capacity would begin to emerge.
16.	?	?	?					Effects would be entirely dependent on location and are unknown.
17.	-	-	-					This option is likely to make waste sites more remote from communities and would therefore reduce opportunities to allow public access to facilities or to shorten supply chains for recycled materials.

Proposed alternative option 4: (And) This option supports the management of hazardous waste in the area where it arises unless it is necessary to do otherwise

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	- ? 	- ?	- + ?	✓	✓	✓	✓	As there is no record of any hazardous waste landfill facilities in the Plan Area[96], and only 12 per cent of the hazardous waste arising within the Plan Area is ultimately managed at facilities within the Plan Area[97], this option is therefore likely to support new hazardous waste facilities in the Plan Area, which could affect biodiversity through their land take, or indirectly as a result of accidental unregulated spills or release of hazardous residues (assuming that any waste sites would be required under environmental permitting to ensure the management of wastes within strict acceptable limits). Given the relatively low levels of hazardous waste generated in the Plan Area such impacts are likely to be at a relatively small scale. Effects would be uncertain as their impact would be dependent on location. Areas outside of the Plan Area are likely to see a neutral to small benefit as less waste would need to be managed, though in the main this would take place at existing facilities. The small benefit is likely to be most significant when existing permissions outside of the Plan Area expire, and overall capacity can re-adjust to demand.
2.	-	-	-	✓	✓	✓	✓	For the same reasons as objective 1, this would equate to more hazardous waste being handled in the Plan area and less outside. This could affect water as a result of accidental unregulated spills or release of

[96] Urban Vision, 2013. Waste Arisings and Capacity Requirements: Final Report [URL: http://www.yorkshiredales.org.uk/planning/planningpolicy/future-policy/draft-local-plan/1-evidence-base/UV-North-Yorkshire-Sub-region-Final-Waste-Capacity-Report-Oct-2013.pdf]

[97] North Yorkshire County Council, City of York Council and North York Moors National Park, 2014. Waste Topic Papers.

	?	?	+ ?					hazardous residues (assuming that any waste sites would be required under environmental permitting to ensure the management of wastes within strict acceptable limits). Given the relatively low levels of hazardous waste generated in the Plan Area such impacts are likely to be at a relatively small scale and tightly regulated via Permitting controls. Many effects would be uncertain as their impact would be dependent on location. Areas outside of the Plan Area are likely to see a neutral to small benefit as less waste would need to be managed, though in the main this would take place at existing facilities. The small benefit is likely to be most significant when existing permissions outside of the Plan Area expire, and overall capacity can re-adjust to demand.
3.	+	+	+					Hazardous waste would not need to travel as far under this option so the effect would be a minor positive (given the relatively low volume of hazardous waste in the Plan Area).
4.	+ -	+ -	+ -					Hazardous waste would not need to travel as far under this option so the effect would be a minor positive (given the relatively low volume of hazardous waste in the Plan Area). Air pollution from traffic would thus be lower. If more hazardous waste is subjected to thermal treatment in the Plan Area there would be some emissions to air that would lessen these benefits from reduced transport, though such emissions will be tightly controlled via environmental permitting. However, these effects are expected to be within emission limit values as policed by the environmental permitting regime, though a minor negative is recorded to account for, for example, the pollution impacts that might occur outside of the control of a permit, e.g. through inappropriate use of the land[98].
5.	- ?	- ?	- + ?	✓	✓	✓	✓	For the same reasons as objective 1, this would equate to more hazardous waste being handled in the Plan area and less outside. This could affect soils / land as a result of land take or accidental unregulated spills or release of hazardous residues (assuming that any waste sites would be required under environmental permitting to ensure the management of wastes within strict acceptable limits). Given the relatively low levels of hazardous waste generated in the Plan Area such impacts are likely to be at a relatively small scale. Effects would be uncertain as their impact would be dependent on location.

[98] The Environment Agency's 'Guidance for Developments Requiring Planning Permissions and Environmental Permits'[URL: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/297009/LIT_7260_bba627.pdf] sets out the role of the environmental permitting regime and its interface with the planning system. It advises specifically that "when deciding on a planning application, planning authorities should: - be confident the development will not result in unacceptable risks from pollution when considering if the development is an appropriate use of the land [and]; not focus on controlling pollution where it can be controlled by other regulations, such as EPR [Environmental Permitting Regulations].

								Areas outside of the Plan Area are likely to see a neutral to small benefit as less waste would need to be managed, though in the main this would take place at existing facilities. The small benefit is likely to be most significant when existing permissions outside of the Plan Area expire, and overall capacity can re-adjust to demand.
6.	+	+	+	✓		✓		Hazardous waste would not need to travel as far under this option so less CO2 would be generated. The effect would be a minor positive (given the relatively low volume of hazardous waste in the Plan Area).
7.	?	?	?	✓		✓		Hazardous waste management is highlighted as being an operation that may be vulnerable to climate change by DEFRA. Heavier rainfall episodes and flooding are likely to be key impacts, though periods of drought may also have impacts[99]. Much will be location specific so it is unknown whether shifting to a more self-sufficient approach is likely to have effects though the south of the plan area in particular may be subject to increased fluvial flooding and tidal flooding in the timescale of hazardous waste disposal sites (particularly landfill). Climate change will certainly need to be considered for timescales appropriate to the expected lifespan of the facilities.
8.	- 0	- 0	- 0	✓		✓		More new facilities will need to be built to support local treatment of hazardous waste, though less fuel will be needed to deliver to them. The effect is likely to be neutral to minor negative.
9.	0	0	0					This option is about locational aspects of hazardous waste management rather than its place in the waste hierarchy.
10.	- ?	- ?	- + ?	✓	✓	✓	✓	For the same reasons as objective 1, this would equate to more hazardous waste being handled in the Plan Area and less outside. This could affect the historic environment as a result of land take and visual impacts on historic character. Given the relatively low levels of hazardous waste generated in the Plan Area such impacts are likely to be at a relatively small scale. Effects would be uncertain as their impact would be dependent on location. Areas outside of the Plan Area are likely to see a neutral to small benefit as less waste would need to be managed, though in the main this would take place at existing facilities. The small benefit is likely to be most significant when existing permissions outside of the Plan Area expire, and overall capacity can re-adjust to demand.
11.	- ?	- ?	- +	✓	✓	✓	✓	For the same reasons as objective 1, this would equate to more hazardous waste being handled in the Plan Area and less outside. This could affect the landscape / townscape as a result of land take and visual impacts on character. Given the relatively low levels of hazardous waste generated in the Plan Area such impacts are

[99] DEFRA, 2013. National Policy Statement for Hazardous Waste: A framework document for planning decisions in nationally significant hazardous waste infrastructure [URL: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/205568/pb13927-hazardous-waste-policy-20130606.pdf]

			?					likely to be at a relatively small scale. Effects would be uncertain as their impact would be dependent on location. Areas outside of the Plan Area are likely to see a neutral to small benefit as less waste would need to be managed, though in the main this would take place at existing facilities. The small benefit is likely to be most significant when existing permissions outside of the Plan Area expire, and overall capacity can re-adjust to demand.
12.	+ -	+ -	+ -	✓		✓	✓	This option is likely to result in some new facilities in the plan area employing modest numbers. Outside the Plan area there may be a modest drop in demand for use of hazardous waste facilities. This may be counterbalanced by some small scale economic effects of having more hazardous waste sites in the plan area, such as a possible decrease in local tourism or investment.
13.	+ -	+ -	+ -	✓		✓	✓	This option is likely to result in some new facilities in the plan area employing modest numbers. Outside the Plan area there may be a modest drop in demand for use of hazardous waste facilities. This may be counterbalanced by some small scale economic effects of having more hazardous waste sites in the plan area, such as a possible decrease in local tourism or investment.
14.	- ?	- ?	- + ?	✓	✓	✓	✓	For the same reasons as objective 1, this would equate to more hazardous waste being handled in the Plan Area and less outside. This could affect recreation, leisure and learning as a result of land- take and thus disruptions to access and visual impacts on character / views affecting enjoyment of the outdoors. Given the relatively low levels of hazardous waste generated in the Plan Area such impacts are likely to be at a relatively small scale. Effects would be uncertain as their impact would be dependent on location. Areas outside of the Plan Area are likely to see a neutral to small benefit as less waste would need to be managed, though in the main this would take place at existing facilities. The small benefit is likely to be most significant when existing permissions outside of the Plan Area expire, and overall capacity can re-adjust to demand.
15.	-	-	-					Managing more hazardous waste in the Plan Area, albeit at relatively low levels, is likely to affect wellbeing as perceptions of hazardous waste sites are generally not favourable, regardless of the high level of environmental controls placed upon them by the environmental permitting regime.
16.	?	?	?					Much will be location specific so it is unknown whether shifting to a more self-sufficient approach is likely to have effects though the south of the plan area in particular may be subject to increased fluvial flooding and tidal flooding in the timescale of hazardous waste disposal sites (particularly landfill). Too little is known to know of the nature of the effect when locations are not specified though this will certainly need to be considered for timescales appropriate to the expected lifespan of the facilities.
17.	0	0	0					No significant effects

Summary of assessment
Options 1 and 2 would both provide significant benefits for the effective and sustainable management of Commercial and Industrial waste in line with the waste hierarchy and minimising waste to landfill. Both would also be positive for minimising the use of resources and creating positive effects for the economy in line with reducing costs associated with landfill, provision of energy from waste and the production of recycled materials. Option 2, is likely to have more positive implications in relation to transportation of waste given that it would support management of C&I arising from outside of the Plan area where it can be demonstrated that the location proposed would present the nearest appropriate installation for the waste to be dealt with. Overall, this would help to minimise journeys/mileage in relation to waste processing. The majority of other environmental and social effects are uncertain given that they would depend upon the scale, location and type of waste facility to be implemented, although negative effects may potentially be greater under Option 2 as more waste would be being managed in the Plan area.

Option 3 has a number of negative effects, particularly for areas adjacent to the plan area as environmental, social and economic effects are transplanted to other areas, particularly in the long term. Meanwhile, objectives related to transport, air pollution and climate change and the economy also show heightened longer term effects, though these apply for the Plan Area. Option 4 also has largely negative effects (with a few exceptions, such as the mixed positive and negative effects associated with the economy and community vitality SA objectives) caused mainly because self-sufficiency in managing hazardous waste would bring impacts that were previously exported back into the Plan Area, albeit at a relatively low level.

Recommendations
On balance, and assuming that it can be effectively demonstrated to be consistent with other proposals within the plan, it is considered that Option 2 could be the most sustainable.

Meeting Waste Management Capacity Requirements – Construction, Demolition and Excavation Waste (Including Hazardous CD&E Waste) (id46)

Option 1

This option would support provision of adequate capacity for, and promote self-sufficiency in, management of CD&E waste through:

- Providing support in principle for proposals which would deliver increased capacity for the recycling of CD&E waste, with priority being given to facilities which would manage the construction and demolition element of CD&E waste. An indicative additional target capacity of up to 300,000tpa could be delivered. Provision of new capacity for recycling of CD&E waste would need to be consistent with locational and other relevant policies to be identified in the Plan.
- Supporting the delivery of additional transfer station capacity for C&D waste where it can be demonstrated that additional provision would contribute to the objective of dealing with waste in proximity to where it arises
- Supporting additional landfill capacity for non-hazardous CD&E waste where it can be demonstrated that the waste to be landfilled cannot practicably be dealt with further up the waste hierarchy and that there is insufficient permitted capacity in the Plan area or, in the case of inert waste, it would facilitate a high standard of quarry reclamation in accordance with agreed reclamation objectives, or the substantial improvement of derelict or degraded land to a condition where it can be returned to agricultural productivity or other beneficial use. Support would also be provided in principle for an extension of the time period for the utilisation of remaining void space at existing sites subject of time limited permissions.
- Landfill capacity for hazardous CD&E waste requiring landfill would be met through provision outside the Plan area.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	-	✓	✓	✓	✓	Support for new facilities is likely to result in a level of harm to biodiversity and geodiversity although the degree of harm would depend on the location of any new facilities. Enabling a high standard of quarry reclamation could have positive effects in terms of biodiversity.
	+	+	+					
2.	-	-	-	✓		✓	✓	The developments supported under these options could have effects on water quality from run-off from all developments listed, and from leachate from landfill. Whether there would be effects on NVZs or SPZs would be dependent on the location of any facilities. There would also be effects in terms of use of water and generation of waste water through the recycling process.

3.	?	?	?	✓		✓	✓	Effects in terms of transport are uncertain as this would depend on the location of any new facilities. However, by ensuring sufficient provision within the Plan area this will reduce the need for transportation over further distances.
4.	-	-	-	✓	✓	✓	✓	Assuming that emissions permitting regimes operate effectively it is still likely that would be some residual effects on air quality including bio-aerosols from landfill and traffic emissions from other forms of management.
5.	- +	- +	- +	✓		✓		The provision of new facilities is likely to result in loss of soils although the extent to which any best and most versatile agricultural land is lost would depend upon the location of any new facilities. Enabling a high standard of quarry reclamation and improvement of derelict or degraded land could have positive effects in terms of land and soil quality.
6.	- +	- +	- +	✓		✓	✓	It is likely that there would be a negative effect on emissions of greenhouse gases through both transportation and through recycling and landfilling processes which result in the emission of greenhouse gases (although it is assumed that these would be within required limits). There may also be positives related to reducing the need for new construction materials to be produced (such as concrete which is particularly energy intensive).
7.	-	-	-	✓		✓	✓	It is possible that these developments will contribute towards flooding through the creation of additional developed areas, thus exacerbating run-off and increasing flood risk.
8.	+ +	+ +	+ +	✓		✓		The option would have strong positive effects against this objective by dealing with CD&E waste as high up the hierarchy as possible and only landfilling where it cannot be dealt with in any other way. (It has been assumed that recycling in the context of CD&E waste includes re-use but this may need to be clarified should this option be pursued at Preferred Options stage). This will help to reduce the demand for resources.
9.	+ +	+ +	+ +	✓		✓		The option would have strong positive effects against this objective by dealing with CD&E waste as high up the hierarchy as possible and only landfilling where it cannot be dealt with in any other way. (It has been assumed that recycling in the context of CD&E waste includes re-use but this may need to be clarified should this option be pursued at Preferred Options stage).
10.	? +	? +	? +	✓		✓		Support for new facilities could result in a level of harm to the historic environment although the degree of harm would depend on the location of any new facilities. Enabling a high standard of quarry reclamation could have positive effects in terms of the historic environment.
11.	- +	- +	- +	✓		✓		Support for new facilities is likely to result in a level of harm to the landscape although the degree of harm would depend on the location and design of any new facilities. Enabling a high standard of quarry reclamation could have positive effects in terms of landscape.
12.	+	+	+	✓		✓	✓	This option will have positive effects on the economy by providing employment in the waste management sector, with knock-on effects for local businesses and for businesses which support the waste management sector.
13.	?	?	?	✓	✓	✓	✓	Whilst the option may provide positive effects in terms of job creation (as detailed under objective 12) it may

								have negative effects on the vitality of a community depending on the location and scale of any development. The overall effect is uncertain and would depend on the circumstances of each case.
14.	? +	? +	? +	✓		✓	✓	Support for new facilities could result in a level of harm to the recreational assets although the degree of harm would depend on the location of any new facilities. Enabling a high standard of quarry reclamation could have positive effects in terms of recreation opportunities.
15.	-	-	-	✓	✓	✓	✓	There may be negative impacts on communities close to such facilities in terms of noise, smell, traffic etc.
16.	-	-	-	✓		✓	✓	It is possible that these developments will contribute towards flooding through the creation of additional developed areas, thus exacerbating run-off.
17.	+	+	+	✓			✓	This option could result in ensuring that construction materials continue to circulate in the economy thus ensuring sufficient supply for the development needs of the population.

Option 2
This option would be the same as Option 1 but would, additionally, provide support in principle for proposals for the import for landfill of inert CD&E waste arising outside the area where it can be demonstrated that the importation and deposit of the waste is needed to achieve mineral site reclamation in accordance with agreed objectives.

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	- +	- +	- +	✓	✓	✓	✓	Support for new facilities is likely to result in a level of harm to biodiversity and geodiversity although the degree of harm would depend on the location of any new facilities. Enabling a high standard of quarry reclamation could have positive effects in terms of biodiversity. This option is likely to result in greater positives for quarry reclamation than option 1.
2.	-	-	-	✓		✓	✓	The developments supported under these options could have effects on water quality from run-off from all developments listed, and from leachate from landfill. Whether there would be effects on NVZs or SPZs would be dependent on the location of any facilities. There would also be effects in terms of use of water and generation of waste water through the recycling process.
3.	-	-	-	✓		✓		This option may lead to negative effects related to increased transport as it would support the importation of waste.
4.	-	-	-	✓	✓	✓	✓	Assuming that emissions permitting regimes operate effectively it is still likely that would be some residual effects on air quality including bio-aerosols from landfill and traffic emissions from other forms of management.
5.	- +	- +	- +	✓		✓		The provision of new facilities is likely to result in loss of soils although the extent to which any best and most versatile agricultural land is lost would depend upon the location of any new facilities. Enabling a high standard of quarry reclamation could have positive effects in terms of land and soil quality. This option is likely to result in greater positives for quarry reclamation than option 1.
6.	-	-	-	✓		✓	✓	It is likely that there would be a negative effect on emissions of greenhouse gases through both transportation and through recycling and landfilling processes which result in the emission of greenhouse gases.
7.	-	-	-	✓		✓	✓	It is possible that these developments will contribute towards flooding through the creation of additional developed areas, thus exacerbating run-off and increasing flood risk.
8.	+	+	+	✓		✓		The option would have positive effects against this objective by dealing with CD&E waste as high up the hierarchy as possible and only landfilling where it cannot be dealt with in any other way (through option 1), but

								this would be reduced by allowing the landfill of such waste for minerals site restoration. (
9.	+	+	+	✓		✓		The option would have positive effects against this objective by dealing with CD&E waste as high up the hierarchy as possible and only landfilling where it cannot be dealt with in any other way (through option 1), but this would be reduced by allowing the landfill of such waste for minerals site restoration. (
10.	? +	? +	? +	✓		✓		Support for new facilities could result in a level of harm to the historic environment although the degree of harm would depend on the location of any new facilities. Enabling a high standard of quarry reclamation could have positive effects in terms of the historic environment. This option is likely to result in greater positives for quarry reclamation than option 1.
11.	- +	- +	- +	✓		✓		Support for new facilities is likely to result in a level of harm to the landscape although the degree of harm would depend on the location and design of any new facilities. Enabling a high standard of quarry reclamation could have positive effects in terms of landscape. This option is likely to result in greater positives for quarry reclamation than option 1.
12.	+	+	+	✓		✓	✓	This option will have positive effects on the economy by providing employment in the waste management sector, with knock-on effects for local businesses and for businesses which support the waste management sector.
13.	?	?	?	✓	✓	✓	✓	Whilst the option may provide positive effects in terms of job creation (as detailed under objective 12) it may have negative effects on the vitality of a community depending on the location and scale of any development. The overall effect is uncertain and would depend on the circumstances of each case.
14.	? +	? +	? +	✓		✓	✓	Support for new facilities could result in a level of harm to the recreational assets although the degree of harm would depend on the location of any new facilities. Enabling a high standard of quarry reclamation could have positive effects in terms of recreation opportunities. This option is likely to result in greater positives for quarry reclamation than option 1.
15.	-	-	-	✓	✓	✓	✓	There may be negative impacts on communities close to such facilities in terms of noise, smell, traffic etc.
16.	-	-	-	✓		✓	✓	It is possible that these developments will contribute towards flooding through the creation of additional developed areas, thus exacerbating run-off.
17.	-	-	-	✓			✓	This would in effect lessen the positive effect of option 1 by removing CDE waste from the economy by allowing landfill of it.

Proposed alternative option 3: (And) This option supports the management of hazardous waste at source unless it is necessary to do otherwise

This option assumes that managing at source means that individual local planning authorities would provide for management of their own hazardous CD and E waste.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	- ?	- ?	- ?					In addition to other options this option would support managing hazardous waste at source. Evidence suggests that 5,960 tonnes of such waste required landfilling in 2011, though no landfill sites existed in the plan area. Much of this waste was asbestos containing materials (ACM)[100]. If this were to be managed in the Plan Area it would be likely to require construction of a specialist landfill site equipped to handle ACMs or the equipping of one or more existing sites to accept ACM waste in a way complicit with regulations[101] This would have an impact upon the land utilised for such development and access. The impact of this is dependent on location (and therefore uncertain), though in most circumstances impacts would be no more than minor negative at a plan area scale (although at a local scale, if say a habitat rich quarry was utilised, impacts may be heightened). In other plan areas these effects may lessen, but given the low volumes of waste exported this is likely to be relatively insignificant.
2.	- ?	- ?	- ?					Impacts on the water environment form storage of waste are likely to be negligible, given environmental controls required during permitting, however there may be impacts from construction of a site or potential impacts on the local hydrology depending on location of the site, engineered drainage system etc.

[100] Urban Vision, 2013. Figures include the Yorkshire Dales as well as the wider Plan Area.

[101] See Environment Agency, 2010. Waste Acceptance at Landfills [URL: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/296422/geho1110btew-e-e.pdf] - ACMs must be landfilled in separate cells.

3.	? 0	? 0	? 0					It is difficult to predict whether the current arrangement of sites outside of the Plan Area would be better or worse on the whole in terms of transport – and much would depend on the location of any hazardous landfill site. Uncertain, though possibly negligible.
4.	?	?	?					It is difficult to predict whether the current arrangement of sites outside of the Plan Area would be better or worse on the whole in terms of transport – and much would depend on the location of any hazardous landfill site. It cannot therefore be said whether air quality from transport would be better or worse. Given the tight regulation on the disposal of hazardous waste including ACMs it is assumed that the permitting regulations will operate effectively and impacts to air would be negligible
5.	0 -	0 -	0 -					This option is likely to have a land take. The effect is likely to be of negligible to minor significance on a Plan Area scale depending on the quality of the land.
6.	0	0	0					It is difficult to predict whether the current arrangement of sites outside of the Plan Area would be better or worse on the whole in terms of transport and the CO2 / other greenhouse gases it generates– and much would depend on the location of any alternative landfill site or equipped existing landfill sites. Uncertain, though possibly negligible.
7.	?	?	?	✓		✓		Hazardous waste management is highlighted as being an operation that may be vulnerable to climate change by DEFRA. Heavier rainfall episodes and flooding are likely to be key impacts, though periods of drought may also have impacts[102]. Much will be location specific so it is unknown whether shifting to a more self-sufficient approach is likely to have effects though the south of the plan area in particular may be subject to increased fluvial flooding and tidal flooding in the timescale of hazardous waste disposal sites (particularly landfill). Too little is known to know of the nature of the effect when locations are not specified though this will certainly need to be considered for timescales appropriate to the expected lifespan of any facilities.
8.	0	0	0					Although this option would effectively mean that additional landfill would be required, the resources managed (hazardous waste largely comprising ACMs) are highly toxic and it would not be advisable to re-use them[103].
9.	0	0	0					Although this option would effectively mean that additional landfill at the bottom of the waste hierarchy would be required, the resources managed (hazardous waste largely comprising ACMs) are highly toxic and it would not be advisable to re-use them[104].

[102] DEFRA, 2013. National Policy Statement for Hazardous Waste: A framework document for planning decisions in nationally significant hazardous waste infrastructure [URL: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/205568/pb13927-hazardous-waste-policy-20130606.pdf]

[103] Readers should note that ACMs are often not disposed of if they are in good condition as it may be advisable not to dispose of them. Any reader concerned about ACMs should seek advice from the Health and Safety Executive or their local authority.

[104] ibid

10.	? -	? -	? -					This option is likely to have a land take. The effect is likely to be of minor to uncertain significance on a Plan Area scale depending on the historic significance of the land developed and the effect that a disposal site may have on the historic character of an area. In other plan areas these effects may lessen, but given the low volumes of waste exported this is likely to be relatively insignificant.
11.	? -	? -	? -					This option is likely to have a land take. The effect is likely to be of minor to uncertain significance on a Plan Area scale depending on the landscape significance of the land developed and the effect that a disposal site may have on the landscape character of an area. In other plan areas these effects may lessen, but given the low volumes of waste exported this is likely to be relatively insignificant.
12.	+ ?	+ ?	+ ?					The option is likely to have a small scale benefit for jobs at any future specialist facility, though it is unclear whether supporting a more self-sufficient approach to waste would increase or decrease costs to local construction firms compared to the present arrangements. In other plan areas these effects may lessen, but given the low volumes of waste exported this is likely to be relatively insignificant.
13.	? -	? -	? -					Despite the possibility of jobs, this option may work against local tourism, and community vitality as hazardous landfill sites may affect local perceptions of an area. In other plan areas these effects may lessen, but given the low volumes of waste exported this is likely to be relatively insignificant.
14.	? -	? -	? -					This option is likely to have a land take. The effect is likely to be of minor to uncertain significance on a Plan Area scale depending on the access significance of the land developed and the effect that a disposal site may have on views from rights or ways or other publicly accessible land. In other plan areas these effects may lessen, but given the low volumes of waste exported this is likely to be relatively insignificant.
15.	? -	? -	? -					Environmental controls through the permitting regime would ensure that risks to public safety are effectively managed, though the planning regime will need to consider whether development near the site is compatible with it. Given constraints on access and public perceptions of hazardous waste there is the potential for significant effects on wellbeing as a number of people may worry about a facility even where it is well managed, or may fee that previously accessible areas of their communities are out of bounds. In other plan areas these effects may lessen, but given the low volumes of waste exported this is likely to be relatively insignificant.
16.	?	?	?	✓		✓		Heavier rainfall episodes and flooding are likely to be key impacts, though periods of drought may also have impacts[105]. Much will be location specific so it is unknown whether shifting to a more self-sufficient approach is likely to have effects though the south of the plan area in particular may be subject to increased fluvial flooding and tidal flooding in the timescale of hazardous waste disposal sites (particularly landfill). Too little is known to

[105] DEFRA, 2013. National Policy Statement for Hazardous Waste: A framework document for planning decisions in nationally significant hazardous waste infrastructure [URL: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/205568/pb13927-hazardous-waste-policy-20130606.pdf]

								know of the nature of the effect when locations are not specified though this will certainly need to be considered for timescales appropriate to the expected lifespan of any facilities.
17.	0	0	0					No significant effects

Summary of assessment
Under both options 1 and 2 it is possible, although uncertain, that there could be negative effects on the environment and communities through provision of new facilities, whilst positive effects would be realised in relation to managing waste further up the waste hierarchy and using resources efficiently.
Option 2 would potentially increase negative effects relating to transport through importing wastes from elsewhere but in turn this may result in greater positives through facilitating high quality reclamation of former quarries.

Option 3 would, in addition to the effects of other options, have a number of uncertain or minor negative effects. This is generally due to the effect that creating capacity to deal with hazardous construction materials would have on the plan area, for instance if a new specialist landfill facility is needed to be built, which through its use of land and its potential to generate negative public perceptions, would have a range of environmental, social and economic effects depending on location.

Recommendations
It is recommended that on balance Option 2 would be more sustainable as it would provide greater opportunity for securing enhancements to former quarries. There is considerable uncertainty over the effects of climate change on option 3, which if pursued should be considered.

Managing Agricultural Waste (id47)

Option 1.
This option would support self-sufficiency in capacity for management of waste, as well as the principle of managing waste near to where it arises, by supporting where practicable the on-farm management of agricultural waste at the point of arising. Where waste can only be managed through more specialised facilities or facilities which can only realistically be provided at a larger scale, then support would be provided in principle for the development of new infrastructure which would enable appropriate waste from more than one holding to be managed and where it can be demonstrated that the facility is scaled primarily to deal with waste management needs arising in the Plan area. The locational principles for such development would need to be in accordance with the site locational principles for waste development to be contained in the Plan.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?		✓	✓	✓	It is uncertain what the impact of this option would be on biodiversity and geodiversity as effects are dependent on the location of on farm management or off farm facilities. Land take, leachate from on farm management, as well as localised nutrient loading of soils may, in the wrong place lead to some negative impacts on biodiversity however this would be likely to be of minor to negligible significance in most cases.
	-	-	-					
2.	0	0	0		✓	✓	✓	On farm management of waste has the potential to generate leachate to water bodies. Assuming the environmental permitting and exemption[106] regime works satisfactorily this should not be significant. There are also some positive effects associated with on farm composting which, when composted materials are used on farm, reduces the need for inorganic fertilisers (which are an important source of water pollution).
	?	?	?					
3.	+	+	+	✓		✓		Managing waste on farm where practicable will support a general reduction in traffic levels. In addition, where specialist facilities are required (as those facilities must accord with the plan's locational principals) if those principals support the minimisation of transport the positive effect would be enhanced.

[106] See Environment Agency, 2010. Agricultural Waste Exemptions – a look up guide [URL: http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/LIT_7533_9650f6.pdf]

4.	-	-	-	✓	✓	✓		Supporting on farm management of waste where practicable may create some localised issues associated with bio-aerosols and odours which may cause a nuisance. These issues can be readily avoided / mitigated for by policies elsewhere in the plan and by the pollution control / exemptions regime.
5.	+	+	+		✓	✓		While off farm facilities will have a land footprint, dealing with waste off farm might have a slightly lower net land take (as wastes are aggregated, and may be managed higher up the waste hierarchy). Some on farm wastes, such as composted wastes, can play an important role in increasing the nutrient status of farm soils however. On balance the impact is positive
6.	+	+	+	✓		✓		Maximising the amount of waste managed on farm would reduce transport emissions and thus contribute positively to reducing greenhouse gas emissions.
7.	0 +	0 +	0 +		✓		✓	Supporting on farm waste management would support on farm composting, which can play a role in enhancing water retention in soils. For other on farm wastes there is no clear link to climate adaptation.
8.	+	+	+	✓		✓		Supporting on farm waste management would often minimise resource use as many wastes will be composted or may be utilised in on farm anaerobic digestion facilities (even though this is not directly supported by the option). However, other waste streams may be managed at a lower level on the waste hierarchy. In practice, regulations (principally the Waste Management Regulations 2006 (Agricultural Waste Regulations) and Environmental Permitting Regulations, 2010) should discourage on farm landfill to a degree (as a permit is required to continue to landfill), while licensing exemptions can be obtained for recycling on-farm waste. The net effect is positive.
9.	+	+	+	✓		✓		Generally the objective, when considered alongside the permitting and exemption regime for farm waste, would encourage on farm composting and recycling, and support facilities for more specialist waste management. So waste would tend to be managed higher up the waste hierarchy. This is likely to be highly positive, however, it should be recognised that a significant proportion of farm waste is already dealt with on farm.
10.	0	0	0					No clear link
11.	0 ?	0 ?	0 ?	✓		✓		While on farm waste management may be a visible feature in the landscape, it is a generally considered to be of very low significance and often an accepted part of the landscape. Off farm specialist waste management facilities have an uncertain impact, though given they will be considered alongside locational principles (which although only options at this stage, all emphasise making use of the existing facility network) impacts are expected to be low.
12.	0	0	0	✓		✓		Managing farm waste on site where possible, and supporting this with more specialised sites should help support some jobs, but these are expected to be at a low level.

	+	+	+					
13.	0	0	0					No clear link
14.	0	0	0					No clear link
15.	-	-	-	✓	✓	✓		Supporting on farm management of waste where practicable may create some localised issues associated with bio-aerosols and odours which may cause a nuisance. This may impact upon the wellbeing of local people living close to on farm waste facilities or off farm specialised waste facilities. These issues can be readily avoided / mitigated for by policies elsewhere in the plan and by the pollution control / exemptions regime.
16.	0	0	0					No clear link
17.	0	0	0					No clear link

Option 2

This option would operate in combination with Option 1 and would also give specific support in principle for the development of Anaerobic Digestion (AD) facilities for the management of agricultural waste, in line with national waste strategy.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	?	?	?		✓	✓	✓	It is uncertain what the impact of this option would be on biodiversity and geodiversity as effects are dependent on the location of on farm management or off farm facilities, including AD facilities. Land take, leachate from on farm management, as well as localised nutrient loading of soils may, in the wrong place lead to some negative impacts on biodiversity however this would be likely to be of minor to negligible significance in most cases.
	-	-	-					
2.	-	-	-		✓	✓		For this option the effects would largely be as option 1, as AD facilities may have the potential to contribute to pollution if mismanaged or in storm events. However, the environmental permitting regime is assumed to bring

	+	+	+					levels to levels that are below the significance threshold in normal circumstances. A key product of AD is digestate. This can represent an effective way of applying the nutrients from on farm wastes such as slurries and manures to land, thus reducing potential for over application and pollution (as over application of slurries and manures is a cause of nutrient pollution of watercourses[107]).
3.	+	+	+	✓		✓		The effects of this option are largely considered to be the same as for option 1. However, AD offers the prospect of providing a local source of fertiliser in biodigestate, which may reduce some of the off farm transportation requirements associated with fertilisers.
4.	-	-	-	✓	✓	✓		Effects are considered to be similar to option 1.
5.	+ + ??	+ + ?	+ + ?		✓	✓		Encouraging anaerobic digestion creates a renewable source of biodigestate, which will directly replace synthetic fertilizers and inefficient spreading of slurries and manures. So, in a farm context, this may mean that the fertility of organic wastes is efficiently returned to the soil[108]. Piped AD biodigestate application systems may also benefit soils as they can enable minimum tillage farming techniques. If other off farm wastes, such as food waste, are taken by the facility there is an even greater benefit, as this can make a significant contribution to reducing landfill. One potential area for concern is where crops are specifically grown for biodigestate production, which could have a significant negative impact on this objective as land that potentially could be used for food production may instead be used as a source of feedstock for AD.
6.	+ +	+ +	+ +	✓		✓	✓	As well as digestate, AD's other product is biogas. This can be used as a source of electricity or fuel to offset the utilisation of fossil fuels. Heat can also be derived from the energy transformation to electricity in a combined heat and power system. This will help significantly reduce carbon emissions. Digestate also displaces the embodied energy of fertiliser and saves about 5 tonnes of CO2 for every one tonne of nitrogen fertiliser[109].

[107] See DECC / DEFRA, 2011. Anaerobic Digestion Strategy and Action Plan [URL: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69400/anaerobic-digestion-strat-action-plan.pdf]

[108] See DECC / DEFRA, 2011. Anaerobic Digestion Strategy and Action Plan [URL: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69400/anaerobic-digestion-strat-action-plan.pdf]

[109] See DECC / DEFRA, 2011. Anaerobic Digestion Strategy and Action Plan [URL: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69400/anaerobic-digestion-strat-action-plan.pdf]

7.	0 +	0 +	0 +		✓		✓	As option 1. In addition, there is no clear link between climate adaption and support for AD.
8.	+ +	+ +	+ +	✓			✓	AD, as it potentially captures biogas, heat and digestate from a range of farm wastes such as crop residues, slurries and manures, effectively minimises the requirement for buying in resources such as fertilisers. Combined with option 1 this will lead to very positive effects.
9.	+ +	+ +	+ +	✓			✓	AD, as it potentially captures biogas, heat and digestate from a range of farm wastes such as crop residues, slurries and manures, effectively captures the maximum value from farm waste streams thus preventing wastes, such as the waste methane that arises from the storage of manure. While manures and crop residues may be used on farms in any case, if external food waste is accepted this may increase the waste reduction value of the technology.
10.	0	0	0					No clear link
11.	-	-	-	✓		✓		Combined with option 1 this option would result in more fairly large buildings and silos appearing on farms. While these may not look out of place in a farming landscape, in some areas they may be viewed as a source of visual intrusion, or not in keeping with landscape character.
12.	+	+	+	✓		✓		Combined with option 1 this would create positive effects. In particular, where digestate or energy can be sold this could represent a significant income stream for a farm which may support a low number of jobs.
13.	0	0	0					No clear link
14.	0	0	0					No clear link
15.	-	-	-	✓	✓	✓		Effects would be broadly the same as option 1 (though some issues of odour / bioaerosols could be reduced as open processes would be replaced to a degree by more enclosed AD facilities).
16.	0	0	0					No clear link
17.	0	0	0					No clear link

Summary of assessment

Both options exhibit a range of sustainability effects, however, these are in the main neutral to positive.

Option 1 might result in minor negative effects relating to biodiversity, water, air, and health and wellbeing. However, most other effects are broadly positive as more on site management would reduce transport and associated effects, and would support existing practises of managing farm wastes in positive ways.

Option 2 has similar negative effects, as well as possible negative effects on farm landscapes. However, it also has some strong positive sustainability effects that arise from the benefits of turning farm waste into energy and biodigestate (an end product of anaerobic digestion that can be used as a fertiliser), such as benefits for climate change, minimisation of use of resources and soils and land. One particular area of uncertainty, however, is where crops are specifically grown to produce biodigestate and energy, which could cancel out some sustainability benefits as it would increase land requirements.

Recommendations

Option 2 is considered the more sustainable option, though both options would require a supporting policy framework to maximise sustainability benefits.

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Managing Low Level (Non-Nuclear) Radioactive Waste (id48)

Assumptions – Draft Government Policy for Hazardous Waste are subject to stringent legislative controls to control their management. LLNNR originates predominantly from the medical and research industries and includes: paper, rags, tools, clothing, filters, and other materials which contain small amounts of mostly short-lived radioactivity.

Option 1
This option would assume that needs for capacity for management of LLNNR waste would be met outside of the Plan area.
(Continuation of the current situation)

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0	✓	✓	✓		Given that the provision would be outside of the plan area, the impact on biodiversity is not likely to be significant. The location of the waste facility elsewhere may experience potential for harmful effects which could be cumulative depending on the volume of waste to be processed, the scale of the facility and any existing impacts. However, any environmental impacts would be strictly regulated by external bodies to minimise risks arising from the treatment of LLNNR.
	?	?	?					
2.	0	0	0	✓	✓	✓		Given that the provision would be outside of the plan area, the impact on water is not likely to be significant. However, the location of the waste facility elsewhere may experience potential for harmful effects which could be cumulative depending on the volume of waste to be processed, the scale of the facility and any existing impacts. However, any environmental impacts would be strictly regulated by external bodies to minimise risks arising from the treatment of LLNNR.
	?	?	?					
3.	0	0	0	✓	✓	✓		This option would represent the current baseline treatment of waste being transported out of the plan area for treatment at specialist waste facilities which is therefore neutral for this objective. However, there are on-going negative effects in connection with length of trips across boundaries, although it is acknowledged that the plan area only produces a small amount of LLNNR, depending on where the waste is treated. The nearest facility is acknowledged to be Leeds (30 miles) but there are also potential locations in Lancashire and Cumbria which would incur significantly more transport miles. It is likely that the main waste contributors would be from the main urban areas within the plan, the concentration of which is to the south and west which have good transport links.
	-	-	-					

4.	- ?	- ?	- ?	✓	✓	✓		Impacts on air quality are likely to arise in connection with the trips made for the transportation of LLNNR. These are likely to be cross boundary and cumulative given that the provision would be outside of the plan area. However, the location and type of the waste facility can also produce adverse effects through incineration for example, which the baseline states is the main management technique. This could also have cumulative effects depending on the volume of waste to be processed, the scale of the facility and any existing impacts.
5.	0	0	0					It is anticipated that there are potential low level contamination issues in relation to LLNNR, particularly where it is landfilled or stored. The majority of waste arising in the Plan area is anticipated to be managed via incineration in Leeds and given that the provision would be outside of the plan area, and not via landfill, the impact on soils is not considered to have adverse effects. In addition, any environmental impacts would be strictly regulated by external bodies to minimise risks arising from the treatment of LLNNR.
6.	0 ?	0 ?	0 ?	✓	✓	✓		Impacts on climate change may be as a result of emissions from transportation of LLNNR to the appropriate waste management facilities. The impacts may become more significant depending on which facilities the waste is taken to and the distance to be travelled. Additional effects may also arise from the incineration process, such as at the Leeds facility, which is likely to result in emissions. However, any environmental impacts would be strictly regulated by external bodies to minimise risks arising from the treatment of LLNNR.
7.	0	0	0					There is no direct link between the policy and the objective to adapt to climate change.
8.	0	0	0					This type of waste is not anticipated to be recycled due to its radioactivity and therefore it would have neutral impacts on this objective.
9.	+ 0	+ 0	+ 0	✓	✓	✓		This option is likely to continue the current practice of appropriately managing LLNNR in specific facilities outside of the Plan area. This would therefore have a neutral or positive effect in relation to this objective.
10.	0 ?	0 ?	0 ?	✓	✓	✓		Given that the provision would be outside of the plan area, the impact on the historic environment within the plan area is not likely to be significant. However, the location of the waste facility elsewhere may experience potential for harmful effects depending on its location.
11.	0 ?	0 ?	0 ?	✓	✓	✓		Given that the provision would be outside of the plan area, the impact on the historic environment within the plan area is not likely to be significant. However, the location of the waste facility elsewhere may experience potential for harmful effects depending on its location.
12.	0	0	0					The impacts on the economy are likely to be neutral given that this option would continue the current waste management practices. Benefits at the waste facility are unknown.
13.	0	0	0	✓	✓	✓		It is not anticipated that the management of LLNNR would have an effect on local communities within the Plan area given that management facilities are located elsewhere. However, the location of the waste facility

	?	?	?					elsewhere may experience potential effects depending on its proximity to local communities. In addition, any environmental or health impacts would be strictly regulated by external bodies to minimise risks arising from the treatment of LLNNR.
14.	0	0	0					It is not anticipated that the management of LLNNR would have an effect on recreation and leisure within the plan area given that management facilities are located elsewhere. The location of the waste facility elsewhere may experience potential effects depending on its location.
	?	?	?					
15.	0	0	0	✓	✓	✓		Given that the provision would be outside of the plan area, the impact on health and well-being within the plan area is not likely to be significant. Health and well-being may be potentially affected elsewhere may depending on its proximity to receptors, such as people. However, any impacts would be strictly regulated by external bodies to minimise risks to health arising from the treatment of LLNNR.
	?	?	?					
16.	0	0	0	✓	✓	✓		It is not anticipated that the management of LLNNR would have an effect on flood risk given that management facilities are located elsewhere and are unlikely to change. In addition, any environmental or health impacts would be strictly regulated by external bodies to minimise risks arising from the treatment of LLNNR.
	?	?	?					
17.	0	0	0					There is no clear link between this policy and the objective for meeting the needs of the population.

Option 2

This option would assume that the needs for capacity for management of LLNNR waste are likely to be met outside the plan area but would provide support in principle for development of specialist facilities in the Plan area where is can be demonstrated that the facility would enable LLNNR waste arising in the area to be managed further up the hierarchy. The locational principles for such development would need to be in accordance with the site locational principles for waste development to be contained in the Plan.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	**Impact / timescale**			**Type of effect**				**Analysis**
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	-	-	-	✓	✓	✓		Effects from the development of specialist facilities for waste management in the plan area could range from minor to significant depending on the scale, type and location of the facility. However, it would be reasonable

	?	?	?					to assume that there would be level of harm on biodiversity/geodiversity potentially through habitat loss or disturbance. This option would rely on other policies in the plan to make decisions on the suitability of LLNNR waste treatment facilities.
2.	-	-	-	✓	✓	✓		Effects from the development of specialist facilities for waste management in the plan area could range from minor to significant depending on the scale, type and location of the facility. It would be reasonable to assume that there may be level of harm on water consumption and quality depending on the method of processing. However, any environmental impacts would be strictly regulated by external bodies to minimise risks arising from the treatment of LLNNR. This option would also rely on other policies in the plan to make decisions on the suitability of LLNNR waste treatment facilities.
	?	?	?					
3.	+	+	+	✓	✓	✓		This option may improve the distance required to travel to specialist waste facilities as it links to locational principles in the plan. This option would also rely on other policies in the plan to make decisions on the suitability of LLNNR waste treatment facilities. In addition, the development of facilities which process waste up the hierarchy may also attract waste from outside of the plan area to be treated in a more sustainable manner. This may increase have adverse impacts on reducing transportation mileage and movements with cross-boundary and potentially, cumulative effects.
	-	-	-					
4.	-	-	-	✓	✓	✓		Impacts on air quality are likely to arise in connection with the trips made for the transportation of LLNNR. Should a new facility be proposed, these effects remain uncertain given that key effects are in relation to the distances travelled between the waste generators and any proposed facility. These could be reduced due to connection with the locational principals in the plan. Other effects may arise from the facilities themselves. However, any environmental impacts would be strictly regulated by external bodies to minimise risks arising from the treatment of LLNNR. This option would also rely on other policies in the plan to make decisions on the suitability of LLNNR waste treatment facilities.
	+	+	+					
	?	?	?					
5.	-	-	-	✓	✓	✓		Effects from the development of specialist facilities for waste management in the plan area could range from minor to significant depending on the scale, type and location of the facility. The potential effects on this objective would be on land take. This option would also rely on other policies in the plan to make decisions on the suitability of LLNNR waste treatment facilities.
	?	?	?					

6.	- ?	- ?	- ?	✓	✓	✓		Effects from the development of specialist facilities for waste management would depend on the scale, type and location of the facility. Impacts on climate change are likely to arise in connection with the trips made for the transportation of LLNNR (though these could be reduced through adherence with locational principals in the plan and from the facility which may also produce carbon emissions through incineration. However, any environmental impacts would be strictly regulated by external bodies to minimise risks arising from the treatment of LLNNR. This option would also rely on other policies in the plan to make decisions on the suitability of LLNNR waste treatment facilities.
7.	0	0	0					There is no direct link between the policy and the objective to adapt to climate change.
8.	?	?	?	✓	✓	✓		Enabling LLNNR to be treated up the waste hierarchy may have positive effects on this objective subject to their treatment enabling their re-use or recycling. This is currently uncertain.
9.	+ 0	+ 0	+ 0	✓	✓	✓		Enabling waste treatment further up the waste hierarchy would have positive effect on this objective to effectively manage waste. The development of specialist facilities within the plan area would make waste management self-sufficient within the plan area as well.
10.	- ?	- ?	- ?	✓	✓	✓		Effects from the development of specialist facilities for waste management in the plan area could range from minor to significant depending on the scale, type and location of the facility. However, it would be reasonable to assume that there may be level of harm on the historic environment/heritage assets where facilities may be proposed. This option would also rely on other policies in the plan to make decisions on the suitability of LLNNR waste treatment facilities.
11.	- ?	- ?	- ?	✓	✓	✓		Effects from the development of specialist facilities for waste management in the plan area could range from minor to significant depending on the scale, type and location of the facility. However, it would be reasonable to assume that there would be level of harm on biodiversity/geodiversity potentially through habitat loss or disturbance. This option would also rely on other policies in the plan to make decisions on the suitability of LLNNR waste treatment facilities.
12.	- ?	- ?	- ?	✓	✓	✓		Developing specialist waste management facilities within the plan area to deal with LLNNR is likely to be expensive given that there are few facilities around the country that deal this type of waste. The baseline states that the plan area produces small amounts of LLNNR to be processed in comparison to other waste streams which may mean that new facilities may not be viable. An economic opportunity may arise to attract waste management into the plan area through more sustainable management on LLNNR. However, overall the effects on the economy are uncertain or potentially a minor negative.
13.	0	0	0	✓	✓	✓		Effects from the development of specialist facilities for waste management in the plan area could range from minor to significant depending on the scale, type and location of the facility. However, it would be reasonable to assume that there could be level of harm on landscape potentially through visual amenity and noise,

	?	?	?					particularly if this is in relation to the National Park a or AONB which are designated for their landscape quality. This option would also rely on other policies in the plan to make decisions on the suitability of LLNNR waste treatment facilities.
14.	?	?	?	✓	✓	✓		Effects from the development of specialist facilities for waste management in the plan area could range from minor to significant depending on the scale, type and location of the facility. In relation to recreation and leisure the effect are uncertain.
15.	?	?	?	✓	✓	✓		Effects from the development of specialist facilities for waste management in the plan area could range from minor to significant depending on the scale, type and location of the facility. This option would also rely on other policies in the plan to make decisions on the suitability of LLNNR waste treatment facilities. However, any environmental impacts would be strictly regulated by external bodies to minimise risks arising from the treatment of LLNNR, including on human health.
16.	?	?	?	✓	✓	✓		Effects from the development of specialist facilities for waste management in the plan area could range from minor to significant depending on the scale, type and location of the facility. This option would also rely on other policies in the plan to make decisions on the suitability of LLNNR waste treatment facilities, including flood risk and drainage related issues.
17.	0	0	0					There is no clear link between this policy and the objective for meeting the needs of the population.

Summary of assessment

The effects of Option 1 would largely be neutral or beneficial within the plan area given that the waste would be managed elsewhere. The main negative effects under Option 1 would be in relation to transportation of LLRW and associated emissions.

In comparison, under Option 2 effects are largely uncertain as proposals would need to be considered against other policies within the Plan. This option has potential negative effects in relation to the local environment and communities. Given that low levels of LLRW are produced in the Plan area, in terms of viability Option 2 may also result in management of waste which has arisen outside of the Joint Plan area which may exacerbate any negative effects.

Recommendations

On balance, it is considered that option 1 should be pursued.

Managing Waste Water (Sewage Sludge) (id49)

Option 1
This option would support the development of new infrastructure for the management of waste water, where such provision would be in line with requirements identified in asset management plans produced by waste water infrastructure providers active in the Plan area. Preference would be given to the expansion of existing infrastructure in appropriate locations rather than the development of new facilities.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	-	✓	✓	✓	✓	There may be effects on biodiversity and geodiversity through loss of land or disturbance caused by extensions to sites. It is assumed that effects on biodiversity in watercourses (through waste entering watercourses) would be avoided through the treatment process working effectively. By giving preference to the expansion of existing sites it is likely that any effects on biodiversity would be limited.
2.	+	+	+	✓		✓		It is assumed that the treatment process will operate effectively and therefore that overall supporting such developments will have positive effects on the water environment.
3.	+	+	+	✓		✓		By giving preference to expansion of existing sites this may reduce or negate the need for additional traffic related to plant maintenance.
4.	-	-	-	✓		✓		There may be localised effects on air quality resulting from release of bioaerosols however by seeking to expand existing facilities over the creation of new ones this is likely to reduce any potential effects.
5.	- +	- +	- +	✓		✓		Whilst there is likely to be a loss of soil through this option, the preference for expanding existing facilities is considered to be a positive approach through reducing need for overall landtake considering such requirements as access tracks etc. Most facilities are within areas of higher agricultural land value in the Plan area.
6.	- +	- +	- +					Waste water treatment stations are not insignificant users of energy and the option will therefore lead to increased energy use and therefore negative effects against this objective. However, by preferring extensions to existing facilities it is likely that more efficient use can be made of energy.
7.	-	-	-	✓		✓	✓	Development / extensions to facilities in floodplains may increase flood risk through the creation of additional

								hard surfacing. Many existing facilities are located in river corridors. Effects are not considered to be significant due to the limited amount of new development likely to come forward and relatively low level of landtake.
8.	0	0	0					No clear link
9.	+	+	+	✓		✓		Whilst this is a form of waste management it is not traditionally classed as recycling although does enable water to be re-used and will therefore have positive effects against this objective.
10.	-	-	-	✓		✓	✓	There may be effects on historic assets through new development or extensions to sites, although these are generally located away from the main clusters of historic assets. By giving preference to the expansion of existing sites it is likely that any effects on the historic environment would be limited.
11.	-	-	-	✓		✓	✓	There may be effects on the landscape through new development or extensions to sites, although the majority are located away from the nationally protected landscapes. By giving preference to the expansion of existing sites it is likely that any effects on the landscape would be limited.
12.	+	+	+	✓		✓		There may be minor positive effects through the creation of jobs at new sites or in relation to extensions to sites, along with temporary jobs created through the construction process.
13.	+	+	+	✓		✓		The provision of waste water treatment works will help to maintain communities and enable them to grow, thus having a positive effect against this objective.
14.	-	-	-	✓		✓	✓	There may be effects on recreation opportunities through new development or extensions to sites, either through loss of assets or through negative effects on the recreation experience. By giving preference to the expansion of existing sites it is likely that any effects on the landscape would be limited.
15.	- +	- +	- +	✓	✓	✓	✓	The development of such facilities will contribute towards the overall health and wellbeing of communities however there may be negative effects related to construction (traffic, dust etc.).
16.	-	-	-	✓		✓	✓	Development / extensions to facilities in floodplains may increase flood risk through the creation of additional hard surfacing. Many existing facilities are located in river corridors. Effects are not considered to be significant due to the limited amount of new development likely to come forward and relatively low level of landtake.
17.	+ +	+ +	+ +	✓		✓		This option will have a strong positive effect by providing a facility to support the population in line with identified requirements.

Option 2
The approach under this option would be the same as for option 1 but support would also be provided in principle for the development of new sites in appropriate locations for management of waste water as well as for the expansion of existing facilities.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	-	✓	✓	✓	✓	There may be effects on biodiversity and geodiversity through loss of land or disturbance caused by extensions to sites. It is assumed that effects on biodiversity in rivers would be avoided through the treatment process working effectively. Development of new sites would be likely to have greater negative effects than extensions to existing sites.
2.	+	+	+	✓		✓		It is assumed that the treatment process will operate effectively and therefore that overall supporting such developments will have positive effects on the water environment.
3.	-	-	-	✓		✓		Supporting new plants may increase the vehicle miles associated with plant maintenance.
4.	-	-	-	✓		✓		There may be localised effects on air quality from release of bioaerosols and development of new sites would have greater negative effects than extensions to existing sites.
5.	-	-	-	✓		✓		There is likely to be a loss of soil and possibly high quality agricultural land under this option. Most facilities are within areas of higher agricultural land value in the Plan area. Development of new sites would be likely to have greater negative effects than extensions to existing sites.
6.	-	-	-	✓		✓	✓	Waste water treatment stations are not insignificant users of energy and the option will therefore lead to increased energy use and therefore negative effects against this objective. Development of new sites would be likely to have greater negative effects than extensions to existing sites.
7.	-	-	-	✓		✓	✓	Development / extensions to facilities in floodplains may increase flood risk through the creation of additional hard surfacing. Many existing facilities are located in river corridors. Development of new sites would be likely to have greater negative effects than extensions to existing sites.
8.	0	0	0					No clear link
9.	+	+	+	✓		✓		Whilst this is a form of waste management it is not traditionally classed as recycling although does enable water to be re-used and will therefore have positive effects against this objective.
10.	-	-	-	✓		✓	✓	There may be effects on historic assets through new development or extensions to sites, although these are

								generally located away from the main clusters of historic assets. Development of new sites would be likely to have greater negative effects than extensions to existing sites.
11.	-	-	-	✓		✓	✓	There may be effects on the landscape through new development or extensions to sites, although the majority are located away from the nationally protected landscapes. Development of new sites would be likely to have greater negative effects than extensions to existing sites.
12.	+	+	+	✓		✓		There may be minor positive effects through the creation of jobs at new sites or in relation to extensions to sites, along with temporary jobs created through the construction process. A greater number of jobs may be created through this option through development of new facilities.
13.	+	+	+	✓		✓		The provision of waste water treatment works will help to maintain communities and enable them to grow, thus having a positive effect against this objective.
14.	-	-	-	✓		✓	✓	There may be effects on recreation opportunities through new development or extensions to sites, either through loss of assets or through negative effects on the recreation experience. Development of new sites would be likely to have greater negative effects than extensions to existing sites.
15.	- +	- +	- +	✓	✓	✓	✓	The development of such facilities will contribute towards the overall health and wellbeing of communities however there may be negative effects related to construction (traffic, dust etc.). Development of new sites would be likely to have greater negative effects than extensions to existing sites.
16.	-	-	-	✓		✓	✓	Development / extensions to facilities in floodplains may increase flood risk through the creation of additional hard surfacing. Many existing facilities are located in river corridors. Effects are not considered to be significant due to the limited amount of new development likely to come forward and relatively low level of landtake. Development of new sites would be likely to have greater negative effects than extensions to existing sites.
17.	+ +	+ +	+ +	✓		✓		This option will have a strong positive effect by providing a facility to support the population.

Summary of assessment
Both options would result in positive effects in relation to provision of infrastructure necessary to support communities and have minor positive effects in relation to employment. Under both options there is also the potential for localised negative effects on the environment although these could be more significant under Option 2 through the likelihood of a greater number of new (rather than extended) facilities.

Recommendations
It is recommended that Option 1 be pursued.

Managing Power Station Ash (id50)

Option 1
In line with policy options relating to the supply of secondary aggregate, this option would support the use of ash as an alternative to primary aggregate but, for ash which cannot be used in this way, would support its continued disposal in accordance with existing arrangements at the Gale Common, Barlow and Brotherton Ings ash disposal sites, which would be identified in the Plan as strategic sites to meet the disposal needs of power generation.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	-	✓	✓	✓		Continued disposal and utilisation of the resource at these sites may have minor negative effects on biodiversity, provided that ash disposal and utilisation stays within the current boundaries of the Gale Common, Barlow and Brotherton Ings sites. This is because at these sites continued disposal and recycling may cause problems with dust, which could blow onto adjacent habitat in windy conditions, or may cause leachate ingress from lagoons or vehicle washdown facilities. For instance, pulverised fuel ash is initially likely to be alkaline[110] which may change the PH of soils, and thus their ecology. Without controls dust may be a local issue, generally within 100 metres of the site and roads, so deposition would be expected to take place up to that distance. Similarly dust, run off or leachate may find its way into nearby watercourses. This may be an issue where there are local woodland, grassland or water receptors near to these sites (all these sites have at least some receptors). Environmental permits and other planning controls would, however, be expected to significantly reduce the significance of this. These local negative effects contrast with the positive benefits of offsetting primary aggregate extraction, which is likely to have benefits for biodiversity / geodiversity.
	+	+	+					

[110] See Korcak, R. Coal Combustion Residues as Soil Amendments: Surface coal mining. US Department of Agriculture Agricultural Research Service [URL: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.198.611&rep=rep1&type=pdf], Wikipedia. Pulverised Fuel Ash

2.	- +	- +	- +	✓	✓	✓		Continued disposal and utilisation of the resource at these sites may have impacts on nearby watercourses through run off. In addition, Barlow borders a NVZ while Gale Common lies within a NVZ, which indicates that water resources are already coming under pressure. Effects of power station ash on water can include increased alkalinity and sodicity (i.e. high in salts). Environmental permits and other planning controls would be expected to significantly reduce the significance of this. These local negative effects contrast with the positive benefits of offsetting primary aggregate extraction, which is likely to have benefits for biodiversity / geodiversity.
3.	0	0	0	✓		✓		As ash is usually transported by pipeline traffic impacts are nor significant
4.	-	-	-	✓		✓		Without mitigation, ash might blow around and effect nearby settlements, thus lowering air quality. Assuming that this option would support extraction of secondary aggregate from the listed disposal sites, if unmitigated, this might cause some additional problems where settlements are nearby. However, in practice, the NPPF ensures ash dust is controlled.
5.	0	+	+	✓		✓		The sites referred to in the option are all extant sites so the direct effect on the baseline for soils / land would be insignificant. However, indirectly there may be a reduced land take from primary aggregate extraction elsewhere, which is offset to a degree by this option. It is assumed that utilisation of ash would be from within these sites.
6.	+	+	++	✓		✓	✓	This objective will reduce the land take of primary extraction sites, it will reduce pressure to seek new ash disposal sites and it will reduce the energy required to extract and transport aggregates which will increasingly benefit greenhouse gas reduction over time.
7.	0	0	0					No clear link
8.	++	++	++	✓		✓		This option offsets the use of primary aggregates and replaces them with a secondary aggregate source.
9.	++	++	++	✓		✓		This option utilises a significant waste (power station ash) and utilises it as a resource.
10.	-	-	-	✓		✓		Although the sites for disposal will remain the same as prior to plan production some additional activity may result from greater utilisation of sites as a source of secondary aggregate. This may create some low level visual disturbance and generate road journeys causing vibration and dust. This may have a minor effect on the nearby listed buildings near Brotherton, and at Womersley near Gale Common, as well as on the scheduled monuments near to sites (1 near Gale Common and 2 near Barlow).
11.	0 -	0 -	0 -	✓		✓		There may be some low level visual disturbance to receptors such as houses near these sites. But it should be remembered that these are extant sites where visual disturbance is already high.

12.	0	0	0	✓		✓		This objective captures value from a waste stream by creating a saleable product and may support a low number of local job opportunities. However, this is likely to be relatively insignificant. .
13.	- +	- +	- +	✓		✓		As noted above, a low number of jobs may be created as a result of this objective, which may benefit community vitality. Traffic associated with the utilisation of power station ash may affect communities, but it is not anticipated that this will affect trade (e.g. from tourism) at a high rate. Effects are mixed minor positive and minor negative effects.
14.	0	0	0					The sites referred to in the option are all extant sites so the effect on the baseline for recreation and leisure would be insignificant. It is assumed that utilisation of ash would be from within these sites.
15.	-	-	-	✓		✓		Increased activity at these sites may create some local problems of dust and increased lorry movements. Mitigation measures (such as wheel washing) and perhaps traffic management measures should be applicable which should help reduce impacts. These are likely to happen because of NPPF policy, even without mitigation measures in the plan.
16.	0	0	0					As it is assumed ash for use as secondary aggregate would come from extant sites this would have no effect on the baseline.
17.	+	+	+	✓		✓		As the three sites currently used for disposal are assumed to be the source of ash as a secondary aggregate, and each of these sites is close to key potential markets in the south of the plan area, the effects on the sub objective 'to shorten supply chains for building materials' are positive.

Proposed alternative option 2: (Or) This option would support the disposal of power station ash along with inert material in landfill

Powerstation Ash is taken to mean pulverised fuel ash, though not furnace bottom ash or desulphogypsum (which are more valued for onward sale). Although regarded as inert, it is also assumed that it would only be disposed of in appropriate landfill sites (with the necessary containment measures for any leached Boron).

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA object	Impact / timescale	Type of effect	Analysis

	S	M	L	P	T	D	I	
1.	-?	-?	-?	✓	✓		✓	Power station ash is generally considered inert; however in landfill it can be very voluminous which would put significant pressure on existing landfill capacity. This may drive further demand for new landfill sites. This would use up land that may or may not have a significant biodiversity / geo-diversity value, and may during construction have additional impacts such as possible run off of soils / fuel to local watercourses. Much is dependent on location (so uncertain to minor negative).
2.	-?	-?	-?	✓			✓	Assuming that environmental permitting controls do their job of managing leachate appropriately direct effects on water are likely to be insignificant. However, because of the voluminous nature of the ash, this option may well drive demand for new landfill sites, which indirectly would have effects on local hydrology, the significance of which is dependent on location, but would mostly be of local significance.
3.	--?	--?	--?		✓	✓		Given the local location of current disposal options and the fact that Gale Common receives ash by pipeline this option could see ash disposed of further away, and potentially to dispersed sites by road. If significant quantities are moved long or even moderate distances this could have a significant effect.
4.	--?	--?	--?		✓		✓	For the reasons given in objective 3 this would potentially increase the transit of a bulky and potentially dirty material leading to air quality effects that could, depending on location be very significant.
5.	-?	-?	-?		✓		✓	For reasons highlighted above this would drive demand for new landfills, which could have a significant land take, the significance of which is dependent on the quality of the land used.
6.	--?	--?	--?	✓		✓		Depending on the location of landfill sites this could generate significant carbon dioxide.
7.	0	0	0					No noted effects
8.	--	--	--	✓			✓	Disposing of power station ash in mixed landfill locks it away forever, meaning that it can no longer be turned into saleable products (e.g. secondary aggregated, bonded used to offset primary extraction.
9.	--	--	--	✓		✓		Disposing of power station ash in mixed landfill locks it away forever, meaning that it can no longer be turned into an 'end of waste' saleable recycled product (e.g. secondary aggregated, bonded used).
10.	-?	-?	-?	✓	✓		✓	Power station ash is generally considered inert; however in landfill it can be very voluminous which would put significant pressure on existing landfill capacity. This may drive further demand for new landfill sites. This would use up land that may or may not have a significant historic environment value, or may be visible from historic assets. Much is dependent on location (so uncertain to minor negative).

11.	- ?	- ?	- ?	✓	✓		✓	Power station ash is generally considered inert; however in landfill it can be very voluminous which would put significant pressure on existing landfill capacity. This may drive further demand for new landfill sites. This would use up land that may or may not have a significant landscape value, or may be visible from landscape assets. Much is dependent on location (so uncertain to minor negative).
12.	--	--	--	✓		✓		Transporting power station ash to more distant landfills may well prove to be uneconomical given the fuel costs involved and landfill tax payable. Furthermore, this option would be removing a potentially saleable product from the economy.
13.	-	-	-	✓			✓	Communities along routes to landfill may experience increased traffic which may have small scale impacts on, for example, tourism. The indirect generation of new landfill may also affect community vitality by, for example, restricting developable land.
14.	- ?	- ?	- ?	✓	✓		✓	Power station ash is generally considered inert; however in landfill it can be very voluminous which would put significant pressure on existing landfill capacity. This may drive further demand for new landfill sites. This would use up land that may or may not have a significant recreational / amenity value, or may be visible from recreational / access assets. Much is dependent on location (so uncertain to minor negative).
15.	--	--	--	✓	✓	✓	✓	Potentially longer road journeys by lorries carrying ash could affect communities along routes with a range of amenity affect. If this drives demand for new landfill there could also be amenity / wellbeing impacts from that new landfill site.
16.	0	0	0					No noted effects
17.	0	0	0					No noted effects

Summary of assessment
There are some minor negative effects of option 1 on biodiversity, water, local air quality and the historic environment, as well as less certain minor negative effects on landscape, community vitality (for which there are also some positive effects associated with employment) and health and wellbeing associated with this option, arising out of localised problems such as dust generation, possible runoff / leachate and traffic. These may however be offset to a degree by positive environmental and social effects, particularly in relation to reduced land take, resulting from lower levels of primary minerals extraction should support for use of power station ash result in less demand / need for this. There are some major positive effects associated with climate change, minimising the use of resources and minimising waste generation resulting from the potential for power station ash to reduce demand for primary aggregates, and minor positive effects associated with the economy and meeting the needs of the population.

Option 2 supports disposal of power station ash in landfill. Although there is considerable uncertainty in the assessment, as much depends on the location of landfill sites chosen, this option displays a broad range of social, environmental and economic negative effects. In particular the Sustainability Appraisal highlights concerns over the potential costs and effects of transporting potentially large volumes to landfill sites, which could also make landfill sites more quickly reach capacity. At the same time power station ash, which could potentially be utilised as a saleable product in the future, will be lost from the economy forever when mixed with landfill.

Recommendations
If option 1 is pursued, mitigation measures around dust, water pollution and traffic can be strengthened through policies in the plan. Option 2 is not recommended as it is seen as broadly unsustainable.

Overall Locational Principles for Provision of New Waste Capacity (id51)

Option 1.
This option would seek to ensure that sufficient waste management capacity is provided through a combination of;

- Making best use of the existing facility network, for example by supporting provision of increased capacity at existing waste management facilities unless there would be unacceptable environmental or local amenity impacts;
- Supporting the provision of capacity at new sites (i.e. sites not currently in use for waste management purposes) where the facility would contribute to meeting needs identified in the Plan and the site meets any more detailed waste site identification criteria contained in the Plan (see subsequent options).

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓	✓	✓	✓	This option would, through making best use of the existing facility network, reduce some impacts on biodiversity / geo-diversity as less land would be used (so less biodiversity would be lost). Supporting new sites will may have some biodiversity / geo-diversity impacts (e.g. from land take / disturbance), however, the extent of these impacts will be dependent on the other detailed waste identification criteria contained in the plan which is uncertain until options have been decided upon (though it is noted that option 2 of the waste site identification principles considers sites against environmental criteria).
	?	?	?					
2.	0	0	0	✓	✓	✓	✓	This option, because use of the existing facility network is dependent on not having unacceptable environmental impacts, is likely, at least in part, to prevent significant water pollution from existing sites (neutral effect on baseline). Supporting new sites may have some water impacts (e.g. from run off from the site), however, the extent of these will inevitably be dependent on the other detailed waste identification criteria contained in the plan (so the impact of this is uncertain until options have been decided upon; though it is noted that option 2 of the waste site identification principles considers sites against environmental criteria.
	?	?	?					

3.	?	?	?	✓		✓		Making best use of the existing facility network may mean that more journeys will be made to the same sites which, depending on their location, may increase the local impacts of transport. However, the option guards against 'unacceptable environmental impacts'. New sites, if they are located in proximity to waste sources / markets, may improve the transport situation. However, this is uncertain as it depends on the outcome of other options in this consultation.
4.	?	?	?	✓		✓		As the transport impacts of objective 2 are uncertain, in many cases the air pollution impacts will be uncertain. For use of existing facilities, unacceptable air pollution impacts are protected against through the wording of the policy.
5.	+ +	+ +	+ +	✓		✓		The emphasis on making the best us of existing sites should significantly reduce land take as the need for new infrastructure on areas of land will be lessened (though will continue to occur at a lessened rate where new sites are needed).
6.	+	+	+	✓		✓	✓	While the impacts on traffic are uncertain, this option, through emphasis on the existing facility network, could also reduce the requirements for new supporting infrastructure such as access roads and buildings, all of which have a carbon footprint (though will continue to occur at a lessened rate where new sites are needed).
	?	?	?					
7.	0	0	0					No clear link.
8.	+ +	+ +	+ +	✓		✓		This option will reduce material requirements as it makes the best use of the existing waste management network, so the materials footprint of many new buildings, access roads etc. will be avoided (though will continue to occur at a lessened rate where new sites are needed).
9.	+ +	+ +	+ +	✓		✓		As this option seeks to 'ensure sufficient waste management capacity' it is assumed that this will be in line with existing national and local waste priorities to move waste up the waste hierarchy. However, some uncertainty remains as effects are dependent on what other policies in the Plan will say about the waste hierarchy. The more supportive these other policies are, the more positive the effects would be under the second part of this option in particular.
	?	?	?					
10.	+	+	+	✓	✓	✓	✓	This option would, through making best use of the existing facility network, reduce impacts on the historic environment as less land would be used (so fewer historic assets would be compromised). Supporting capacity at new sites will inevitably have some historic environment impacts (e.g. effects from land take, on character etc.), however, the extent of these will be dependent on the other detailed waste site identification criteria contained in the Plan (which is uncertain until options have been decided upon; though it is noted that Option 2 of the waste site identification principles considers sites against environmental criteria).
	?	?	?					
11.	+	+	+	✓		✓		This option would, through making best use of the existing facility network, reduce impacts on landscape and townscape. In particular, development of new standalone infrastructure (with associated landscape impact)

	?	?	?					would be lessened. However, new sites will continue to occur at a lessened rate where new sites are needed. The extent of landscape impacts from these sites will be dependent on the other detailed waste site identification criteria contained in the plan (which is uncertain until options have been decided upon; though it is noted that Option 2 of the waste site identification principles considers sites against environmental criteria).
12.	+	+	+	✓		✓		Positive benefits will occur as jobs will be retained at existing locations and some new job locations associated with new sites will arise. Waste business costs may also be reduced by maximising the capacity of exiting sites.
13.	+	+	+	✓		✓		While emphasising existing sites will help to retain jobs, and amenity impacts must be kept within acceptable levels, where new sites are needed it cannot be known what the extent of impacts will be (as other detailed waste site identification criteria contained in the plan are uncertain until options have been decided upon).
	?	?	?					
14.	+	+	+	✓	✓	✓	✓	This option would, through making best use of the existing facility network, reduce impacts on the recreational access network as less land would be used (so less footpaths and green infrastructure would be impacted upon). Supporting capacity at new sites may have some recreational impacts, however, the extent of these impacts will inevitably be dependent on the other detailed waste site identification criteria contained in the plan (which is uncertain until options have been decided upon; though it is noted that option 2 of the waste site identification principles considers sites against environmental criteria).
	?	?	?					
15.	+	+	+	✓	✓	✓	✓	While emphasising existing sites will help to prevent new communities from experiencing health and wellbeing impacts, and the option suggests amenity impacts must be kept within acceptable levels, where new sites are needed it cannot be known what the extent of impacts will be (as other detailed waste site identification criteria contained in the plan are uncertain until options have been decided upon).
	?	?	?					
16.	+	+	+	✓	✓	✓	✓	Unacceptable environmental or local amenity impacts are considered for existing sites, which should encompass consideration of flood risk. It cannot be known if new sites will affect flood risk until other options are decided upon, However, all sites will be subject to the sequential test through strategic flood risk assessment as part of the course of plan production.
	?	?	?					
17.	0	0	0					No clear link

Option 2.

This option would seek to ensure that sufficient waste management capacity is provided through a combination of;

- Making best use of the existing facility network, for example by supporting provision of increased capacity at existing waste management facilities unless there would be unacceptable environmental or local amenity impacts;
- Supporting the provision of capacity at new sites where the facility would contribute to meeting needs identified in the Plan; the site is compatible with other waste site identification criteria in the Plan (see subsequent options); and the site is located as close as practicable to the source/s of waste to be dealt with. This could mean giving priority to locations for new smaller scale facilities serving District scale markets for waste which are within or near to main settlements in the area or, for facilities which are intended to serve the needs of waste arising mainly in rural areas, are well located with regard to the geographical area the facility is to serve;
- For facilities expected to play a wider strategic role (i.e. serving catchments covering a substantial part of the Plan area) these should be located where overall transportation impacts would be minimised taking into account the market area expected to be served by the facility.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓	✓	✓	✓	This option would, through making best use of the existing facility network, reduce impacts on biodiversity / geo-diversity as less land would be used (so less biodiversity would be lost). Supporting capacity at new sites will inevitably have some biodiversity / geodiversity impacts (as described in the option above), however, the extent of these impacts will be dependent on the other detailed waste site identification criteria contained in the plan (which is uncertain until options have been decided upon; though it is noted that option 2 of the waste site identification principles considers sites against environmental criteria). The emphasis on locating sites as close as possible to sources of waste and which minimise transport impacts would have some minor benefits on species as traffic, and thus traffic impacts on species such as road casualties or disturbance, would be lessened.
	?	?	?					
2.	+	+	+	✓	✓	✓	✓	This option, because making use of the existing facility network is dependent on not having unacceptable environmental impacts, is likely, at least in part, to prevent significant water pollution from existing sites.

	?	?	?					Supporting capacity at new sites may have some water impacts (as described in the option above), however, the extent of these will be dependent on the other detailed waste identification criteria contained in the Plan (which is uncertain until options have been decided upon; though it is noted that option 2 of the waste site identification principles considers sites against environmental criteria). The emphasis on locating sites as close as possible to sources of waste, and on sites which minimise transport impacts, would have some minor benefits on water as traffic, and thus water impacts from traffic on roads, will be reduced.
3.	+	+ +	+ +	✓		✓		The emphasis on locating sites as close as possible to sources of waste and, for those which play a wider strategic role, seeking to minimise transport impacts, would have major positive effects on transport. Making best use of the existing facility network may mean that more journeys will be made to the same sites which, depending on their location, may increase the local impacts of transport. This adds some uncertainty to the assessment although it is anticipated that this will not detract from the overall positive effect of this option.
4.	+	+	+	✓		✓		As the transport impacts of option 2 are positive, air pollution impacts will be positive. For use of existing facilities, unacceptable air pollution impacts are prevented through the wording of the policy. Making best use of the existing facility network may mean that more journeys may be made to the same sites which, depending on their location, may increase the local air pollution impacts of transport. It is anticipated that this will not detract from the overall positive effect of this option.
5.	+	+ +	+ +	✓		✓	✓	The emphasis on making the best use of existing sites should significantly reduce land take as the need for new infrastructure on areas of land will be lessened (though will continue to occur at a lessened rate where new sites are needed). The emphasis on locating sites as close as possible to sources of waste and, for those which play a wider strategic role, seeking to minimise transport impacts may indirectly contribute to traffic reduction and thus future demand for upgrading roads, but this is considered to be a minor contribution.
6.	+	+ +	+ +	✓		✓	✓	This option, through emphasis on the existing facility network, could also reduce the requirements for new supporting infrastructure such as access roads and buildings, all of which have a carbon footprint (though carbon impacts will continue to occur at a lessened rate where new sites are needed). Moreover, the emphasis on locating sites as close as possible to sources of waste and, for those which play a wider strategic role, seeking to minimise transport impacts, would have particularly positive effects on

								transport emissions and thus the climate change objective.
7.	0	0	0					No clear link.
8.	+ +	+ +	+ +	✓		✓		This option will reduce material requirements as it makes the best use of the existing waste management network, so the materials footprint of new buildings, access roads etc. will be avoided (though will continue to occur at a lessened rate where new sites are needed).
9.	+ +	+ +	+ +	✓		✓		As this option seeks to 'ensure sufficient waste management capacity' it is assumed that this will be in line with existing national and local waste priorities to move waste up the waste hierarchy. However, some uncertainty remains as effects are dependent on what other policies in the Plan will say about the waste hierarchy.
	?	?	?					
10.	+	+	+	✓	✓	✓	✓	This option would, through making best use of the existing facility network, reduce impacts on the historic environment as less land would be used (so fewer historic assets would be compromised). Supporting capacity at new sites will inevitably have some historic environment impacts (as described in the option above),, however, the extent of these will be dependent on the other detailed waste identification criteria contained in the plan which is uncertain until options have been decided upon (though it is noted that option 2 of the waste site identification principles considers sites against environmental criteria). Making use of existing sites will reduce impacts. The emphasis on locating sites as close as possible to sources of waste and which minimise transport impacts would have some minor benefits on the historic environment as impacts such as pollution deposition and vibration on heritage assets would be lessened.
	?	?	?					
11.	+	+	+	✓		✓		This option would, through making best use of the existing facility network, reduce impacts on landscape and townscape. In particular, development of new standalone infrastructure (with associated landscape impact) would be lessened. However, new sites will continue to occur at a lessened rate where new sites are needed. The extent of landscape impacts from these sites will be dependent on the other detailed waste site identification criteria contained in the plan (which is uncertain until options have been decided upon; though it is noted that option 2 of the waste site identification principles considers sites against environmental criteria). The emphasis on locating sites as close as possible to sources of waste and which minimise transport impacts would have some minor benefits on the landscape as light pollution and impacts on tranquillity levels
	?	?	?					

								would be lessened.
12.	+ +	+ +	+ +	✓		✓		Positive benefits will occur as jobs will be retained at existing locations and some new jobs locations associated with new sites will arise. Waste business costs may also be reduced by maximising the capacity of exiting sites. The option provides support for a range of ways of providing waste management facilities which provides flexibility to the waste sector.
13.	+ ?	+ ?	+ ?	✓		✓		While emphasising existing sites will help to retain jobs, and amenity impacts must be kept within acceptable levels, where new sites are needed it cannot be known what the extent of impacts will be (as other detailed waste site identification criteria contained in the plan are uncertain until options have been decided upon). Traffic impacts on community vitality would, however, be lessened in the longer term, though local effects may persist.
14.	+ ?	+ ?	+ ?	✓	✓	✓	✓	This option would, through making best use of the existing facility network, reduce impacts on the recreational access network as less land would be used (so less footpaths and green infrastructure would be impacted upon). Supporting capacity at new sites may have some recreational impacts, however, the extent of these impacts will be dependent on the other detailed waste site identification criteria contained in the plan (which is uncertain until options have been decided upon; though it is noted that option 2 of the waste site identification principles considers sites against environmental criteria).
15.	+	+	+	✓	✓	✓	✓	While emphasising existing sites will help to prevent new communities from experiencing health and wellbeing impacts, and amenity impacts must be kept within acceptable levels, where new sites are needed it cannot be

	?	?	?					known what the extent of impacts will be (as other detailed waste identification criteria contained in the plan are uncertain until options have been decided upon). Providing waste management facilities close to sources of arisings may have negative effects on communities in terms of effects on amenity and effects from traffic.
16.	+	+	+	✓	✓	✓	✓	Unacceptable environmental or local amenity impacts are considered for existing sites, which should encompass consideration of flood risk. It cannot be known if new sites will affect flood risk until other options are decided upon, however, all sites will be subject to the sequential test through strategic flood risk assessment as part of the course of plan production.
	?	?	?					
17.	+	+	+	✓			✓	This option is likely to shorten supply chains for construction and demolition waste which may ultimately be used as a building resource.

Option 3. This option would seek to ensure that sufficient waste management capacity is provided through a combination of:

1) Making best use of the existing facility network, for example by supporting provision of increased capacity at existing waste management facilities unless there would be unacceptable environmental or local amenity impacts
2) Supporting the provision of capacity at new sites where the facility would contribute to meeting needs identified in the Plan; the site is compatible with other site identification principles in the plan (see subsequent sections) and giving priority to sites located within close proximity, preferably within 5km, to the major road network

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	**Impact / timescale**			**Type of effect**				**Analysis**
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	+	+	+	✓	✓	✓	✓	The effects of this option are broadly the same as option 1. The stipulation of a preferable 5 km distance threshold to the major road network does not significantly change the findings of the assessment.
	?	?	?					

2.	+ ?	+ ?	+ ?	✓	✓	✓	✓	The effects of this option are the same as option 1. The stipulation of a preferable 5 km distance threshold to the major road network does not significantly change the findings of the assessment.
3.	+	++	++	✓		✓		The emphasis on locating sites in close proximity to markets and preferably within 5km of the major road network would have major positive effects on transport, including lessening impacts on communities affected by transport. Making best use of the existing facility network may mean that more journeys will be made to the same sites which, depending on their location, may increase the local impacts of transport. This adds some uncertainty to the assessment. It is anticipated that this will not be significant enough to detract from the overall positive effect of this option.
4.	+	+	+	✓		✓		The emphasis on locating sites in close proximity to markets and preferably within 5km of the major road network, would have major positive effects on transport, therefore air pollution impacts would be reduced. Making best use of the existing facility network may mean that more journeys may be made to the same sites which, depending on their location, may increase the local air pollution impacts of transport. It is anticipated that this will not detract from the overall positive effect of this option.
5.	++ ?	++ ?	++ ?	✓		✓	✓	The effects of this option are broadly the same as option 1.
6.	+ ?	+ ?	+ ?	✓		✓	✓	This option, through emphasis on the existing facility network, could also reduce the requirements for new supporting infrastructure such as access roads and buildings, all of which have a carbon footprint (though carbon impacts will continue to occur at a lessened rate where new sites are needed). The stipulation of a need for sites to be within 5km of a major road network could help to reduce the distance over which waste is transported which would have positive effects in terms of minimising emissions.
7.	0	0	0					No clear link.
8.	++	++	++	✓		✓		The effects of this option are broadly the same as option 1. The stipulation of a 5 km preferred distance threshold to the major road network does not significantly change the findings of the assessment.

9.	+ +	+ +	+ +	✓		✓		The effects of this option are broadly the same as option 1. The stipulation of a 5 km preferred distance threshold to the major road network does not significantly change the findings of the assessment.
	?	?	?					
10.	+	+	+	✓	✓	✓	✓	The effects of this option are broadly the same as option 1.
	?	?	?					
11.	+	-	-	✓		✓		Most effects of this option are broadly the same as option 1. However, some sites may become more visible from the road network.
	?	?	?					
12.	+ +	+ +	+ +	✓		✓		This option has a range of economic benefits arising out of emphasis on existing sites (jobs retention and long term viability), proximity to markets (reduced costs) and proximity to the main road network (reduced costs). However, the stipulation that sites must be located within 5km of the major road network may not provide economic flexibility to the waste sector or help to support economies and jobs in more remote locations.
	-	-	-					
13.	?	?	?	✓		✓		It uncertain what the impact of this option would be.
14.	+	+	+	✓	✓	✓	✓	The effects of this option are broadly the same as option 1. The stipulation of a 5 km preferred distance threshold to the major road network does not significantly change the findings of the assessment.
	?	?	?					
15.	+	+	+	✓	✓	✓	✓	While emphasising existing sites will help to prevent new communities from experiencing health and wellbeing impacts, and amenity impacts must be kept within acceptable levels, where new sites are needed it cannot be known what the extent of impacts will be (as other detailed waste identification criteria contained in the plan are uncertain until options have been decided upon). However, this option will lessen transport impacts making the effect broadly positive.
16.	+	+	+	✓	✓	✓	✓	The effects of this option are broadly the same as option 1. The stipulation of a 5 km preferred distance threshold to the major road network does not significantly change the findings of the assessment.

	?	?	?					
17.	+	+	+	✓			✓	This option is likely to shorten supply chains for construction and demolition waste which may ultimately be used as a building resource.

Option 4.
This option would operate alongside one of options 1 to 3 above and would limit provision of new waste management capacity to those parts of the Plan area outside the North York Moors National Park and AONBs unless the facility to be provided is designed and scaled specifically for meeting waste management needs arising in the designated area and can be provided without causing harm to the designated area. Proposals for major development in these areas would also need to be considered against the criteria of the Major Development Test (see Chapter 8).

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	+	+	+	✓		✓	✓	In relation to the National Park and AONBs, because major development will be discouraged, and because many of the most significant biodiversity resources are in those areas, effects are expected to be positive. However, elsewhere in the plan area some development that would otherwise occur in the National Park and AONBs may occur. This effect is likely to be at a low level of significance. This assessment relates to the additional consideration of option 4 only, and is not a combined effect with the other 3 options.
	0	0	0					
2.	0	0	0	✓		✓	✓	In relation to the National Park and AONBs, because major development will be discouraged, and some of the significant groundwater source protection zones and Nitrate Vulnerable Zones are in those areas (though equally many are distributed outside these areas) effects are expected to be positive for the National Park and AONBs. However, elsewhere in the plan area some development that would otherwise occur in the National Park and AONBs may occur. On balance the effect is expected to be neutral. This assessment relates to the additional consideration of option 4 only, and is not a combined effect with the other 3 options.
3.	-	-	-	✓		✓		This option equates to less likelihood of major development in remote protected landscapes, which may mean

								that longer journeys are required between those areas and waste management facilities. This assessment relates to the additional consideration of option 4 only, and is not a combined effect with the other 3 options.
4.	+	+	+	✓		✓		This option equates to less likelihood of major development in remote protected landscapes, which may mean that longer journeys are required between those areas and waste management facilities. This will increase pollution, though air quality is generally good in these areas so significance is quite low. This assessment relates to the additional consideration of option 4 only, and is not a combined effect with the other 3 options. In addition, as there will be fewer facilities for managing waste in the National Park, there will be less air pollution from these facilities. This will contribute to the clean air special quality of the National Park.
	-	-	-					
5.	-	-	-	✓			✓	This option equates to less development in remote protected landscapes, which may mean that more larger development is directed to non-protected areas which may be more likely to be on best and most versatile land. This assessment relates to the additional consideration of option 4 only, and is not a combined effect with the other 3 options.
6.	0	0	0	✓		✓		This option equates to less development in remote protected landscapes, which may mean that longer journeys are required between those areas and waste management facilities. This will generate greenhouse gases at a low level. This assessment relates to the additional consideration of option 4 only, and is not a combined effect with the other 3 options.
	-	-	-					
7.	0	0	0					No clear link. This assessment relates to the additional consideration of option 4 only, and is not a combined effect with the other 3 options.
8.	0	0	0					No clear link. This assessment relates to the additional consideration of option 4 only, and is not a combined effect with the other 3 options.
9.	0	0	0					No clear link. This assessment relates to the additional consideration of option 4 only, and is not a combined effect with the other 3 options.
10.	+	+	+	✓		✓	✓	In relation to the National Parks and AONBs, because major development will be discouraged, and some of the significant historic assets are in those areas (though equally many are distributed outside these areas) effects are expected to be positive for the national parks and AONBs, though elsewhere in the plan area some development that would otherwise occur in the national park and AONBs may occur. On balance the effect is expected to be positive as cultural heritage is part of the National Park purposes. This assessment relates to the additional consideration of option 4 only, and is not a combined effect with the other 3 options.
11.	++	++	++	✓		✓		This option equates to less likelihood of major development in protected landscapes. This will protect the most significant landscape assets in the plan area. This assessment relates to the additional consideration of option 4 only, and is not a combined effect with the other 3 options.

12.	+	+	+	✓		✓		This option might forego some opportunities for future waste development related jobs, though equally it would protect against negative impacts on tourism. The net effect is considered to be minor positive. This assessment relates to the additional consideration of option 4 only, and is not a combined effect with the other 3 options.
13.	+	+	+	✓		✓		This option might forego some opportunities for future waste development related jobs in local communities in protected landscapes, though equally it would protect against negative impacts on tourism. The net effect is considered to be minor positive. This assessment relates to the additional consideration of option 4 only, and is not a combined effect with the other 3 options.
14.	+ +	+ +	+ +	✓		✓		This option is expected to reduce pressure on the key recreational resources of the plan area (i.e. the National Parks and AONBs). This will have a broadly positive effect on the purposes of the National Park. This assessment relates to the additional consideration of option 4 only, and is not a combined effect with the other 3 options.
15.	0	0	0	✓		✓		There may be some minor negative effects on health and wellbeing as waste related traffic may need to travel further to waste management facilities. However, this may also mean less waste management foci for traffic within the National Parks (which may have some positive local effects on wellbeing). On balance the effects are likely to neutral. This assessment relates to the additional consideration of option 4 only, and is not a combined effect with the other 3 options.
16.	0	0	0					No clear link. This assessment relates to the additional consideration of option 4 only, and is not a combined effect with the other 3 options.
17.	0 -	0 -	0 -	✓			✓	There may be minor negative effects as this could potentially lead to a reduction in facilities in protected landscapes. This assessment relates to the additional consideration of option 4 only, and is not a combined effect with the other 3 options.

Proposed alternative option 5: (Or) This option would combine Option 1 with the 3rd bullet point of Option 2:

This option would seek to ensure that sufficient waste management capacity is provided through a combination of:

- Making best use of the existing facility network, for example by supporting provision of increased capacity at existing waste management facilities unless there would be unacceptable environmental or local amenity impacts.
- Supporting the provision of capacity at new sites (i.e. sites not currently in use for waste management purposes) where the facility would contribute to meeting needs identified in the Plan and the site meets any more detailed waste site identification criteria contained in the Plan (see subsequent options).
- For facilities expected to play a wider strategic role (i.e. serving catchments covering a substantial part of the Plan area) these should be located where overall transportation impacts would be minimised taking into account the market area expected to be served by the facility.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓	✓	✓	✓	This option would, through making best use of the existing facility network, reduce some impacts on biodiversity / geodiversity as less land would be used (so less biodiversity would be lost). Supporting capacity at new sites will inevitably have some biodiversity / geo-diversity impacts, however, the extent of these impacts will be dependent on location and the other detailed waste identification criteria contained in the plan which is uncertain until options have been decided upon (though it is noted that option 2 of the waste site identification principles considers sites against environmental criteria). The emphasis on locating strategic facilities where overall transportation impacts would be minimised is likely to result in some minor benefits on species as traffic, and thus traffic impacts on species such as road casualties or disturbance, would be lessened.
	?	?	?					
2.	+	+	+	✓	✓	✓	✓	As use of the existing facility network is dependent on not having unacceptable environmental impacts, this option is likely, at least in part, to prevent significant water pollution from existing sites.

	?	?	?					Supporting capacity at new sites may have some water impacts, however, the extent of these will be dependent on location and the other detailed waste identification criteria contained in the plan (so the impact of this is uncertain until options have been decided upon; though it is noted that option 2 of the waste site identification principles considers sites against environmental criteria. The emphasis on locating strategic facilities where overall transportation impacts would be minimised is likely to result in some minor benefits on the water environment as traffic, and thus traffic impacts on the water environment such as potential for pollution incidents, would be lessened.
3.	+ +	+ +	+ +	✓		✓		The emphasis on locating strategic facilities where overall transportation impacts would be minimised, would have major positive effects on transport. Making best use of the existing facility network may mean that more journeys will be made to the same sites which, depending on their location, may increase the local impacts of transport. However, the option guards against 'unacceptable environmental impacts'. New sites, if they are located in proximity to waste sources / markets, may improve the transport situation. However, this is uncertain as it depends on the outcome of other options in this consultation.
	?	?	?					
4.	+	+	+	✓		✓		The emphasis on locating strategic facilities where overall transportation impacts would be minimised, would have a positive effect on air quality. Making best use of the existing facility network may mean that more journeys will be made to the same sites which may have a negative impact upon air quality in certain locations. This adds some uncertainty to the assessment. It is anticipated that this will not detract from the overall positive effect of this option.
	?	?	?					
5.	+ +	+ +	+ +	✓		✓		The emphasis on making the best use of existing sites should significantly reduce land take as the need for new infrastructure on areas of land will be lessened (though will continue to occur at a lessened rate where new sites are needed). Locating strategic facilities where overall transportation impacts would be minimised would contribute to traffic

								reduction and thus future demand for upgrading roads, but this is considered to be a minor contribution.
6.	+ ?	+ + ?	+ + ?	✓		✓	✓	Through emphasis on the existing facility network this option could also reduce the requirements for new supporting infrastructure such as access roads and buildings, all of which have a carbon footprint (though will continue to occur at a lessened rate where new sites are needed). Moreover, locating strategic facilities where overall transportation impacts would be minimised, would have particularly positive effects on transport emissions and thus the climate change objective.
7.	0	0	0					No clear link
8.	+ +	+ +	+ +	✓		✓		This option will reduce material requirements as it makes the best use of the existing waste management network, so the materials footprint of many new buildings, access roads etc. will be avoided (though will continue to occur at a lessened rate where new sites are needed).
9.	+ + ?	+ + ?	+ + ?	✓		✓		As this option seeks to 'ensure sufficient waste management capacity' it is assumed that this will be in line with existing national and local waste priorities to move waste up the waste hierarchy. However, some uncertainty remains as effects are dependent on what other policies in the Plan will say about the waste hierarchy. The more supportive these other policies are, the more positive the effects would be under the second bullet point of this option in particular.
10.	+ ?	+ ?	+ ?	✓	✓	✓	✓	Through making best use of the existing facility network this option would reduce impacts on the historic environment as less new development would come forward (so fewer historic assets would be compromised). Supporting capacity at new sites will inevitably have some historic environment impacts, however, the extent of these will be dependent on location and the other detailed waste site identification criteria contained in the Plan (which is uncertain until options have been decided upon; though it is noted that Option 2 of the waste site identification principles considers sites against environmental criteria). The emphasis on locating strategic facilities where overall transportation impacts would be minimised is likely to result in some minor benefits on the historic environment as traffic, and thus traffic impacts on such pollution deposition and vibration on heritage assets would be lessened.
11.	+ ?	+ ?	+ ?	✓		✓		Through making best use of the existing facility network this option would reduce impacts on landscape and townscape. In particular, development of new standalone infrastructure (with associated landscape impact) would be lessened. However, new sites will continue to occur at a lessened rate where needed. The extent of landscape impacts from these sites will be dependent on location and the other detailed waste site identification criteria contained in the plan (which is uncertain until options have been decided upon; though it is noted that Option 2 of the

								waste site identification principles considers sites against environmental criteria).
12.	+	+	+	✓		✓		Positive benefits will occur as jobs will be retained at existing locations and some new jobs associated with new sites will arise. Waste business costs may also be reduced by maximising the capacity of exiting sites and by minimising transportation to strategic facilities.
13.	+	+	+	✓		✓		While emphasising existing sites will help to retain jobs, and amenity impacts must be kept within acceptable levels, where new sites are needed it cannot be known what the extent of impacts will be (as other detailed waste site identification criteria contained in the plan are uncertain until options have been decided upon).
	?	?	?					
14.	+	+	+	✓	✓	✓	✓	This option would, through making best use of the existing facility network, reduce impacts on the recreational access network as less land would be used (so less footpaths and green infrastructure would be impacted upon). Supporting capacity at new sites may have some recreational impacts, however, the extent of these impacts will inevitably be dependent on the other detailed waste site identification criteria contained in the plan (which is uncertain until options have been decided upon; though it is noted that option 2 of the waste site identification principles considers sites against environmental criteria).
	?	?	?					
15.	+	+	+	✓	✓	✓	✓	While emphasising existing sites will help to prevent new communities from experiencing health and wellbeing impacts, and the option suggests amenity impacts must be kept within acceptable levels, where new sites are needed it cannot be known what the extent of impacts will be (as location and other detailed waste site identification criteria contained in the plan are uncertain until options have been decided upon). Locating strategic facilities in order that transportation impacts would be minimised may lead to a minor positive effect on the health and wellbeing of communities, particularly in relation to road safety and air quality.
	?	?	?					
16.	+	+	+	✓	✓	✓	✓	Unacceptable environmental or local amenity impacts are considered for existing sites, which should encompass consideration of flood risk. It cannot be known if new sites will affect flood risk until other options are decided upon, However, all sites will be subject to the sequential test through strategic flood risk assessment as part of the course of plan production.
	?	?	?					
17.	+	+	+					This option may shorten supply chains for construction and demolition waste which may ultimately be used as a building resource. Supporting provision of capacity at new sites and making best use of the existing facility

								network may improve public access to waste facilities enabling sustainable waste management.

Proposed alternative option 6: (Or) This option would seek to ensure that sufficient waste management capacity is provided through directing facilities to locations where impacts on the environment can be minimised, as determined by consideration against Development Management policies.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓		✓		An emphasis on directing facilities to locations where impacts on the environment will be minimised may result in positive impacts in relation to biodiversity and geodiversity. As this option will be implemented by consideration against Development Management policies in the Plan which are uncertain until the options have been decided upon (though it is noted that option 2 of the waste site identification principles considers sites against environmental criteria) an element of uncertainty remains within this assessment.
	?	?	?					
2.	+	+	+	✓		✓		An emphasis on directing facilities to locations where impacts on the environment will be minimised may result in positive impacts in relation to water quality and supply. As this option will be implemented by consideration against Development Management policies in the Plan which are uncertain until the options have been decided upon (though it is noted that option 2 of the waste site identification principles considers sites against environmental criteria) an element of uncertainty remains within this assessment.
	?	?	?					
3.	+	+	+	✓		✓		An emphasis on directing facilities to locations where impacts on the environment will be minimised may result in positive impacts in relation to reducing transport miles and encouraging the use of sustainable modes of transport. As this option will be implemented by consideration against Development Management policies in the Plan which are uncertain until the options have been decided upon (though it is noted that option 2 of the waste site identification principles considers sites against environmental criteria) an element of uncertainty remains within this assessment.
	?	?	?					
4.	+	+	+	✓		✓	✓	An emphasis on directing facilities to locations where impacts on the environment will be minimised may result in positive impacts in relation to air quality due to the positive effects outlined under objective 3 (minimisation

	?	?	?					of transport miles therefore less emissions etc.) and through locating facilities in areas that would minimise impact upon air quality. As this option will be implemented by consideration against Development Management policies in the Plan which are uncertain until the options have been decided upon (though it is noted that option 2 of the waste site identification principles considers sites against environmental criteria) an element of uncertainty remains within this assessment.
5.	+	+	+	✓		✓		An emphasis on directing facilities to locations where impacts on the environment will be minimised may result in positive impacts in relation to soil and land use if the best and most versatile land is avoided for development. As this option will be implemented by consideration against Development Management policies in the Plan which are uncertain until the options have been decided upon (though it is noted that option 2 of the waste site identification principles considers sites against environmental criteria) an element of uncertainty remains within this assessment.
	?	?	?					
6.	+	+	+	✓		✓	✓	An emphasis on directing facilities to locations where impacts on the environment will be minimised may result in positive impacts in relation to reducing the causes of climate change (through minimising transport miles and therefore emissions). An emphasis on directing facilities to locations where impacts on the environment will be minimised may result in positive impacts in relation to soil and land use. As this option will be implemented by consideration against Development Management policies in the Plan which are uncertain until the options have been decided upon (though it is noted that option 2 of the waste site identification principles considers sites against environmental criteria) an element of uncertainty remains within this assessment.
	?	?	?					
7.	0	0	0					No clear link.
8.	+	+	+	✓		✓	✓	Minimising the use of resources may be factored in to selecting locations where impacts on the environment can be minimised. This would result in a minor positive effect for this objective however as this option will be implemented by consideration against Development Management policies in the Plan which are uncertain until the options have been decided upon an element of uncertainty remains within this assessment.
	?	?	?					
9.	+ +	+ +	+ +	✓			✓	As this option seeks to 'ensure sufficient waste management capacity' it is assumed that this will be in line with existing national and local waste priorities to move waste up the waste hierarchy. However, some uncertainty remains as effects are dependent on what other policies in the Plan will say about the waste hierarchy.
	?	?	?					
10.	+	+	+	✓		✓		An emphasis on directing facilities to locations where impacts on the environment will be minimised may result in positive impacts in relation to the historic environment if impacts upon archaeological features / settings of high sensitivity are avoided. As this option will be implemented by consideration against Development Management policies in the Plan which are uncertain until the options have been decided upon (though it is noted that option 2 of the waste site identification principles considers sites against environmental criteria) an element of uncertainty remains within this assessment.
	?	?	?					

11.	+	+	+	✓		✓		An emphasis on directing facilities to locations where impacts on the environment will be minimised may result in positive impacts in relation to landscapes and townscapes if the most valuable/sensitive landscapes are avoided. As this option will be implemented by consideration against Development Management policies in the Plan which are uncertain until the options have been decided upon (though it is noted that option 2 of the waste site identification principles considers sites against environmental criteria) an element of uncertainty remains within this assessment.
	?	?	?					
12.	+	+	+	✓	✓	✓	✓	This option seeks to ensure sufficient waste management capacity is provided, resulting in positive effects on the economy and where new facilities are required to meet that capacity, this option will support the creation of new jobs. A focus on the environment over other factors such as the economy could mean that greater weight is given to environmental considerations than those relating to the economy. This has the potential to result in minor negative effects e.g. if the most economically viable sites are not developed due to environmental constraints.
	-	-	-					
13.	+	+	+	✓	✓	✓	✓	Supporting the creation of new waste management capacity should this be required, may have some impacts on the viability and vitality of local communities, however, the extent of these impacts will be dependent on the other detailed waste site identification criteria contained in the plan (which is uncertain until options have been decided upon). Where new facilities are required, this would lead to a minor positive impact in relation to job creation
	?	?	?					
14.	?	?	?	✓		✓	✓	Supporting the creation of new waste management capacity should this be required, may have some recreational impacts, however, the extent of these impacts will be dependent on the other detailed waste site identification criteria contained in the plan (which is uncertain until options have been decided upon).
15.	?	?	?	✓		✓	✓	Supporting the creation of new waste management capacity should this be required, may have impacts upon the wellbeing, health and safety of local communities, however, the extent of these impacts will be dependent on the other detailed waste site identification criteria contained in the plan (which is uncertain until options have been decided upon).
16.	+	+	+	✓		✓		Directing facilities to locations where impacts on the environment can be minimised should encompass consideration of flood risk. It cannot be known if new sites will affect flood risk until other options are decided upon, however, all sites will be subject to the sequential test through strategic flood risk assessment as part of the course of plan production.
	?	?	?					
17.	+	+	+	✓		✓	✓	This option would seek to ensure sufficient waste management capacity which would enable development and wider activity to meet the needs of the population. It may also help to improve public access to waste management facilities although this would be dependent upon other detailed waste site identification criteria contained in the plan (which is uncertain until options have been decided upon).
	?	?	?					

Proposed alternative option 7: (And) This option would work alongside either of options 1, 2 or 3 and would require proposals for new facilities to demonstrate that it is not possible or feasible to provide for additional capacity at existing sites.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓	✓	✓	✓	The addition of this option would be likely to prevent or at least delay the creation of some new sites which in broad terms would be positive for biodiversity when considered in addition to other options. Expansion of existing sites would also benefit from existing infrastructure etc. (so less net impact than a new site). There is however some uncertainty as to whether sites could be extended to the point where some ecological carrying capacity could be breached at a local / landscape scale due to cumulative effects.
		?	?					
2.	?	?	?	✓	✓	✓	✓	The addition of this option would be likely to prevent or at least delay the creation of some new sites which in broad terms would have uncertain effects on water as those new sites may be better or worse than current sites in terms of their potential water environment impacts. At a local scale impacts on water bodies could potentially be prolonged.
3.	+	+	+	✓		✓	✓	This option would be likely to prevent or at least delay the creation of some new sites which would reduce the construction impacts associated with creating the new infrastructure etc. to support new sites. The addition of this option would prioritise making the best use of existing sites over supporting the provision of capacity at new sites. There is currently a relatively close relationship between potential sources of waste arisings and the existing waste facility network suggesting that the existing network is relatively well suited to meeting the objective of managing waste in proximity to where it arises and therefore minimising transport miles. Although the current overall pattern of waste management facilities tend to coincide with the highest concentrations of population and commercial and industrial activity, large parts of the plan area are rural and significant transport of waste may be required if new facilities cannot be provided close to these areas. However, on balance it is considered that a net minor positive effect would occur under this option. There is also the possibility of changes in the current patterns of waste arisings throughout the plan period and/or changes to waste import arrangements. In this respect, the addition of this option may introduce an element of uncertainty relating to reducing transport miles as further waste treatment capacity would, where possible, be concentrated in areas where they already exist rather than being distributed throughout the plan area or
		?	?					

								necessarily responding to changing patterns in waste arisings.
4.	? - +	? - +	? - +	✓	✓	✓	✓	At a local level this option could result in impacts to air being prolonged or exacerbated. At a plan level this option could offset the need for better or worse sites. The addition of this option may prevent or at least delay the creation of some new sites thereby protecting the air quality in these areas. So broadly uncertain, with the possibility of localised minor positive or negative effects.
5.	+ +	+ +	+ +	✓			✓	The addition of this option would prioritise making the best use of existing sites where feasible over supporting the provision of capacity at new sites. This would significantly reduce land take as the need for new infrastructure on areas of land will be lessened leading to a major positive effect in relation to efficient use of land and soil.
6.	+ ?	+ ?	+ ?	✓		✓		New sites (as they involve creating some new supporting infrastructure such as access, possible initial processing facilities etc.) are likely to be marginally less climate friendly than extensions to existing sites, though much will depend on location.
7.	0	0	0					No clear link.
8.	+	+	+	✓		✓		In contrast to new sites, expansion of existing sites is likely to be more resource efficient (due to a reduced requirement for new supporting infrastructure).
9.	0	0	0					No significant effects are noted.
10.	+	+ ?	+ ?	✓		✓	✓	The addition of this option would prioritise making the best use of existing sites where feasible over supporting the provision of capacity at new sites. This is considered to have minor benefits in terms of the historic environment as it is likely to involve less development therefore minimise the direct impacts upon archaeology and/or visual impacts upon the settings of designated features. However, there is some uncertainty as to whether sites could be extended to the point where some historic environment 'carrying capacity' could be breached at a local / landscape scale due to cumulative effects.
11.	+	+ ?	+ ?	✓		✓	✓	The addition of this option would prioritise making the best use of existing sites where feasible over supporting the provision of capacity at new sites. This is considered to have minor benefits in terms of landscapes and townscapes as it is likely to involve less landtake and minimise requirements for new access roads etc. therefore minimising negative visual impacts under this objective. However, there is some uncertainty as to whether sites could be extended to the point where landscape 'carrying capacity' could be breached at a local / landscape scale due to cumulative effects.

12.	0	0	0					Existing sites and the jobs that they support would benefit from this option, though the jobs / economic benefits associated with new sites may be forgone to a degree. Broadly this option would have a neutral effect.
13.	+	+	+	✓	✓	✓	✓	Existing sites and the jobs that they support would benefit from this option. This option may also prevent or at least delay the creation of some new sites which may avoid negative impact on amenity and tourism. However communities in close proximity to existing sites may experience exacerbated amenity impacts due to increased traffic movements etc.
	-	-	-					
14.	0/+	0/+	0/+	✓	✓		✓	The addition of this policy would be likely to prevent or at least delay the creation of some new sites which may have some minor benefits by reducing impacts on the recreational access network as less land would be used (so less footpaths and green infrastructure would be impacted upon).
15.	+	+	+	✓	✓		✓	The addition of this option would prioritise making the best use of existing sites where feasible over supporting the provision of capacity at new sites. This is considered to have minor benefits in terms of protecting the wellbeing, health and safety of local communities as it may confine waste facility development to areas where it already exists, meaning that less communities are impacted by the amenity and traffic issues that may arise. Conversely, communities in close proximity to existing facilities may experience minor negative effects as making the best use of existing sites may involve an increase in traffic movements, extended opening/operation hours or extension to the planning permission expiry date and/or area.
	-	-	-					
16.	0	?	?	✓	✓		✓	The addition of this option may prevent or at least delay the creation of some new sites, which may aid in minimising flood risk (depending upon the nature of the location where development may have been sited) due to a reduction in developed impermeable surfaces. Effects associated with this objective are therefore uncertain.
17.	0	-	-	✓	✓		✓	The prioritisation of provision of waste capacity at existing sites over new sites may limit public access to waste management facilities as these would be concentrated in existing locations rather than necessarily where the demand arises.

Summary of assessment

Options 1, 2, 3, and 5 have a number of similarities and are likely to result in a number of positive effects associated with the minimisation of the land and associated infrastructure footprint through maximising use of existing sites and the reduction of transport miles, which is significantly better for Options 2, 3 and 5 than Option 1.

Option 6 has the potential to result in a number of positive effects due to its emphasis on minimising effects on the environment however it is noted that this could detract from economic benefits.

Options 4 and 7 are considered alongside other options and so cannot be directly compared to them. Option 4 would have overall positive effects on landscape, biodiversity, cultural heritage and on recreational opportunities through protecting the National Park and AONBs. However, it also shows some potential for minor negative effects in relation to transport generated and where it would displace major development to other parts of the Plan area. Option 7 has broadly positive effects particularly in relation to the efficient use of land (objective 5). Some potential for negative effects in relation to the extension/intensification of activity at existing sites has also been noted.

Uncertainty is noted with several objectives as the extent of impacts is often dependent on the other detailed waste site identification criteria contained in the Plan / the final location of sites, which is uncertain until options for this have been decided upon.

Recommendations
Broadly options 2 and 3 and 5 perform best against the SA framework, as Option 2 performs well in terms of supporting a more even spread of economic benefits whilst Options 3 and 5 perform better in terms of effects on communities. The SA would support any of these options being taken forward.

Waste Site Identification Principles (id52)

Assumptions – It is assumed that the quantum and type of waste management developments would be the same under either option, the process of assessing suitable sites is the consideration under these options.

Option 1
This option would support provision of waste management capacity at sites which meet the range of criteria identified in national waste policy.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+ -	+ -	-	✓	✓	✓	✓	National Planning Policy for Waste includes a requirement to consider nature conservation though doesn't specifically consider local nature conservation priorities (though arguably the NPPF does) and waste management sites would inevitably have a land take. In the longer term effects may be uncertain should national policy be amended or replaced.
2.	+	+	?	✓		✓		National Planning Policy for Waste requires consideration to be given to effects on vulnerable surface and groundwater and whether particular care is needed in areas subject to flooding. In the longer term effects may be uncertain should national policy be amended or replaced.
3.	+ +	+ +	?	✓		✓		National Planning Policy for Waste requires the suitability of the local road network and impacts on local roads to be considered and requires non-road methods to be used where possible. In the longer term effects may be uncertain should national policy be amended or replaced.
4.	+	+	?	✓		✓		National Planning Policy for Waste contains requirements to consider effects on air quality and would therefore have positive effects against this objective, acknowledging that some effects on air quality may remain. In the longer term effects may be uncertain should national policy be amended or replaced.
5.	+	+	?	✓		✓		National Planning Policy for Waste requires priority to be given to reusing previously developed land and redundant agricultural and forestry buildings, though it would inevitably still have a land take
6.	- +	- +	?	✓		✓	✓	Whilst the National Planning Policy for Waste says that priority should be given to reuse of previously developed land, it does not require consideration to be given to loss of trees or other vegetation (except in the context of internationally and nationally protected biodiversity sites) and may therefore result in loss of carbon

								storage. PPS10 does not include specific reference to supporting schemes which would generate energy from waste. In the longer term effects may be uncertain should national policy be amended or replaced.
7.	+	+	+	✓		✓	✓	National Planning Policy for Waste requires particular care to be given to the suitability of locations which are subject to flooding.
8.	+	+	?	✓		✓		National Planning Policy for Waste requires priority to be given to reusing previously developed land and redundant agricultural and forestry buildings which would represent sustainable use of resources. In the longer term effects may be uncertain should national policy be amended or replaced.
9.	+	+	?	✓		✓		In terms of site selection the National Planning Policy for Waste requires priority to be given to reusing previously developed land and redundant agricultural and forestry buildings which would potentially reduce the amount of previously used building materials and waste from construction entering the waste streams. In the longer term effects may be uncertain should national policy be amended or replaced.
10.	-	-	?	✓		✓	✓	National Planning Policy for Waste requires consideration to be given to adverse effects on sites of international importance or with a nationally recognised designation meaning that although these would be afforded protection other important assets such as important townscapes or the setting of York would not be protected. In the longer term effects may be uncertain should national policy be amended or replaced.
11.	+ -	+ =	?	✓		✓		National Planning Policy for Waste requires consideration to given to adverse effects on nationally protected landscapes and to consider the setting of the development (though this option would still lead to more cumulative disturbance in the landscape. In the longer term effects may be uncertain should national policy be amended or replaced.
12.	+	+	+ ?	✓		✓	✓	National Planning Policy for Waste requires consideration to be given to the economic potential resulting from the location of waste facilities and would therefore have positive effects on this objective although this is limited to assessments related to the 'cumulative effect of previous waste disposal facilities' and could therefore open to interpretation. National Planning Policy for Waste also states that authorities should consider co-locating with complementary facilities and locations on industrial sites which could have benefits for local businesses in terms of supply products that can be reused. In the longer term effects may be uncertain should national policy be amended or replaced. However, this uncertainty may be offset by the ability of the Plan to adapt to changing economic circumstances.
13.	+	+	+	✓		✓	✓	National Planning Policy for Waste considers community.
14.	?	?	?	✓		✓	✓	Effects on recreation are not specifically considered in National Planning Policy for Waste although it does contain a requirement to consider potential land use conflict although the lack of a specific reference means that effects would be uncertain. In the longer term effects may be uncertain should national policy be amended or replaced.
15.	+	+	?	✓		✓	✓	National Planning Policy for Waste requires consideration to be given to the health implications of any waste

								facilities which would have positive effects against this objective. In the longer term effects may be uncertain should national policy be amended or replaced.
16.	+ +	+ +	+ +	✓		✓	✓	National Planning Policy for Waste requires particular care to be given to the suitability of locations which are subject to flooding.
17.	-	-	?	✓			✓	National Planning Policy for Waste does not provide scope for consideration of public access to waste management facilities. (It does provide support for design in all developments to consider opportunities for community recycling but this is not within the context of new waste management sites themselves).

Option 2

This option would set out more specific local principles for identification of sites based on a preference for:

- Siting facilities for the recycling, transfer and recovery of waste on suitable previously developed land, industrial and employment land, or at existing waste management sites, giving preference to sites where it can be demonstrated that co-locational benefits would arise taking into account existing or proposed uses and economic activities nearby. Where the facility is proposed to deal mainly with waste arising in rural areas then siting within redundant agricultural buildings or their curtilages would also be acceptable in principle under this option.
- Siting facilities involving the recovery of energy from waste at locations where the energy produced can be utilised efficiently. This would, for facilities with the potential to produce combined heat and power, include giving preference to sites where heat can be utilised.
- Siting facilities to support the re-use and recycling of CD&E waste at the point of arising (for temporary facilities linked to the life of the associated construction project) and at active mineral workings where the main outputs of the process are to be sold alongside or blended with mineral produced at the site; as well as at the types of sites identified in 1) above where these are well related to the sources of arisings and/or markets for the end product.
- Siting facilities to provide additional waste water treatment capacity at existing waste water treatment works sites as a first priority. Where development of new capacity on greenfield land is necessary then preference would be given to sites located on lower quality agricultural land.
- Providing any additional capacity required for landfill of waste through preferring the infill of quarry voids for mineral site reclamation purposes as a first priority, giving preference to proposals where a need for infill has been identified as part of an agreed quarry reclamation scheme and where pollution control concerns can be mitigated to an acceptable level. Depositing of inert CD&E waste for the improvement of derelict or degraded land would also be supported under this option where it can be demonstrated that the import of the waste is essential to bring the land back into beneficial use and the scale of the importation would not undermine the potential to manage waste further up the hierarchy.

In all cases the site would need to be suitable when considered in relation to physical, environmental, amenity and infrastructure constraints including existing and proposed neighbouring land uses, the capacity of transport infrastructure and any cumulative impact from previous waste disposal facilities, in line with national policy.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	?	✓	✓	✓	✓	This option requires consideration to be given to environmental constraints (which would include biodiversity

								and geo-diversity) although this would be in line with national waste policy and effects for biodiversity would therefore be as set out for Option 1 above.
2.	+	+	?	✓		✓		This option requires consideration to be given to environmental constraints (which would include effects on water) although this would be in line with national waste policy and effects for water quality would therefore be as set out for Option 1 above.
3.	+	+	+	✓		✓		This option gives preference to co-locating and siting facilities close to the point of arising, which would have positive effects in terms of minimising transport associated with new waste developments.
4.	+	+	?	✓		✓		This option requires consideration to be given to environmental constraints (which would include effects on air) although this would be in line with national waste policy and effects for air quality would therefore be as set out for Option 1 above.
5.	+	+	+	✓		✓		This option would have positive effects in relation to protecting soils and agricultural land by preferring use of previously developed land and land at industrial estates.
6.	+	+	+ +	✓		✓	✓	This option would have positive effects in relation to reducing the causes of climate change by requiring energy produced from EfW plants to be used efficiently and giving preference to locations where the heat can be used also. This would reduce the need for generating power from fossil fuels and the associated carbon emissions, acknowledging that some carbon emissions take place with EfW processes.
7.	?	?	?	✓		✓	✓	This option requires consideration to be given to environmental constraints (which would include climate change and flooding) although this would be in line with national waste policy and effects for climate change adaptation would therefore be as set out for Option 1 above.
8.	+	+	+	✓		✓		The option supports the use of redundant agricultural buildings which would reduce the need for new construction materials, although consideration could be given to supporting the re-use of other buildings (such as industrial buildings).
9.	+	+	+	✓			✓	The option supports the use of previously developed land and redundant agricultural buildings which would potentially reduce the amount of previously used building materials and waste from construction entering the waste streams, although consideration could be given to supporting the re-use of other buildings (such as industrial buildings).
10.	-	-	?	✓		✓	✓	This option requires consideration to be given to environmental constraints (which would include the historic environment) although this would be in line with national waste policy and effects for the historic environment would therefore be as set out for Option 1 above.
11.	-	-	?	✓		✓		This option requires consideration to be given to environmental constraints (which would include landscape) although this would be in line with national waste policy and effects for landscape would therefore be as set out for Option 1 above.
12.	+	+	+	✓			✓	The option would support siting waste management facilities at industrial and employment land and co-locating and would therefore have positive effects against this objective by other supporting businesses

								through for example provision of products to be reused which could have positive effects in terms of sustaining businesses and attracting new businesses.
13.	+	+	+	✓			✓	The option would support siting waste management facilities at industrial and employment land and co-locating and would therefore have positive effects against this objective by other supporting businesses which in turn would help to maintain the vitality of communities. The preference for locations where the heat can be utilised may also help to maintain the vitality of communities through provision of sustainable energy.
14.	?	?	?	✓		✓	✓	This option requires consideration to be given to amenity constraints (which could include recreation although isn't specific) although this would be in line with national waste policy and effects for recreation would therefore be as set out for Option 1 above.
15.	+	+	+ ?	✓		✓	✓	The preference for locations where heat can be used would have positive effects on the wellbeing of communities through provision of a local sustainable energy source. In terms of mitigating any effects on communities, the option would require consideration of amenity issues to be undertaken in line with national waste policy and effects would therefore be the same for Option 1.
16.	?	?	?	✓		✓	✓	This option requires consideration to be given to environmental constraints (flooding) although this would be in line with national waste policy and effects for climate change adaptation would therefore be as set out for Option 1 above.
17.	+	+	+ +	✓		✓	✓	This option would have positive effects against this objective through the preference for locations which would enable heat to be used, which could provide energy for communities. These effects may become more positive over time as more schemes are put in place.

Summary of assessment

The assessment reveals that under Option 1 a number of topics would not be sufficiently covered through reference to national waste policy alone, including biodiversity and geodiversity, agricultural land, climate change, heritage, landscape and recreation. In addition, uncertain effects are recorded over the longer term as the implications of any future changes to national waste policy (beyond the current update being produced) are unknown.

Option 2 provides greater positive effects in terms of the preference for locations close to where heat generated through Combined Heat and Power schemes can be used, which would support climate change objectives as well as having a positive outcome for local communities and businesses. However, the reference to national waste policy in relation to consideration of specific environmental and community issues presents the same uncertainties and potential negative effects as Option 1.

Recommendations

It is recommended that Option 2 be pursued to provide the greatest certainty throughout the Plan period. To alleviate concerns over solely relying on national waste policy to consider issues related to the environment and communities reference should also be given to other policies in the Joint Plan.

Waste Management Facility Safeguarding (id53)

Assumptions: The assessment of waste facility safeguarding does not consider the effects of waste developments themselves, which is considered under other options, but focuses on the effects of safeguarding the facilities.

Option 1
This option would identify a limited number of strategically significant sites for specific safeguarding. This could include strategically important sites and facilities for recovery or disposal of residual waste such as the Allerton Park and Harewood Whin sites, as well as any allocations for strategically important facilities (such as those dealing with large volumes of waste or which would meet specialised waste management needs which cannot readily be met elsewhere). Other forms of development that may prejudice the operation of these facilities would not be supported without overriding justification.

Other waste facilities and sites would be safeguarded through a development control policy requiring the presence of an existing waste site or facility to be taken into account in other development control decisions, with a presumption that other forms of development which may prejudice the waste use would not be acceptable in the absence of overriding justification.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?	✓	✓	✓	✓	It is considered this option would have uncertain effects on biodiversity or geo-diversity as where sites are safeguarded alternative development may need to be located elsewhere and where they are not safeguarded this may generate a need for alternative waste developments elsewhere. Whilst this may lead to a net effect (positive or negative) for biodiversity and geo-diversity it is not possible to identify this without knowledge of the nature and location of the developments involved.
2.	?	?	?	✓		✓	✓	It is considered this option would have uncertain effects on water quality and supply as where sites are safeguarded alternative development may need to be located elsewhere and where they are not safeguarded this may generate a need for alternative waste developments elsewhere. Whilst this may lead to a net effect

								(positive or negative) for water quality and supply it is not possible to identify this without knowledge of the nature and location of the developments involved.
3.	+	+	+	✓			✓	Safeguarding strategically important waste management sites may have positive effects in relation to transport as should alternative sites be needed these may be less well served by transport routes, or in the short term it may require use of alternative, smaller, existing facilities thus resulting in more transport movements.
4.	?	?	?	✓		✓	✓	It is considered this option would have uncertain effects on air quality as where sites are safeguarded alternative development may need to be located elsewhere and where they are not safeguarded this may generate a need for alternative waste developments elsewhere. Whilst this may lead to a net effect (positive or negative) for air quality it is not possible to identify this without knowledge of the nature and location of the developments involved.
5.	?	?	?	✓		✓	✓	It is considered this option would have uncertain effects on loss of soils and agricultural land as where sites are safeguarded alternative development may need to be located elsewhere and where they are not safeguarded this may generate a need for alternative waste developments elsewhere. Whilst this may lead to a net effect (positive or negative) for soils and agricultural land it is not possible to identify this without knowledge of the nature and location of the developments involved.
6.	+	+	+	✓			✓	Safeguarding strategically important waste management sites may have positive effects in relation to greenhouse gas emissions related to transport as should alternative sites be needed these may be less well served by transport routes, or in the short term it may require use of alternative smaller existing facilities thus resulting in more transport movements.
7.	?	?	?	✓			✓	It is considered this option would have uncertain effects on adapting to climate change as where sites are safeguarded alternative development may need to be located elsewhere and where they are not safeguarded this may generate a need for alternative waste developments elsewhere, thus resulting in similar effects but from different developments. Whilst this may lead to a net effect (positive or negative) for climate change it is not possible to identify this without knowledge of the nature and location of the developments involved.
8.	+	+	+	✓			✓	Safeguarding these facilities represents a sustainable use of resources as, assuming they are required throughout the Plan period, should they be lost to other development alternative waste management development would be required elsewhere which would require use of resources. It is assumed that new development on former waste management sites would require some form of resource use in redevelopment of the site. By requiring other developments to locate elsewhere this only requires resources for one development.
9.	++	++	++	✓		✓		This option would help maintain facilities for waste management thus having a strong positive effect on this objective.
10.	?	?	?	✓		✓	✓	It is considered this option would have uncertain effects on the historic environment as where sites are safeguarded alternative development may need to be located elsewhere and where they are not safeguarded

								this may generate a need for alternative waste developments elsewhere, thus resulting in similar effects but from different developments. Whilst this may lead to a net effect (positive or negative) for the historic environment it is not possible to identify this without knowledge of the nature and location of the developments involved.
11.	?	?	?	✓		✓	✓	It is considered this option would have uncertain effects on landscape as where sites are safeguarded alternative development may need to be located elsewhere and where they are not safeguarded this may generate a need for alternative waste developments elsewhere, thus resulting in similar effects but from different developments. Whilst this may lead to a net effect (positive or negative) for landscape it is not possible to identify this without knowledge of the nature and location of the developments involved.
12.	?	?	?	✓		✓	✓	Whilst this option may have positive effects in terms of supporting employment at waste management sites, it may have negative effects for employment in other sectors which would wish to make use of these sites. However, it is not possible to ascertain these effects without knowledge of potential other uses.
13.	?	?	?	✓		✓	✓	Maintaining strategic sites may have a positive effect on the vitality of communities which would be negatively affected by new waste development which was replacing displaced former development, but it is not possible to score this as this would depend on the location of any resulting new development.
14.	?	?	?	✓		✓	✓	It is considered this option would have uncertain effects on recreation and leisure as where sites are safeguarded alternative development may need to be located elsewhere and where they are not safeguarded this may generate a need for alternative waste developments elsewhere, thus resulting in similar effects but from different developments. Whilst this may lead to a net effect (positive or negative) for recreation and leisure it is not possible to identify this without knowledge of the nature and location of the developments involved.
15.	?	?	?	✓		✓	✓	Maintaining strategic sites may have a positive effect on the health, safety and wellbeing of communities which would be negatively affected by new waste development which was replacing displaced former development, but it is not possible to score this as this would depend on the location of any resulting new development.
16.	?	?	?	✓		✓	✓	It is considered this option would have uncertain effects on flooding as where sites are safeguarded alternative development may need to be located elsewhere and where they are not safeguarded this may generate a need for alternative waste developments elsewhere, thus resulting in similar effects but from different developments. Whilst this may lead to a net effect (positive or negative) for flooding it is not possible to identify this without knowledge of the nature and location of the developments involved.
17.	+	+	+	✓		✓	✓	This option enables these facilities to be maintained, thus supporting the waste management needs of the population.

Option 2
This option would rely on national policy[111] to achieve the safeguarding of waste sites and facilities.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?	✓	✓	✓	✓	PPS10 requires consideration to be given to the impact of non-waste development proposals on existing or allocated waste management facilities. It is considered this option would have uncertain effects on biodiversity or geodiversity as where sites are safeguarded alternative development may need to be located elsewhere and where they are not safeguarded this may generate a need for alternative waste developments elsewhere. Whilst this may lead to a net effect (positive or negative) for biodiversity and geodiversity it is not possible to identify this without knowledge of the nature and location of the developments involved. In the longer term effects may be uncertain should national policy be amended or replaced.
2.	?	?	?	✓		✓	✓	PPS10 requires consideration to be given to the impact of non-waste development proposals on existing or allocated waste management facilities. It is considered this option would have uncertain effects on water quality and supply as where sites are safeguarded alternative development may need to be located elsewhere and where they are not safeguarded this may generate a need for alternative waste developments elsewhere. Whilst this may lead to a net effect (positive or negative) for water quality and supply it is not possible to identify this without knowledge of the nature and location of the developments involved. In the longer term effects may be uncertain should national policy be amended or replaced.
3.	+	+	?	✓			✓	PPS10 requires consideration to be given to the impact of non-waste development proposals on existing or allocated waste management facilities. Safeguarding waste management facilities may have positive effects in relation to transport as should alternative sites be needed these may be less well served by transport routes, or in the short term it may require use of alternative smaller existing facilities thus resulting in more transport movements. In the longer term effects may be uncertain should national policy be amended or replaced.
4.	?	?	?	✓		✓	✓	PPS10 requires consideration to be given to the impact of non-waste development proposals on existing or

[111] This has been assessed using the criteria contained in PPS10 as this is adopted national policy at the time of the assessment. It is acknowledged that is likely to be replaced by the updated waste guidance shortly and therefore the assessment will be revisited prior to selecting a preferred option.

								allocated waste management facilities. It is considered this option would have uncertain effects on air quality as where sites are safeguarded alternative development may need to be located elsewhere and where they are not safeguarded this may generate a need for alternative waste developments elsewhere. Whilst this may lead to a net effect (positive or negative) for air quality it is not possible to identify this without knowledge of the nature and location of the developments involved. In the longer term effects may be uncertain should national policy be amended or replaced.
5.	+	+	?	✓		✓	✓	PPS10 requires consideration to be given to the impact of non-waste development proposals on existing or allocated waste management facilities. Safeguarding waste management sites may have positive effects in relation to greenhouse gas emissions related to transport as should alternative sites be needed these may be less well served by transport routes, or in the short term it may require use of alternative smaller existing facilities thus resulting in more transport movements. In the longer term effects may be uncertain should national policy be amended or replaced. In the longer term effects may be uncertain should national policy be amended or replaced.
6.	+	+	?	✓			✓	PPS10 requires consideration to be given to the impact of non-waste development proposals on existing or allocated waste management facilities. Safeguarding strategically important waste management sites may have positive effects in relation to greenhouse gas emissions related to transport as should alternative sites be needed these may be less well served by transport routes, or in the short term it may require use of alternative smaller existing facilities thus resulting in more transport movements. In the longer term effects may be uncertain should national policy be amended or replaced.
7.	?	?	?	✓			✓	PPS10 requires consideration to be given to the impact of non-waste development proposals on existing or allocated waste management facilities. It is considered this option would have uncertain effects on adapting to climate change as where sites are safeguarded alternative development may need to be located elsewhere and where they are not safeguarded this may generate a need for alternative waste developments elsewhere, thus resulting in similar effects but from different developments. Whilst this may lead to a net effect (positive or negative) for climate change it is not possible to identify this without knowledge of the nature and location of the developments involved. In the longer term effects may be uncertain should national policy be amended or replaced.
8.	+	+	?	✓			✓	Safeguarding these facilities represents a sustainable use of resources as, assuming they are required throughout the Plan period, should they be lost to other development alternative waste management development would be required elsewhere which would require use of resources. It is assumed that new development on former waste management sites would require some form of resource use in redevelopment of the site. By requiring other developments to locate elsewhere this only requires resources for one development. In the longer term effects may be uncertain should national policy be amended or replaced.
9.	+	+	?	✓		✓		This option would consider implications for waste management facilities but would not guarantee their

								safeguarding, and would therefore be positive but not strongly positive. In the longer term effects may be uncertain should national policy be amended or replaced.
10.	?	?	?	✓		✓	✓	PPS10 requires consideration to be given to the impact of non-waste development proposals on existing or allocated waste management facilities. It is considered this option would have uncertain effects on the historic environment as where sites are safeguarded alternative development may need to be located elsewhere and where they are not safeguarded this may generate a need for alternative waste developments elsewhere. Whilst this may lead to a net effect (positive or negative) for the historic environment it is not possible to identify this without knowledge of the nature and location of the developments involved. In the longer term effects may be uncertain should national policy be amended or replaced.
11.	?	?	?	✓		✓	✓	PPS10 requires consideration to be given to the impact of non-waste development proposals on existing or allocated waste management facilities. It is considered this option would have uncertain effects on landscape as where sites are safeguarded alternative development may need to be located elsewhere and where they are not safeguarded this may generate a need for alternative waste developments elsewhere. Whilst this may lead to a net effect (positive or negative) for the landscape it is not possible to identify this without knowledge of the nature and location of the developments involved. In the longer term effects may be uncertain should national policy be amended or replaced.
12.	+	+	?	✓		✓	✓	By requiring consideration to be given to impacts for waste management (under national policy), this option provides a certain degree of flexibility that may enable economic considerations to feature in decision involving potential loss of a waste management facility. In the longer term effects may be uncertain should national policy be amended or replaced.
13.	?	?	?	✓		✓	✓	Maintaining strategic sites may have a positive effect on the vitality of communities which would be negatively affected by new waste development which was replacing displaced former development, but it is not possible to score this as this would depend on the location of any resulting new development. In the longer term effects may be uncertain should national policy be amended or replaced.
14.	?	?	?	✓		✓	✓	PPS10 requires consideration to be given to the impact of non-waste development proposals on existing or allocated waste management facilities. It is considered this option would have uncertain effects on recreation and leisure as where sites are safeguarded alternative development may need to be located elsewhere and where they are not safeguarded this may generate a need for alternative waste developments elsewhere, thus resulting in similar effects but from different developments. Whilst this may lead to a net effect (positive or negative) for recreation and leisure it is not possible to identify this without knowledge of the nature and location of the developments involved. In the longer term effects may be uncertain should national policy be amended or replaced.
15.	?	?	?	✓		✓	✓	Considering the safeguarding of sites may have a positive effect on the health, safety and wellbeing of communities which would be negatively affected by new waste development which was replacing displaced

								former development, but it is not possible to score this as this would depend on the location of any resulting new development. In the longer term effects may be uncertain should national policy be amended or replaced.
16.	?	?	?	✓		✓	✓	PPS10 requires consideration to be given to the impact of non-waste development proposals on existing or allocated waste management facilities. It is considered this option would have uncertain effects on adapting to flooding as where sites are safeguarded alternative development may need to be located elsewhere and where they are not safeguarded this may generate a need for alternative waste developments elsewhere, thus resulting in similar effects but from different developments. Whilst this may lead to a net effect (positive or negative) for flooding it is not possible to identify this without knowledge of the nature and location of the developments involved. In the longer term effects may be uncertain should national policy be amended or replaced.
17.	+	+	?	✓		✓	✓	This option enables the importance of maintaining waste management facilities to be considered, thus supporting the waste management needs of the population. In the longer term effects may be uncertain should national policy be amended or replaced.

Proposed alternative option 3: (Or) **Under this option all waste management facilities would be safeguarded. Other forms of development that may prejudice the operation of these facilities would not be supported without overriding justification.**

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?	✓			✓	It is considered this option would have uncertain effects on biodiversity or geodiversity as where sites are safeguarded and development that may prejudice the site erred against, this may result in displaced development. Whilst this may lead to a net effect (positive or negative) for biodiversity and geodiversity it is not possible to identify this without knowledge of the nature and location of the developments involved.
2.	?	?	?	✓			✓	It is considered this option would have uncertain effects on water quality and supply as where sites are safeguarded and development that may prejudice the site erred against, this may result in displaced development. Whilst this may lead to a net effect (positive or negative) for water it is not possible to identify

								this without knowledge of the nature and location of the developments involved.
3.	+ ?	+ ?	+ ?	✓			✓	Safeguarding all waste management sites may have positive effects in relation to transport as should alternative sites be needed these may be less well served by transport routes. However, displace development may need to go somewhere else less sustainable.
4.	?	?	?	✓			✓	It is considered this option would have uncertain effects on air quality as where sites are safeguarded and development that may prejudice the site erred against, this may result in displaced development. Whilst this may lead to a net effect (positive or negative) for air quality it is not possible to identify this without knowledge of the nature and location of the developments involved.
5.	?	?	?	✓			✓	It is considered this option would have uncertain effects on land as where sites are safeguarded and development that may prejudice the site erred against, this may result in displaced development. Whilst this may lead to a net effect (positive or negative) for land it is not possible to identify this without knowledge of the nature and location of the developments involved.
6.	+ ?	+ ?	+ ?	✓			✓	Safeguarding all waste management sites may have positive effects in relation to transport as should alternative sites be needed these may be less well served by transport routes. However, displace development may need to go somewhere else less sustainable. This would result in uncertain to positive climate change impacts.
7.	?	?	?	✓			✓	It is considered this option would have uncertain effects on climate adaptation as where sites are safeguarded and development that may prejudice the site erred against, this may result in displaced development. Whilst this may lead to a net effect (positive or negative) for climate adaptation it is not possible to identify this without knowledge of the nature and location of the developments involved.
8.	+	+	+	✓			✓	Safeguarding these facilities represents a sustainable use of resources as, assuming they are required throughout the Plan period as less building materials would be needed to bring sites back in to use or provide access to them.
9.	++	++	++	✓				This option would maintain facilities for waste management thus having a strong positive effect on this objective.
10.	?	?	?	✓			✓	It is considered this option would have uncertain effects on the historic environment as where sites are safeguarded and development that may prejudice the site erred against, this may result in displaced development. Whilst this may lead to a net effect (positive or negative) for the historic environment it is not possible to identify this without knowledge of the nature and location of the developments involved.
11.	?	?	?	✓			✓	It is considered this option would have uncertain effects on the landscape as where sites are safeguarded and development that may prejudice the site erred against, this may result in displaced development. Whilst this may lead to a net effect (positive or negative) for the landscape it is not possible to identify this without knowledge of the nature and location of the developments involved.

12.	- +	- +	- +	✓		✓	✓	Safeguarding so many sites, although beneficial in some circumstances for enabling future sustainable waste development, would in other cases constrain the locational choices available to developers which ultimately may make some development unviable, or hinder regeneration proposals for areas.
13.	?	?	?	✓			✓	It is considered this option would have uncertain effects on the community vitality as where sites are safeguarded and development that may prejudice the site not supported, this may result in displaced development. Whilst this may lead to a net effect (positive or negative) for community vitality it is not possible to identify this without knowledge of the nature and location of the developments involved.
14.	?	?	?	✓			✓	It is considered this option would have uncertain effects on recreation, leisure and learning as where sites are safeguarded and development that may prejudice the site erred against, this may result in displaced development. Whilst this may lead to a net effect (positive or negative) for recreation, leisure and learning it is not possible to identify this without knowledge of the nature and location of the developments involved.
15.	?	?	?	✓			✓	It is considered this option would have uncertain effects on wellbeing, health and safety as where sites are safeguarded and development that may prejudice the site erred against, this may result in displaced development. Whilst this may lead to a net effect (positive or negative) for wellbeing, health and safety it is not possible to identify this without knowledge of the nature and location of the developments involved.
16.	?	?	?	✓			✓	It is considered this option would have uncertain effects on flooding as where sites are safeguarded and development that may prejudice the site erred against, this may result in displaced development. Whilst this may lead to a net effect (positive or negative) for flooding it is not possible to identify this without knowledge of the nature and location of the developments involved.
17.	+	+	+	✓			✓	This option enables these facilities to be maintained, thus supporting the waste management needs of the population.

Proposed alternative option 4: (Or) **This option would aim to safeguard all waste management facilities with current planning permission at the time the Joint Plan is developed.**

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?	✓			✓	Assessment is the same as option 3 though effects apply to a slightly broader range of sites. This is not significant enough to change the impact score.
2.	?	?	?	✓			✓	Assessment is the same as option 3 though effects apply to a slightly broader range of sites. This is not significant enough to change the impact score.
3.	+ ?	+ ?	+ ?	✓			✓	Assessment is the same as option 3 though effects apply to a slightly broader range of sites. This is not significant enough to change the impact score.
4.	?	?	?	✓			✓	Assessment is the same as option 3 though effects apply to a slightly broader range of sites. This is not significant enough to change the impact score.
5.	?	?	?	✓			✓	Assessment is the same as option 3 though effects apply to a slightly broader range of sites. This is not significant enough to change the impact score.
6.	+ ?	+ ?	+ ?	✓			✓	Assessment is the same as option 3 though effects apply to a slightly broader range of sites. This is not significant enough to change the impact score.
7.	?	?	?	✓			✓	Assessment is the same as option 3 though effects apply to a slightly broader range of sites. This is not significant enough to change the impact score.
8.	+	+	+	✓			✓	Assessment is the same as option 3 though effects apply to a slightly broader range of sites. This is not significant enough to change the impact score.
9.	++	++	++	✓				Assessment is the same as option 3 though effects apply to a slightly broader range of sites. This is not significant enough to change the impact score.
10.	?	?	?	✓			✓	Assessment is the same as option 3 though effects apply to a slightly broader range of sites. This is not significant enough to change the impact score.

11.	?	?	?	✓			✓	Assessment is the same as option 3 though effects apply to a slightly broader range of sites. This is not significant enough to change the impact score.
12.	- +	- +	- +	✓		✓	✓	Assessment is the same as option 3 though effects apply to a slightly broader range of sites. This is not significant enough to change the impact score.
13.	?	?	?	✓			✓	Assessment is the same as option 3 though effects apply to a slightly broader range of sites. This is not significant enough to change the impact score.
14.	?	?	?	✓			✓	Assessment is the same as option 3 though effects apply to a slightly broader range of sites. This is not significant enough to change the impact score.
15.	?	?	?	✓			✓	Assessment is the same as option 3 though effects apply to a slightly broader range of sites. This is not significant enough to change the impact score.
16.	?	?	?	✓			✓	Assessment is the same as option 3 though effects apply to a slightly broader range of sites. This is not significant enough to change the impact score.
17.	+	+	+	✓			✓	Assessment is the same as option 3 though effects apply to a slightly broader range of sites. This is not significant enough to change the impact score.

Summary of assessment

It is not possible to identify effects against a number of environmental sustainability objectives without knowing the nature of any proposed development or alternative locations for either this or displaced waste management facilities. Option 1 would provide positive effects against waste management objectives by providing certainty over safeguarding these facilities throughout the Plan period however Option 2 may perform better against wider economic objectives by providing a greater element of flexibility in decision making. Relying on national policies provides uncertainties in the longer term should national policy be amended or replaced (further to the existing proposed updated national waste planning policy).

Options 3 and 4 would have similar uncertain effects arising out of the fact that other development would be displaced by safeguarded existing or planned waste development although option 4 would apply to a slightly broader range of sites than option 3. Slightly more certainty is observed in relation to transport and climate change which have uncertain to positive affects arising out of the fact that these safeguarded sites, having already had to operate as commercial concerns are slightly more likely than not to be reasonably well placed in terms of accessibility to sources / markets. They would also have mixed economic effects because if so many sites, large and small, operational and closed, were safeguarded there would be less flexibility over the locational choices made by other development.

Recommendations

It is recommended that Option 1 be adopted as this would support the overall approach to provision of waste management facilities in the Plan area

in line with other policies in this Plan.

Transport Infrastructure (id54)

Option 1
This option would encourage the use of existing rail, water and pipeline transport infrastructure, and also support the development of new rail, water or pipeline facilities in appropriate locations consistent with protection of local communities and the environment, for the transport of minerals and waste produced or arising within the Plan area and for any large scale import or export of minerals or waste to or from the area.

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	-	-	✓	✓	✓		The continued use of existing infrastructure in the short term is not likely to have significant effects on biodiversity (as it continues current trends). In the longer term, the effects are uncertain as the impacts may become more negative depending on the location and requirements for additional/new infrastructure. The severity of these impacts would be determined by location and type of infrastructure development. In particular, the construction phases of development may incur habitat loss, and the on-going use of development may cause disturbance to biodiversity.
		?	?					
2.	?	?	?	✓		✓		In the short term there is likely to be a continuation of existing trends in transportation through the retention of existing infrastructure. Where it is identified that waste and minerals could be exported using waterways in the future, there is the potential for water quality to be negatively impacted in the longer term such as through waterside development and its associated run-off. These effects however are uncertain and predominantly localised to the Selby area which has infrastructure that is potentially suitable for this method of transportation.
3.	+	+	+	✓	✓	✓		This option allows for the retention of different modes of transportation as well as alternative methods of transport to be used and implemented for the transportation of waste and minerals. This should have a positive impact on helping reduce road transportation and mileage, including its associated emissions. There is potential for this to positively impact over time as the drive to reduce road transportation in favour of more sustainable modes is considered. However, this will still be dependent upon whether there is the potential to implement alternatives to road transport in particular locations. However, the net effect is positive.
		?	?					
4.	+	+	+	✓		✓		It is likely that this option would have a positive impact on air quality through the retention and support for infrastructure, which would reduce transportation by road. The significance of this may increase over time

								should there be a positive shift towards using these more sustainable modes. However, some effects (e.g. dust from vehicles) may have a localised impact result depending on the routes chosen. The effect, however, is broadly positive.
5.	0	-	-	✓		✓		There are likely to be neutral effects from retaining existing infrastructure. However, the development of any new infrastructure is likely to involve some additional land footprint and the level of impact would be dependent upon location and the characteristics of the land chosen for that new infrastructure. It is likely that any effects on land lost to development would be cumulative (i.e. more additional land would be lost over time).
6.	+	+	+	✓			✓	Retaining and supporting additional infrastructure should help to encourage and reduce road transportation consequently having a positive impact on reducing greenhouse gas emissions, particularly in the long term. The magnitude of the effects will be dependent upon the location of future mineral and waste sites however and whether they can connect, or have the potential to connect, to this sustainable network in order to have a positive influence in reducing road transportation and associated emissions. The effect, however, is broadly positive.
7.	0	0	0					There is no clear link to this objective
8.	+	+ / ?	? / -	✓		✓		This option would be positive in retaining and supporting infrastructure that would allow for sustainable minerals and waste development and their movement. There are implications on the use of resources to construct new infrastructure to support rail, water and pipeline transport.
9.	0	0	0					There is no clear link to this objective
10.	?	?	?	✓		✓		The effects on heritage assets and their setting are likely to be a consideration for the development of new infrastructure development. The severity of any impacts will be dependent upon the type of infrastructure and its location. Consequently, the impacts are currently unknown.
11.	?	?	?	✓		✓		The effect on the landscape character is likely to be a consideration for the development of new infrastructure development (though retaining existing infrastructure is likely to have no effect on the present situation). The severity of any impacts will be dependent upon the type of infrastructure and its location. Mitigation may be required to reduce the impacts where applicable. Consequently, the impacts are currently unknown.
12.	+	+	+	✓		✓		Retaining the existing infrastructure whilst also allowing for new infrastructure will help to support the mineral and waste industries with regards to accessing their markets and the movement of goods. This option is expected to have a minor positive effect.

13.	?	?	?	✓	✓	✓		The retention of existing infrastructure is likely to continue the present situation. New infrastructure may have a potential impact but any effects are likely to be dependent upon the location and type of infrastructure development.
14.	0	0	0					There is no clear link to this objective. This option may result in some very small scale effects on recreational users of waterways (e.g. through disturbance to tranquillity) but this is not expected to be at a significant level.
15.	+ ?	+ ?	+	✓		✓		The scale of impacts on the health / wellbeing of local communities will be directly influenced by the use of rail and water infrastructure where they are co-located with minerals / waste development. The retention of existing infrastructure is not likely to cause further nuisance unless the frequency of use increases, which is a possibility. Direct impacts could relate to noise, odour and dust through waste and mineral transportation. Furthermore, where new infrastructure is required, the impacts on human health and well-being would need to be understood to minimise any localised effects. By helping to reduce road transportation, there could be positive effects by removing HGVs from roads in terms of safety, noise and vibration as well as reducing the potential for odour and dust from transportation. On balance the localised effects of supporting existing and new infrastructure are considered not to outweigh the net benefits of reducing road transportation of minerals and waste.
16.	0 ?	0 ?	?	✓		✓		The development of new infrastructure would need to take account of flood risk to ensure that it would not directly or indirectly affect flood risk. However, it is expected that development to enable transportation by water is likely to fall within the Government's definition of water compatible, though will still be required to not increase the chances of flooding elsewhere. In summary while effects are expected to be minimal, there remains some uncertainty with this option that can only be resolved at a site specific level of detail'
17.	0	0	0					There is no clear link to this objective

Option 2
This option would be the same as option 1 but would require the carbon implications of any proposal to also be considered.

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	-	-	✓	✓	✓		This option would perform in the same way as option 1
		?	?					
2.	?	?	?	✓		✓		This option would perform in the same way as option 1.
3.	+	+	+	✓		✓	✓	As the transport mode used and the route taken between a minerals or waste site and the transport infrastructure that enables transfer to a particular mode has a significant bearing on the carbon emissions of a development, this option is likely to promote proximity between minerals and waste sites and 'inter-modal' transport infrastructure (such as wharves, railheads) and markets. It is also likely to promote the use of non-road forms of transport (accepting that minerals can only be extracted where they are found) in general. In some cases it might, however, promote the use of low carbon (e.g. biogas or more energy efficient) vehicles or greater rationalisation of logistical arrangements for transporting minerals and waste as an alternative to utilising inter-modal infrastructure. These latter means of reducing carbon might still have impacts (such as noise, vibration or congestion) on local communities, some of which will stay at the same level as the baseline, while others may improve the baseline. However, on balance it is expected that the impacts, when compared to the baseline, will improve with time.
4.	+	+	+ +					As this option may in some cases promote intermodal shift and in some other cases promote low carbon fuels, efficient fleet or logistical rationalisation rather than utilisation of intermodal infrastructure effects on air pollution are predicted to be positive. This will improve over time.
5.	0	-	-	✓		✓	✓	This option would perform in broadly the same way as option 1, though in some cases it may lessen the need to develop new intermodal infrastructure.
6.	+	+ +	+ +					This option will strongly promote the reduction of carbon emissions. However, it might not always promote the best option, as some developers may seek to promote the low carbon benefits of changes to existing fleet or logistics as being more sustainable than doing nothing, even where intermodal shift would be the best option. This may suggest that a strong policy arising from this option could require the consideration of non-road forms of transport wherever possible and require a justification for not utilising them.
7.	0	0	0					There is no clear link to this objective
8.	+	+	?	✓		✓		This option would perform in broadly the same way as option 1, though to a degree it might slightly lessen demand for existing infrastructure if other ways of reducing carbon also prove effective.

		?	-					
9.	0	0	0					There is no clear link to this objective
10.	?	?	?	✓		✓		This option would perform in the same way as option 1
11.	?	?	?	✓		✓		This option would perform in the same way as option 1
12.	+	+	+	✓		✓	✓	This option would perform in broadly the same way as option 1. However, the economic effect might be further enhanced by driving improvements to vehicle fleet to a degree, making minerals and waste businesses more resilient to increases in fuel costs.
13.	?	?	?	✓	✓	✓		This option would perform in broadly the same way as option 1. However, it may also result in more (though less polluting) vehicles than option 1 (though at a level that is likely to be less than the baseline trend).
14.	0	0	0	✓	✓	✓		This option would perform in the broadly the same way as option 1
15.	+	+	+	✓		✓		This option would perform in the broadly the same way as option 1, however, it might lessen the benefit of removing traffic from roads to a degree (as non-road option may not always be the lowest carbon option.
	?	?	?					
16.	0	0	?	✓		✓		This option would perform in the broadly the same way as option 1
	?	?						
17.	+	+	+	✓		✓		This option would allow logistical arrangements for minerals / waste to be more closely scrutinised which may result in shortened supply chains for things like building materials.

Summary of assessment

Initially only Option 1 was put forward. This option is likely to have positive impacts through the retention of the existing rail, pipeline and water transportation infrastructure and support for the development of new infrastructure on reducing the need to transport waste and minerals by road and the economy, as well as potentially positive effects on climate change although this is dependent upon individual circumstances. However, the likely social and environmental impacts experienced in relation to the landscape, human health and well-being and biodiversity will be dependent upon the location, type and scale of additional infrastructure as well as the frequency of its use. The majority of effects at the stage are therefore dependent upon implementation.

Recommendations

An alternative option could seek to encourage the retention of infrastructure and the development of new rail, water and pipeline facilities informed by an appraisal of the carbon impacts. Although it is broadly sustainable to transport by these methods it is uncertain how minerals and waste development link to this. A possible alternative approach to this would be to support the retention and development of the infrastructure that would represent environmentally sound approach to transporting waste and minerals and also to assess the net carbon impacts of transport modes utilised. The assessors consider that this is supported by NPPF policy on transport and climate change whereby a low carbon future is supported.

With both options…
Both options are likely to have positive impacts through the retention of the existing rail, pipeline and water transportation infrastructure and support for the development of new infrastructure. These positive effects are on reducing the need to transport waste and minerals by road and potentially on climate change and economic objectives. Option 2 would have greater positive effects in relation to mitigating climate change through the requirement to consider carbon implications at the planning application stage. It may indirectly also have stronger positive effects in relation to air quality as it may promote better logistical practice and fuel efficiency as an alternative to using non road transport. Under both options the likely social and environmental impacts experienced in relation to the landscape, human health and well-being and biodiversity will be dependent upon the location, type and scale of additional infrastructure as well as the frequency of its use. The majority of effects at the stage are therefore dependent upon implementation.

Recommendations
While option 2 performs marginally better than option 1 (on account of its positive climate change and air pollution effects) positive effects could be further enhanced at the policy development stage via a strong policy arising from this option, which could require the consideration of non road forms of transport wherever possible and require a justification for not utilising them.

Transport Infrastructure Safeguarding (id55)

Option 1
This option would safeguard all known railheads, rail links to quarries and wharfage which would have the potential for minerals transport against encroaching or replacement development which would prevent the use of land for mineral transport purposes, unless the need for the alternative development would outweigh the benefits of retaining the facility.

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0 ?	0 ?	0 ?					This option is likely to have a wider implication for biodiversity and habitat connectivity should all rail links be retained. It is unlikely that this would change the current baseline situation however through their retention. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
2.	?	?	?					There is unlikely to be a change from the current baseline situation through the retention of known railheads, links and wharfage. However, Water quality may be impacted by the continued use of wharves although this may be location specific to where they are in use. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
3.	++ ?	++ ?	++ ?	✓		✓		The principle of retention is positive in encouraging more sustainable forms of transportation of minerals. This option allows for all existing routes/railheads with the potential for minerals transport to be retained, reserving the widest possibilities for movement of minerals. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
4.	?	?	?					Positive impacts on air quality would be experienced where the transportation of minerals by rail/water would replace road transportation. This option would reserve the widest network for this to be implemented but is reliant upon the location of extraction in these locations. The impact is difficult to predict at this stage and some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.

5.	+	+	+	✓	✓	✓		The retention of existing wharves and rail heads/links would mean that any future extraction in these locations may not require additional land for transportation. However, where transport infrastructure sites are not in use and are unlikely to have potential now or in the future or are currently redundant and a better alternative use is identified the option allows consideration of those alternative uses. On balance, there are both positives and negatives associated with this objective. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
	-	-	-					
6.	+	+	+	✓		✓		The principle of retention is positive in encouraging more sustainable forms of transportation of minerals by safeguarding existing facilities. This option allows for all existing routes/railheads to be retained reserving the widest possibilities for movement of minerals and providing alternatives to road transportation. However, it is likely that some of these facilities have more potential than others in contributing to this form of mineral movement and therefore a limited positive impact on climate change which may become more positive over time. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
	?	?	?					
7.	0	0	0					There is not clear link between this option and the objective
8.	+	+	+	✓		✓	✓	This option would be positive in retaining and supporting infrastructure that would allow for sustainable minerals and waste development and their movement. Where these can be utilised they will reduce the use of resources for the construction of new infrastructure.
9.	0	0	0					There is not clear link between this option and the objective
10.	-	-	-	✓		✓	✓	The retention of existing rail head/links and wharves are not likely to have a significant impact over and above the current baseline in the short-term. However, where they are not in use and have less potential for use in the future it may create sites which become vacant and derelict. Retaining them for the transportation of minerals in the long-term therefore may stop development which has the potential to enhance heritage assets and their setting. River/canal side wharves located within urban areas may particularly benefit from redevelopment where they will not be in use for transportation and can be brought back into a positive use. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
	?	?	?					

11.	- ?	- ?	- ?	✓		✓	✓	Similarly to objective 10, existing rail head/links and wharves are an existing feature in the landscape and their retention is not likely to have significant effects in the short term. However, where they are not in use and have less potential for use in the future it may create sites which become vacant and derelict. Retaining them for the transportation of minerals in the long-term therefore may prevent development which has the potential to enhance these features and their immediate landscape. River/canal side wharves located within urban areas may particularly benefit from redevelopment where they will not be in use for transportation and can be brought back into a positive use. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
12.	+ ?	+ ?	+ ?	✓		✓	✓	Retaining all of the rail heads/links and wharves would be positive in ensuring that the sites connected to these have potential to remain connected in terms of access and movement of minerals in the future. In reality Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known. it is likely that only some routes would have the potential for use in the future depending on the location of viable mineral extraction, which may make some railheads/links and wharves less likely to be used in the future.
13.	0 ?	?	?	✓	✓	✓	✓	This option is unlikely to have significant effects in the short-term. However, this option may reduce enhancement opportunities where sites have no potential to be used in the future and are retained but fall into a derelict state. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
14.	0 ?	?	? -	✓	✓	✓	✓	This option is unlikely to have significant effects in the short-term. However, this option may reduce enhancement opportunities where sites are have no potential to be used in the future and are retained but fall into a derelict state. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
15.	0	0	0					In the short-term it is unlikely that the situation will change from the present given that all rail head/links and wharves would be retained. However, the effects in the future on human health, noise, odour etc. will be determined through which infrastructure is more frequently used as opposed to the principle of retention. Where they are not in use and have less potential for use in the future it may create sites which become

	?	?	?					vacant and derelict, with knock-on effects relating to safety, health and well-being. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
16.	0 ?	0 ?	0 ?					The retention of existing rail heads/links and wharves is unlikely to change the current baseline. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
17.	0 ?	?	? -	✓	✓		✓	This option is unlikely to have significant effects in the short-term. However, this option may reduce enhancement opportunities (which could be provided for by other alternative developments) for the benefit of the population where sites have no potential to be used in the future and are retained but fall into a derelict state due to being safeguarded. Option would enable other developments. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.

Option 2
This option would only safeguard railheads, rail links to quarries and wharfage which are currently being used for minerals transport against encroaching or replacement development, which would prevent the use of land for mineral transport purposes, unless the need for the alternative development would outweigh the benefits of retaining the facility.

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0 ?	0 ?	0 ?	✓		✓		This option is likely to have implications for biodiversity and habitat connectivity where rail links are retained and therefore no change from baseline. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
2.	?	?	?	✓		✓		There is unlikely to be a change from the current baseline situation through the retention of used railheads,

	+	+	+					links and wharfage. Water quality is likely to be impacted by the use of wharves although this will be location specific to where they are in use. Where they are no longer in use, water quality may be positively affected. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
3.	+ +	+ -	+ -	✓		✓		The principle of retention of rail head/links and wharves is positive in encouraging more sustainable forms of transportation of minerals. This option allows for existing in-use routes/railheads to be retained for movement of minerals. However, this option would not allow for the potential of other sites to be brought back into use should they have potential in the future, or for new / future infrastructure to be safeguarded. It is likely that these alternative sites may be lost reducing the potential for connectivity in locations where extraction may restart or planned to commence. On balance this is likely to have positive effect in the short term for existing extraction but may have possible negative effects in the long-term. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
4.	0 ?	?	?	✓		✓		Positive impacts on air quality would be experienced where the transportation of minerals by rail/water would replace road transportation. This option would reserve the in-use infrastructure network for the future, which would not be too different to the current situation. However, this is reliant upon the location of extraction in these locations and does not allow for alternatives or the potential for infrastructure to be brought back into use where extraction can restart or commence. The impacts in the long-term are therefore difficult to predict at this stage and some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
5.	+ ?	+ -	+ -	✓	✓	✓		The retention of existing in-use wharves and rail heads/links would mean that any future extraction in these locations may not require additional land for transportation. However, where sites are not currently in use or are planned, this would reduce the ability to reuse existing lines/rail heads where existing connections exist. However, it is anticipated that not all rail heads/lines and wharves have potential for the future and therefore some sites would be available for redevelopment making use of these brownfield locations, particularly in the long-term. On balance, there are both positives and negatives associated with this option. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
6.	+	+	?	✓		✓		The principle of retention is positive in encouraging more sustainable forms of transportation of minerals by safeguarding existing facilities. This option allows for existing in-use routes/railheads to be retained for movement of minerals. However, this option would not allow for the potential of other sites to be brought back

	?	?						into use should they have potential in the future or planned infrastructure to be safeguarded and may therefore promote road transportation in the long-term. However, the extent to which this may occur is currently unknown. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
7.	0	0	0					There is not clear link between this option and the objective
8.	+	+	+	✓		✓	✓	This option would be positive in retaining and supporting infrastructure that would allow for sustainable minerals and waste development and their movement from sites currently in use. Where new locations for extraction are developed, there is the potential for resource use in developing infrastructure for the movement of goods. Unlike option 1 or 3, this option does not look at inactive sites or infrastructure suitable/with potential for the future.
		-	-					
9.	0	0	0					There is not clear link between this option and the objective
10.	0	+	+	✓		✓	✓	The retention of existing rail head/links and wharves are not likely to have a significant impact over and above the current baseline in the short-term. However, this option does not safeguard infrastructure that is not currently in use. . This would allow sites that aren't in use and which have the potential to enhance heritage assets and their setting to be enhanced by other forms of development. River/canal side wharves located within urban areas may particularly benefit from redevelopment where they will not be in use for transportation and can be brought back into a positive use. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
	?	?	?					
11.	-	-	-	✓		✓	✓	Similarly to objective 10, existing rail head/links and wharves are an existing feature in the landscape and their retention is not likely to have a significant effect in the short term. However, where they are not in use it may create sites which become vacant and available. Under this option there is the potential for these sites to be developed to enhance their immediate landscape. River/canal side wharves located within urban areas may particularly benefit from redevelopment where they will not be in use for transportation and can be brought back into a positive use. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
	?	?	?					

12.	+ ?	+ ?	+ ?	✓		✓	✓	Retaining the in-use rail heads/links and wharves would be positive in ensuring that there the sites connected to these have potential to remain connected in terms of access and movement of minerals in the future. However, any sites which are currently inactive and have potential for future extraction may lose connectivity through development. Where this is relevant, further cost may be incurred in developing new infrastructure to connect extraction of minerals with their markets. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
13.	0 ?	0 ?	+ ?	✓	✓	✓	✓	This option is unlikely to have significant effects in the short-term. This option may have a positive effect in the future should some rail halts/links be removed/redeveloped, particularly in locations where it is visible and impacts on tourism. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
14.	? 0	?	? +	✓	✓	✓	✓	This option is unlikely to have significant effects in the short-term. However, indirectly, this option may allow enhancement opportunities where sites are not in use. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
15.	0 ?	0 ?	0 ?					In the short-term it is unlikely that the situation will change from the present given that all of the rail head/links and wharves currently in-use would be retained. However, the effects in the future on human health, noise, odour etc. will be determined through which infrastructure is more frequently used as opposed to the principle of retention. Where they are not in use and have less potential for use in the future it may create sites which become vacant and derelict, with knock-on effects relating to safety, health and well-being, although there is less likelihood of this under this potion than option 1. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
16.	0 ?	0 ?	0 ?					The retention of existing rail heads/links and wharves currently in use is unlikely to change the current baseline. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
17.	0 ?	?	? +	✓	✓		✓	This option is unlikely to have significant effects in the short-term. However, indirectly this option may provide enhancement opportunities for the benefit of the population where sites are not in use if other restorative or enhancing development outside of the scope of this plan comes forward. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the

								nature, location or consequences of any displaced development is not known.

Option 3
This option would consider each railhead, quarry rail link and wharfage to assess its potential for minerals transport now and in the future, and only those with greater potential for such use would be safeguarded.

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0 ?	0 ?	0 ?					It is unlikely that retention would change the current baseline situation, however it is likely that through this option some sites may not be safeguarded and there may be potential for enhancement in these locations, although this is dependent upon its future use and location. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
2.	0 ?	?	?					There is unlikely to be a change from the current baseline situation through the retention of railheads, links and wharfage with potential for movement of minerals. Water quality is likely to be impacted by the use of wharves although this would be location specific to where they are in use. Positive effects on water quality may be incurred in the long-term where wharves are not used or safeguarded for the movement of minerals. So this option, which avoids unnecessary use, contrasts favourably with option 1. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
3.	++ ?	+ ?	+ ?	✓		✓		The principle of retention is positive in encouraging more sustainable forms of transportation of minerals. This option allows for infrastructure with the greatest potential for the movement of minerals to be safeguarded. This would ensure that if the most viable sustainable infrastructure is retained, and the movement of minerals is maximised. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.

4.	?	?	?	✓		✓		Positive impacts on air quality would be experienced where the transportation of minerals by rail/water would replace road transportation. This option would reserve the infrastructure with the most potential but is still reliant upon the location of extraction. The impact is difficult to predict at this stage and some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
5.	+ ?	+ ?	+ ?	✓	✓	✓		The retention of existing wharves and rail heads/links would mean that any future extraction around these locations may not require additional land for transportation. This option could effectively screen out sites which have limited potential to be used now and in the future for the movement of minerals. This would allow the reuse of some brownfield land by other more viable development, which would have a minor positive effect. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
6.	+ ?	+ ?	+ ?	✓		✓		The principle of retention is positive in encouraging more sustainable forms of transportation of minerals by safeguarding existing infrastructure which has the most potential now and in the future. This option would make a firm link between the location of mineral resources and the best way of moving material from the site in relation to existing infrastructure, though some more marginal locations for safeguarding may be screened out under this option (leading to a lost opportunity for carbon savings). Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
7.	0	0	0					There is not clear link between this option and the objective
8.	+	+	+	✓		✓	✓	This option would be positive in retaining and supporting infrastructure that would allow for sustainable minerals and waste development and their movement now and in the future. Where these can be utilised they will reduce the use of resources for the construction of new infrastructure.
9.	0	0	0					There is not clear link between this option and the objective
10.	0 ?	+ ?	+ ?	✓		✓	✓	The retention of existing in-use rail head/links and wharves which have potential are not likely to have a significant impact over and above the current baseline in the short-term. Where sites are screened out through consideration, there may be opportunities for enhancement by other (non-minerals) development. River/canal side wharves located within urban areas may particularly benefit from redevelopment where they will not be in use for transportation and can be brought back into a positive use. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.

11.	0 ?	+ ?	+ ?	✓		✓	✓	The retention of existing in-use rail head/links and wharves which have potential are not likely to have a significant impact over and above the current baseline in the short-term as they will predominantly be part of the existing landscape. Where sites are 'screened out', there may be opportunities for enhancement by other (non-minerals) development. River/canal side wharves located within urban areas may particularly benefit from redevelopment where they will not be in use for transportation and can be brought back into a positive use. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
12.	+ ?	+ ?	+ ?	✓		✓	✓	Safeguarding all of the rail heads/links and wharves that would have the most potential for the movement of minerals now and in the future would be positive in ensuring the best infrastructure can be used. This option makes a firm link between the location of mineral resources and the best way of moving material from the site in relation to existing infrastructure which would have a long-term positive effect on the industry. Overall this is likely to have positive effects. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement and effects of this on the economy is unknown
13.	0 ?	?	?	✓	✓	✓	✓	This option is unlikely to have significant effects on local communities but may have a positive influence where this type of transport may reduce impacts on local communities from the alternative, road based, transportation of minerals (e.g. congested roads or noise which may reduce the tourist appeal of a place)
14.	?	?	?	✓	✓	✓	✓	This option is unlikely to have significant effects in the short-term. However, this option may effectively screen out less viable transport infrastructure (such as poorly connected disused rail links) which could have to potential to be used in the future for recreational opportunities. The effects of this are currently uncertain and some further uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
15.	0	0	0					In the short-term it is unlikely that the situation will change from the present given that all rail head/links and wharves currently in use would be safeguarded. However, the effects in the future on human health, noise, odour etc. will be determined by which infrastructure is more frequently used and where as opposed to the principle of safeguarding. No effect on baseline as current effects would continue and there is less likelihood

	?	?	?					of resulting in vacant sites. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
16.	0 ?	0 ?	0 ?					The retention of existing rail heads/links and wharves for their potential now and in the future is unlikely to change the current baseline. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
17.	?	?	?	✓	✓		✓	This option is unlikely to have significant effects in the short-term. However, this option may present enhancement opportunities for the benefit of the population more directly such as housing and open space given that less promising sites not being safeguarded The effects of this are currently uncertain. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development on communities is not known.

Summary of assessment

Option 1 is likely to provide the most flexibility compared to both Options 2 and 3 in terms of the future movement of minerals to the market. This would have a positive effect in ensuring that all possibilities for transporting minerals using these methods are safeguarded. However, this option may result in greater potential for vacant sites. Option 3 would only safeguard where there is identified potential now and in the future, which would link the location of minerals movement with assessment of actual and projected use and would allow sites without sufficient potential to be redeveloped for alternative (non-minerals related) uses. Option 2 could restrict future transport capability by only safeguarding currently used rail heads, links and wharves, which could have negative effects on the economy and minerals supply in the longer term.

Recommendations

It is considered that Option 3 shows more positive benefits overall when compared to option 1 and 2, although it is acknowledged that for the majority of objectives no strong preference for any option was identified. Any policy would need to address potential for vacant sites and length of time / issues related to this would need to be considered when considering alternative developments.

Locations for Ancillary Minerals Infrastructure (id56)

Option 1

This option would support locating ancillary minerals infrastructure on active mineral extraction sites (including sites for the production of secondary aggregate) provided the following criteria are met:

- The ancillary minerals infrastructure produces a 'value added' product based mainly on the mineral extracted at the site.
- The process or development does not create significant additional adverse impact on local communities, businesses or the environment.
- The process or development does not significantly increase the overall amount of road transport to and from the site.
- The development is linked to the overall life of extraction at the site, unless the location is appropriate for its retention in the longer term.

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?	✓	✓	✓	✓	The impacts on this objective could be neutral or negative depending on the location and cumulative impacts of extraction and processing co-locating as well as the type of ancillary infrastructure. Proximity of sensitive habitat /biodiversity receptors would need to be explored in order to understand the significance of the adverse effects on the environment, as stated within the option. The principle of co- location may help to minimise habitat loss in other locations but this is dependent upon the location of the extraction/processing. Any development would also be subject to other environmental policies which would have a positive effect on minimising impacts on biodiversity. Overall, there may be positive or negative effects on this objective, the scale of which is unknown however and would be dependent upon the ancillary infrastructure type.
		-	-					
2.	-	-	-	✓	✓	✓	✓	Where sites are located near to water courses, ground water protection zones or require water extraction, there may be an adverse impact. The severity of this impact will depend upon the type of processing taking place as certain ancillary functions have the potential to contaminate water resources and constrain supply. A particular threat may be surface water run-off being the pathway for contamination. This option would not locate ancillary functions where significant adverse impacts on the environment would be made. However, this significance would need to be determined on a site specific level. Mitigation measures may be required to contain any contamination resulting from the ancillary use.
	?	?	?					
3.	+	+	+	✓	✓	✓	✓	This option supports co-location of extraction and ancillary functions which should help to minimise the overall transport impacts by reducing the need for travel between the two processes thus reducing transport miles and HGV movement. There may be localised impacts on the road network from the co-location of extraction and ancillary functions but the option would only support development that does not significantly

								increase traffic from the site. This would potentially have a positive impact on the baseline which states that currently ancillary functions are not always located close to the extraction of minerals.
4.	+	+	+	✓	✓	✓	✓	Helping to reduce transport movements should have a positive impact overall on air quality by reducing emissions from transport. However, there may be localised impacts arising from the type of ancillary use on the site should it create dust or other emissions from processing the minerals extracted. Where quarries are located close to human receptors, the impacts could be significant, particularly in the long-term. The policy would only support this where it could be proven that significant additional adverse impacts on local communities was not encountered. The effects may also be temporary depending on the length and type of ancillary infrastructure. On balance, the effects could be positive or negative.
	-	-	-					
5.	?	?	?	✓	✓	✓	✓	The co-location of ancillary infrastructure to extraction may require further land-take within the vicinity of the quarry. The impact of this is likely to be less than creating a new ancillary function in a greenfield location given that existing road/rail infrastructure could be used but more than developing a brownfield site such as industrial site/processing site. The significance of this is likely to be determined by the type and location of ancillary function.
6.	+	+	+	✓	✓	✓	✓	Helping to reduce transport movements should have a positive impact overall on greenhouse gas emissions by reducing emissions from transport.
7.	0	0	0	✓	✓	✓	✓	No clear link
8.	0	0	0	✓	✓	✓	✓	This option would not influence the extraction of minerals or their use. The impact of co-locating ancillary infrastructure is therefore considered neutral from the short-long term.
9.	0	0	0					No clear link
10.	?	?	?	✓	✓	✓	✓	The impact of locating ancillary mineral infrastructure on extraction sites may have an impact on the character and setting of historic or heritage assets. This would be specific to particular sites and may result in minor to significant effects depending on their location as well as direct and cumulative adverse effects.
	-	-	-					
11.	?	?	?	✓	✓	✓	✓	The impact on the landscape would be different in each location and would need to be assessed on an individual basis. The range of effects could be minor to significant depending on the location and type of ancillary infrastructure proposed, particularly within the AONB which is known for its tranquillity. These effects could be direct and potentially cumulative depending on the existing effects on the landscape.
	-	-	-					
12.	+	+	+	✓		✓		This option would support the economy through clustering of extraction and processing functions likely to enable a quicker turnaround of aggregates to the market. It would also promote low carbon economy through minimising the number of vehicular trips between the different functions. However, the distance to

	-	-	-					market may increase in terms of where the stock of aggregates are kept and required for the market. However, the co-location of ancillary infrastructure and processing is likely to increase visual impact and noise which may have detrimental effects in areas important for tourism, such as the AONB. This is likely not to impact on the actual production of aggregates, which would be likely to continue as at present.
13.	-	-	-	✓	✓	✓	✓	This would enable minerals to be processed where extracted, which may be of use as building materials to the local community. However, the co-location of ancillary infrastructure and processing is likely to increase visual impact and noise which may have detrimental effects, particularly those areas reliant on or important for tourism. One of the criteria for determining ancillary infrastructure would be its impact on the local community. Where these are in close proximity to local communities there is more potential for negative effects.
14.	-	-	-	✓	✓	✓	✓	Locating ancillary infrastructure with extraction would have differing impacts on recreation and leisure. The range of effects could be minor to significant depending on the location and type of ancillary infrastructure proposed, particularly within the National Park which is known for its tranquillity and areas designated as an AONB. These effects could be direct and potentially cumulative depending on the existing location.
15.	?	?	?	✓	✓	✓	✓	The impact on local community's health and well-being would be different in each location and would need to be assessed on an individual basis. The policy would only advocate ancillary infrastructure that did not significantly impact on the local community but the range of effects could be minor to significant depending on the location and type of ancillary infrastructure proposed; particularly in relation to noise, odour and dust. These effects could be direct and potentially cumulative depending on the existing proximity of extraction sites.
	-	-	-					
16.	?	?	?	✓	✓	✓	✓	Any ancillary development would need to take account of potential flood risk, particularly in relation to the potential for increased surface water run-off. The option would only allow development where significant adverse effects would not be generated on the environment. However the range of effects could be minor to significant depending on the location and type of ancillary infrastructure proposed.
17.	0	0	0					No clear link

Option 2
This option would be the same as option 1 except that support would only be provided where the 'host' site would be located outside the North York Moors National Park and AONBs. Ancillary infrastructure related to extraction sites in National Parks or AONBs would need to be located outside of these areas.

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?	✓	✓	✓	✓	The impacts on this objective could be neutral or negative depending on the location and cumulative impacts of extraction and processing co-locating as well as the type of ancillary infrastructure. Proximity of sensitive habitat /biodiversity receptors would need to be explored in order to understand the significance of the adverse effects on the environment, as stated within option 1. The independent location of ancillary infrastructure outside of the National Park and AONB would be positive for habitat retention and minimising additional noise and disturbance. However, pressure may be put on other locations which would result in the loss of habitat outside of these areas. Any development would also be subject to other environmental policies which would have a positive effect on minimising impacts on biodiversity. Overall, there are positive and negative effects on this objective but in comparison to option 1, would be more positive through the consideration of National Park and AONBs. The scale of this is uncertain, however, and would be dependent upon the ancillary infrastructure type and its location.
	+	+	+					
2.	-	-	-	✓	✓	✓	✓	Where sites are located near to water courses, ground water protection zones or require water extraction, there may be an adverse impact. The severity of this impact will depend upon the type of processing taking place as certain ancillary functions have the potential to contaminate water resources and constrain supply. A particular threat may be surface water run-off being the pathway for contamination. This option would not locate ancillary functions where significant adverse impacts on the environment would be made, specifically including the national Park and AONBs. However, this significance would need to be determined on a site specific level. Mitigation measures may be required to contain any contamination resulting from the ancillary use.
	?	?	?					
3.	+	+	+	✓	✓	✓	✓	This option supports co-location of extraction and ancillary functions in locations outside of the National Park and AONBs which should help to minimise the overall transport impacts by reducing the need for travel between the two processes thus reducing transport miles and HGV movement. There may be localised impacts on the road network from the co-location of extraction and ancillary functions but the option would only support development that does not significantly increase traffic from the site. The delivery of minerals for processing in the National Park and AONBs would mean that trips would continue out of these areas to ancillary functions which would continue to have an impact on the road network depending on the location of final markets. Overall, it is likely have a minor positive impact on the baseline which states that currently ancillary functions are not always located close to the extraction of minerals.

4.	+	+	+	✓	✓	✓	✓	Helping to reduce transport movements should have a positive impact overall on air quality by reducing emissions from transport. However, there may be localised impacts arising from the type of ancillary use on the site should it create dust or other emissions from processing the minerals extracted. Where quarries are located close to human receptors, the impacts could be significant, particularly in the long-term. The policy would only support this where it could be proven that significant additional adverse impacts on local communities is not encountered. The effects may also be temporary depending on the length and type of ancillary infrastructure. On balance, the effects could be positive or negative.
	-	-	-					
5.	?	?	?	✓	✓	✓	✓	The co-location of ancillary infrastructure to extraction may require further land-take within the vicinity of the quarry in areas outside of the National Park and AONBs. The impact of this is likely to be less than creating a new ancillary function in a greenfield location given that existing road/rail infrastructure could be used but more than developing a brownfield site such as industrial site/processing site. There will be a knock-on land take impact from locating ancillary functions outside of the National Park and AONBs. The significance of which is likely to be determined by the type and location of ancillary function.
6.	+	+	+	✓	✓	✓	✓	Helping to reduce transport movements should have a positive impact overall on greenhouse gas emissions by reducing emissions from transport. Cross boundary effect are still likely, particularly where ancillary infrastructure is provided outside but in connection to any extraction sites within the National Park and AONBs.
7.	0	0	0	✓	✓	✓	✓	No clear link
8.	0	0	0	✓	✓	✓	✓	This option would not influence the extraction of minerals or their use. The impact of co-locating ancillary infrastructure is therefore considered neutral from the short-long term regardless of its location.
9.	0	0	0					No clear link
10.	?	?	?	✓	✓	✓	✓	The impact of locating ancillary mineral infrastructure on extraction sites may have an impact on the character and setting of historic or heritage assets. The impact is likely to be less in the National Park and AONBs given associated ancillary infrastructure would be developed outside of these areas. This option would need to ensure that additional pressure as a result of this would not be on areas which have a sensitive historic character and setting such as the City of York. On balance, the effects would be specific to particular sites and may result in minor to significant effects depending on their location as well as direct and cumulative adverse effects.
	+	+	+					
11.	+	+	+	✓	✓	✓	✓	The impact on the landscape would be different in each location and would need to be assessed on an individual basis. The range of effects could be minor to significant depending on the location and type of ancillary infrastructure proposed. However, the impact is likely to be less significant / have a minor positive effect within the National park and AONBs which would not have associated ancillary infrastructure. This would maintain important landscape areas known for their beauty and tranquillity. These effects on other areas however, could be direct and potentially cumulative depending on the existing effects on the
	?	?	?					

								landscape.
12.	+	+	+	✓		✓		This option would support the economy through clustering of extraction and processing functions likely to enable a quicker turnaround of aggregates to the market in areas outside of the National Park and AONBs. It would also promote low carbon economy through minimising the number of vehicular trips between the different functions. However, the distance to market may increase in terms of where the stock of aggregates are kept and required for the market and any extraction in the National Park would still need to travel for processing. However, the co-location of ancillary infrastructure and processing is likely to increase visual impact and noise which may have detrimental effects in areas important for tourism. The effects of this are likely to be less/minor positive in the National Park and AONB. This is likely not to impact on the actual production of aggregates, which would be likely to continue as at present.
	-	-	-					
13.	-	-	-	✓	✓	✓	✓	This would enable minerals to be processed where extracted, which may be of use as building materials to the local community, apart from the National Park and AONBs. However, the co-location of ancillary infrastructure and processing is likely to increase visual impact and noise which may have detrimental effects, particularly those areas reliant on or important for tourism. One of the criteria for determining ancillary infrastructure would be its impact on the local community. Where these are in close proximity to local communities there is more potential for negative effects.
		+	+					
14.	+	+	+	✓	✓	✓	✓	Locating ancillary infrastructure with extraction would have differing impacts on recreation and leisure. The range of effects could be minor to significant depending on the location and type of ancillary infrastructure proposed. This option would reduce adverse impacts on the National Park which is known for its tranquillity and the designated AONBs which are designated for the leisure and recreational value. These effects could be direct and potentially cumulative depending on the existing location.
15.	?	?	?	✓	✓	✓	✓	The impact on local community's health and well-being would be different in each location and would need to be assessed on an individual basis. The policy would only advocate ancillary infrastructure that did not significantly impact on the local community but the range of effects could be minor to significant depending on the location and type of ancillary infrastructure proposed; particularly in relation to noise, odour and dust. These effects could be direct and potentially cumulative depending on the existing proximity of extraction sites.
	-	-	-					
16.	?	?	?	✓	✓	✓	✓	Any ancillary development would need to take account of potential flood risk, particularly in relation to the potential for increased surface water run-off. The option would only allow development where significant adverse effects would not be generated on the environment. However the range of effects could be minor to significant depending on the location and type of ancillary infrastructure proposed.
17.	0	0	0					No clear link

Option 3
This option would support the development of ancillary minerals infrastructure away from mineral extraction sites provided the following criteria are met:

- The site is located on industrial or employment land, previously developed land, or would be co-located with other compatible industrial or commercial development.
- The site is located near to an urban area or other known market destination where the product will be used.
- The site has good access to the transport network.
- The development would not create significant adverse impact on local communities, businesses or the environment.

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	? +	? +	? +	✓	✓	✓	✓	In comparison to option 1 and 2, this option could have a less of an adverse impact on biodiversity should the ancillary infrastructure be located on brownfield or existing industrial sites. The significance of the adverse effects on the environment could range from minor to significant although no significant adverse impacts would be allowed as per the policy. Any development would also be subject to other environmental policies which would have a positive effect on minimising impacts on biodiversity. On balance the effects would be dependent upon the ancillary infrastructure type and its location.
2.	- ?	- ?	- ?	✓	✓	✓	✓	Where sites are located near to water courses, ground water protection zones or require water extraction, there may be an adverse impact. The severity of this impact will depend upon the type of processing taking place as certain ancillary functions have the potential to contaminate water resources and constrain supply. A particular threat may be surface water run-off being the pathway for contamination. This option would not locate ancillary functions where significant adverse impacts on the environment would be made. However, this significance would need to be determined on a site specific level. Mitigation measures may be required to contain any contamination resulting from the ancillary use.
3.	+	-	-	✓	✓	✓	✓	In comparison to options 1 and 2, this is likely to generate more trips through the use of additional locations for ancillary uses. However, this option would only support development away from mineral extraction in locations which have good existing transport connections. There may be localised impacts on the road network from the co-location of industrial processes and ancillary functions but the option would only support this where there is

	-							a good transport network. This would potentially impact on the baseline which states that currently ancillary functions are not always located close to existing industrial functions, implying that new transport infrastructure may be required
4.	+	+	+	✓	✓	✓	✓	There may be localised impacts arising from the type of ancillary use on the site should it create dust or other emissions from processing the minerals extracted. The policy would only support this where it could be proven that significant additional adverse impacts on local communities was not encountered. The effects may also be temporary depending on the length of use and type of ancillary infrastructure. The cumulative impact of having processing and other industrial uses together would need to be analysed fully to understand this. On balance, the effects could be positive or negative.
	-	-	-					
5.	+	+	+	✓	✓	✓	✓	Locating function on previously developed land or existing industrial sites should minimise the likely greenfield land take required. Using existing infrastructure should also have a positive impact on this objective given that existing road/rail infrastructure could be used from existing sites. The significance of this is likely to be determined by the type and location of ancillary function but is likely to be positive.
6.	-	-	-	✓	✓	✓	✓	In comparison to options 1 and 2 there are likely implications on emissions which contribute to climate change from the transportation of minerals between the locations for extraction and processing. This is likely to have a minor negative overall.
7.	0	0	0	✓	✓	✓	✓	No clear link
8.	0	0	0	✓	✓	✓	✓	This option would not influence the extraction of minerals or their use. The impact of co-locating ancillary infrastructure is therefore considered neutral from the short-long term.
9.	0	0	0					No clear link
10.	?	?	?	✓	✓	✓	✓	Locating ancillary mineral infrastructure on previously developed site/ existing industrial areas is likely to have less of an impact on the character and setting of historic or heritage assets. However, this is location dependent and is subject to where the sites are available to be used and their proximity to heritage assets and areas important to character and setting. The impacts could range from minor to significant effects depending on this proximity. In comparison to option 1 and 2, the effects are still uncertain.
11.	+	+	+	✓	✓	✓	✓	The impact on the landscape would be different in each location and would need to be assessed on an individual basis. The type of impacts may be reduced due to the re-use of previously developed site and existing industrial locations which re likely to share similar characteristics to this type of development. The range of effects could still be minor to significant depending on the location and type of ancillary infrastructure proposed, particularly within the AONB which is known for its tranquillity. These effects could be direct and potentially cumulative depending on the existing effects on the landscape.
	-	-	-					

12.	+	+	+	✓		✓		This option would support the economy through clustering of industrial functions which have good access to the market and supporting the development of uses associated with Minerals and Waste. This would provide a good level of flexibility in selecting a site. The distance to market may increase or decrease depending on where there is suitable industrial land/previously developed land available. However, it is more likely that these types of locations are found closer to the markets. There may also be potential for benefits to the local economy through supporting other businesses at these locations. However, the co-location of ancillary infrastructure and processing could increase visual impact and noise which may have detrimental effects in areas important for tourism, such as in the AONBs and the National Park although this would be mitigated to an extent through the locational requirements under this option. This is likely not to impact on the actual production of aggregates, which would be likely to continue as at present. On balance it is still considered that this would have a positive effect overall.
13.	+	+	+	✓	✓	✓	✓	Compared to options 1 and 2, locating processing functions on industrial land/previously developed sites may have a positive impact on any visual impact from ancillary uses to local communities. However, one of the criteria for determining ancillary infrastructure would be its impact on the local community. Where these are in close proximity to local communities there is more potential for negative effects. On balance, this is likely to have positive effects but is still location dependent.
	-	-	-					
14.	+	+	+	✓	✓	✓	✓	This approach is like likely to minimise impacts on recreation and leisure given that the adjacent uses would primarily be similar.
15.	?	?	?	✓	✓	✓	✓	The impact on local community's health and well-being would be different in each location and would need to be assessed on an individual basis. The policy would only advocate ancillary infrastructure that did not significantly impact on the local community but the range of effects could be minor to significant depending on the location and type of ancillary infrastructure proposed; particularly in relation to noise, odour and dust. These effects could be direct and potentially cumulative depending on the existing proximity of extraction sites.
	-	-	-					
16.	?	?	?	✓	✓	✓	✓	Any ancillary development would need to take account of potential flood risk, particularly in relation to the potential for increased surface water run-off. The option would only allow development where significant adverse effects would not be generated on the environment. However the range of effects could be minor to significant depending on the location and type of ancillary infrastructure proposed.
17.	0	0	0					No clear link

Option 4

This would be the same as option 3 except that support would only be provided where the site would be located outside the North York Moors National Park, with the exception of Whitby Business Park which already contains ancillary infrastructure.

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓	✓	✓	✓	This option would have similar impacts to option 3. However, this would have a more positive effect on the AONB and National Park. In comparison to option 3, this option could have a less of an adverse impact on biodiversity should the ancillary infrastructure be located on brownfield or existing industrial sites. The significance of the adverse effects on the environment could range from minor to significant although no significant adverse impacts would be allowed as per the policy. Any development would also be subject to other environmental policies which would have a positive effect on minimising impacts on biodiversity.
	?	?	?					
2.	+	+	+	✓	✓	✓	✓	In comparison to option 3, this is likely to have a positive effect for the National Park and AONB whereby this development would be limited. It would require the avoidance of other areas where water courses and ground water protection zones may be vulnerable. There may be implications for the severity of impacts elsewhere through allowing development is a smaller area but this will depend upon the type of processing taking place as certain ancillary functions have the potential to contaminate water resources and constrain supply. This option would not locate ancillary functions where significant adverse impacts on the environment would be made. However, this significance would need to be determined on a site specific level. Mitigation measures may be required to contain any contamination resulting from the ancillary use.
	?	?	?					
3.	0	-	-	✓	✓	✓	✓	This option would support development away from mineral extraction in locations which have good existing transport connections. The effects are likely to be similar to the previous option should extraction of minerals take place within the National Park, acknowledging that locations away from processing sites may also generate more trips and potentially local adverse impacts on the road network. However, it would reduce effects from potential ancillary functions in the future as they would not be able to locate within the National Park and AONB. This option is considered to have a neutral effect in the short-term but potential positive effects in the longer term.
4.	+	+	+	✓	✓	✓	✓	There may be localised impacts arising from the type of ancillary use on the site should it create dust or other

	-	-	-					emissions from processing the minerals extracted similarly to option 3. In comparison to option 3, this option would have positive benefits for maintaining air quality within the National Park although it is still anticipated to have both positive and negative effects across the plan area.
5.	+	+	+	✓	✓	✓	✓	Similarly to option 3, locating functions on previously developed land or existing industrial sites outside of the National park and AONB should still minimise the likely greenfield land take required. Using existing infrastructure should also have a positive impact on this objective given that existing road/rail infrastructure could be used from existing sites. Whilst some brownfield sites within the National park may be suitable and would not be used for this purpose, this option is still considered to have a positive overall effect.
6.	-	-	-	✓	✓	✓	✓	Comments are similarly to option 3. However, this option would not allow ancillary functions within the national park which may increase transportation miles, which contribute to climate change. This is likely to have a minor negative overall.
7.	0	0	0	✓	✓	✓	✓	No clear link
8.	0	0	0	✓	✓	✓	✓	This option would not influence the extraction of minerals or their use. The impact of co-locating ancillary infrastructure is therefore considered neutral from the short-long term.
9.	0	0	0					No clear link
10.	+	+	+	✓	✓	✓	✓	Locating ancillary mineral infrastructure on previously developed site/ existing industrial areas is likely to have less of an impact on the character and setting of historic or heritage assets. In comparison to option 3, it is likely to have a more positive impact through protecting the National Park and AONB given that cultural heritage forms part of the National Park designation.. However, this is location dependent and is subject to where the sites are available to be used and their proximity to heritage assets and areas important to character and setting. The impacts could range from minor to significant effects depending on this proximity.
	?	?	?					
11.	+	+	+	✓	✓	✓	✓	This option would have a positive effect on and within the AONB and National Park, which are designated for their landscape features and known for their tranquillity. However, there would still be effects on areas outside of these designations, which would need to be assessed on an individual basis. The type of impacts may be reduced due to the re-use of previously developed site and existing industrial locations which re likely to share similar characteristics to this type of development. The range of effects could still be minor to significant depending on the location and type of ancillary infrastructure proposed. Whilst this option does reduce impacts for the national park and AONB, there could still be direct and potentially cumulative depending on other landscapes within the plan area. On balance, there is still likely to be positive and negative impacts from this option.
	-	-	-					

12.	+	+	+	✓		✓		This option would support the economy through clustering of industrial functions which have good access to the market and supporting the development of uses associated with Minerals and Waste. The distance to market may increase or decrease depending on where there is suitable industrial land/previously developed land available, particularly should they be required within the National Park and AONB. It is more likely that these types of locations are found closer to the markets however. This option is likely to reduce impacts on the AONB and National Park, which could have positive effects on areas reliant for tourism. This is likely not to impact on the actual production of aggregates, which would be likely to continue as at present.
13.	+	+	+	✓	✓	✓	✓	Compared to options 1 and 2, locating processing functions on industrial land/previously developed sites may have a positive impact by reducing any visual impact from ancillary uses to local communities. Ensuring these are located away from the National Park and AONB would also be positive in ensuring areas reliant on tourism for their functionality/vitality would be minimised. However, for other location in the plan area, there is still potential for negative effects as per option 3. On balance, this is likely to have more positive effects than option 3 but is still location dependent.
14.	+	+	+	✓		✓	✓	This approach is like likely to minimise impacts on recreation and leisure given that the adjacent uses would primarily be similar and located away from areas within the AONB and National Park, which are more likely to be used for recreational purposes and which are designated for this purpose..
15.	? -	? -	? -	✓	✓	✓	✓	Similarly to option 3, the impact on local community's health and well-being would be different in each location and would need to be assessed on an individual basis. The policy would only advocate ancillary infrastructure that did not significantly impact on the local community and that was outside of the National Park which is should have a positive effect in this location. There may still be effects in other areas however that could be minor to significant depending on the location and type of ancillary infrastructure proposed; particularly in relation to noise, odour and dust. These effects could be direct and potentially cumulative depending on the existing proximity of extraction sites.
16.	?	?	?	✓	✓	✓	✓	Any ancillary development would need to take account of potential flood risk, particularly in relation to the potential for increased surface water run-off. The option would only allow development where significant adverse effects would not be generated on the environment outside of the AONB and National Park. However the range of effects could be minor to significant depending on the location and type of ancillary infrastructure proposed.
17.	0	0	0					No clear link

Summary of assessment
All of the options are likely to have positive effects on the economy through supporting ancillary functions associated with minerals extraction and

processing, although Option 3 in conjunction with option 1 would provide the greatest flexibility in this respect.
All of the options would support development that would not have significant adverse effects on the environment (which is positive). Minor negative effects in terms of transport miles are likely to be greater under Options 3 and 4 where an additional location may be added into the overall supply chain, although these options are likely to have positive effects through reducing the amount of greenfield land required. Options 2 and 4 would have significant positive benefits in terms of landscape and recreation by protecting the National Park and the AONBs. Many of the effects identified are location and use dependent which creates uncertainty on the overall effects from the options. In particular, the type of use would influence the effects on dust, odour and noise on adjacent uses / the local community. This is particularly relevant for Options 3 and 4 which would guide ancillary functions to previously developed land and industrial locations, which are most likely to be located nearer to local communities.

Recommendations
Overall it is considered that Options 2 and 4 would have the most sustainability benefits but may be more applicable to different ancillary functions. The SA recommends that they could be combined to optimise positive effects.

Minerals Ancillary Infrastructure Safeguarding (id57)

Option 1

This option would safeguard all known sites for concrete batching, roadstone manufacture, other concrete products manufacture and the handling, processing and distribution of recycled and secondary aggregate against encroaching or replacement development which would prevent the use of the land for ancillary aggregates purposes.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0	✓			✓	As safeguarding does not infer any further ancillary infrastructure development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
	?	?	?					
2.	0	0	0	✓			✓	As safeguarding does not infer any further ancillary infrastructure development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
	?	?	?					

3.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any further ancillary infrastructure development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
4.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any further ancillary infrastructure development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
5.	+ - ?	+ - ?	+ - ?	✓	✓	✓		The safeguarding of all sites used for ancillary functions would minimise the amount of new land take required by ensuring a choice of brownfield sites are available. However, where sites are not in use and are unlikely to have potential now or in the future or are currently redundant, this would essentially land bank sites which may be developed for alternative uses. This would not be an effective use of these brownfield locations, particularly in the long-term and may open to challenge sites for redevelopment purposes. On balance, there are both positives and negatives associated with this objective. Some uncertainty is also noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
6.	+ ?	+ ?	+ ?	✓		✓		Although safeguarding does not infer any further ancillary infrastructure development will take place, this option would safeguard all sites for recycled, recyclable and secondary aggregates which may directly support a reduction in the amount of extraction required overall. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
7.	0	0	0					There is no clear link between this option and the objective.

8.	+ +	+ +	+ +	✓		✓	✓	This option would be positive in retaining and supporting sites that would allow for minerals processing. It maximises the opportunity and availability of sites for recycled and secondary aggregates as well as other ancillary functions. Where these can be utilised they will reduce the use of resources for the construction of new sites. It is considered that this would have a significantly positive effect overall.
9.	0	0	0					There is no clear link between this option and the objective.
10.	0 ?	0 ?	?	✓		✓	✓	The safeguarding of existing sites with ancillary minerals functions is not likely to have a significant impact over and above the current baseline in the short-term as safeguarding does not infer that development will take place. However, where safeguarded sites are not in use and have less potential for use in the future it may create sites which become vacant and derelict. Retaining them for the ancillary functions in the long-term therefore may stop development which has the potential to enhance (or detract from) heritage assets and their setting. Overall, the effects are likely to be neutral in the short-term becoming more uncertain in the future. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
11.	0 ?	0 ?	?	✓		✓	✓	Similarly to objective 10, the safeguarding of existing sites with ancillary minerals functions is not likely to have a significant impact over and above the current baseline in the short-term as safeguarding does not infer that development will take place. However, where safeguarded sites are not in use and have less potential for use in the future it may create sites which become vacant and derelict. Retaining them for ancillary functions in the long-term therefore may stop development which has the potential to enhance (or detract from) the landscape character. . Overall, the effects are likely to be neutral in the short-term becoming more uncertain in the long-term. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
12.	+ - ?	+ - ?	+ - ?	✓		✓	✓	Safeguarding all of the sites with ancillary functions would be positive in ensuring the viability of, and a choice of locations for, minerals processing in the future. This potentially retains a future economic opportunity. However, in reality it is likely that only some sites would have the potential for continuing use in the future depending upon their location and potential for different types of ancillary functions. On negative aspect of this option, however, is that some sites may be left with a legacy of redundant infrastructure which would limit future flexibility alternative ways of developing the site. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement and its effects are unknown.
13.	?	?	?	✓	✓	✓	✓	This option is unlikely to have significant effects in the short-term. However, this option may reduce enhancement opportunities where sites have no potential to be used in the future and are retained but fall into

	0		-					a derelict state. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
14.	0 ?	?	- ?	✓	✓	✓	✓	This option is unlikely to have significant effects in the short-term. However, this option may reduce enhancement opportunities where sites have no potential to be used in the future and are retained but fall into a derelict state. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
15.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any further ancillary infrastructure development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
16.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any further ancillary infrastructure development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
17.	0 ?	?	?	✓	✓		✓	This option is unlikely to have significant effects in the short-term. However, this option may reduce enhancement opportunities for the benefit of the population where sites have no potential to be used in the future and are safeguarded. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement and its effects on communities is unknown.

Option 2

This option would safeguard only stand-alone sites for concrete batching, roadstone manufacture, other concrete products manufacture and the handling, processing and distribution of recycled and secondary aggregate against encroaching or replacement development which would prevent the use of the land for ancillary aggregates purposes.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0	✓			✓	As safeguarding does not infer any further ancillary infrastructure development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
	?	?	?					
2.	0	0	0	✓			✓	As safeguarding does not infer any further ancillary infrastructure development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
	?	?	?					
3.	0	0	0	✓			✓	As safeguarding does not infer any further ancillary infrastructure development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so

	?	?	?					displacement effects on development cannot yet be considered.
4.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any further ancillary infrastructure development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
5.	+ - ?	+ - ?	+ - ?	✓	✓	✓		In comparison to option 1, this option would safeguard only stand-alone sites used for ancillary functions to ensure that the sites most vulnerable to change would be safeguarded. This would be significantly positive where they perform well and are likely to be in use in the future. However, these sites may not necessarily be the ones that are the most suitable or viable for continuing ancillary use and a further assessment would need to be undertaken to ensure that it does not land bank sites which may be better developed for alternative uses. This would not be an effective use of these brownfield locations, particularly in the long-term. On balance, there are both positives and negatives associated with this objective. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
6.	+ ?	+ ?	+ ?	✓		✓		Although safeguarding does not infer any further ancillary infrastructure development will take place, this option would safeguard stand-alone sites for recycled, recyclable and secondary aggregates which may directly support a reduction in the amount of extraction required overall. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
7.	0	0	0					There is not a clear link between this option and the objective.
8.	++	++	++	✓		✓	✓	This option would be positive in safeguarding and supporting stand-alone sites that would allow for minerals processing. It retains the opportunity and availability of sites for recycled and secondary aggregates as well as other ancillary functions where they are most vulnerable to alternative development. Where these can be

								utilised they will reduce the use of resources for the construction of new sites. It is considered that this would have a positive effect overall
9.	0	0	0					There is not a clear link between this option and the objective.
10.	0 ?	0 ?	?	✓		✓	✓	The safeguarding of stand-alone sites with ancillary minerals functions is not likely to have a significant impact over and above the current baseline in the short-term as safeguarding does not infer that development will take place. However, where stand-alone sites are not in use and have less potential for use in the future it may create sites which become vacant and derelict. Safeguarding them for the ancillary functions in the long-term therefore may stop development which has the potential to enhance (or detract from) heritage assets and their setting. Overall, the effects are likely to be neutral in the short-term becoming more uncertain in the future. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
11.	0 ?	0 ?	?	✓		✓	✓	Similarly to objective 10, the safeguarding of stand-alone sites with ancillary minerals functions is not likely to have a significant impact over and above the current baseline in the short-term as safeguarding does not infer that development will take place. However, where they are not in use and have less potential for use in the future it may create sites which become vacant and derelict. Retaining them for ancillary functions in the long-term therefore may stop development which has the potential to enhance (or detract from) the landscape character. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
12.	+ ?	+ ?	+ ?	✓		✓	✓	Safeguarding stand-alone sites with ancillary functions would be positive in ensuring the viability of, and a choice of locations for, minerals processing in the future, although less so than option 1. This would be significantly positive where they perform well and are likely to be in use in the future. However, in reality it is likely that only some sites would have the potential for continuing use in the future depending upon their location and potential for different types of ancillary functions and a further assessment would need to be undertaken to ensure that this option does not land bank sites which may be better developed for alternative uses and maximise economic opportunities. In terms of economic viability, maintaining only stand-alone sites, rather than all sites as in Option 1 is likely to be less of a potential liability to existing operational sites and to have less impact on the development of alternatives in other locations, particularly in the future. This option is considered to have predominantly positive effects but also some uncertainty given that no appraisal of a site's suitability would be carried out. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.

13.	0 ?	?	- ?	✓	✓	✓	✓	This option is unlikely to have significant effects in the short-term. However, this option may reduce enhancement opportunities where sites are have no potential to be used in the future and are retained but fall into a derelict state. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
14.	0 ?	?	- ?	✓	✓	✓	✓	This option is unlikely to have significant effects in the short-term. However, this option may reduce enhancement opportunities where sites are have no potential to be used in the future and are retained but fall into a derelict state. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
15.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any further ancillary infrastructure development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
16.	0 ?	0 ?	0 ?	✓			✓	The retention of existing sites is unlikely to change the current baseline. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
17.	0 ?	?	?	✓	✓		✓	This option is unlikely to have significant effects in the short-term. However, in the medium to long term, this option may reduce enhancement opportunities for the benefit of the population where sites have no potential to be used in the future and are safeguarded. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.

Option 3

This option should consider each site for concrete batching, roadstone manufacture, other concrete products manufacture and the handling, processing and distribution of recycled and secondary aggregate on an individual basis to assess its risk of being affected by new development, and those with greater potential to be impacted by encroaching development or replacement development would be safeguarded.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0	✓			✓	As safeguarding does not infer any further ancillary infrastructure development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
	?	?	?					
2.	0	0	0	✓			✓	As safeguarding does not infer any ancillary infrastructure development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
	?	?	?					

3.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any ancillary infrastructure development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
4.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any ancillary infrastructure development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
5.	+ -	+ -	+ -	✓	✓	✓		Similarly to option 2, this option would be positive in safeguarding sites at risk from encroachment or redevelopment which would have a positive impact on safeguarding and using land efficiently. This would be significantly positive where they perform well and are likely to be in use in the future. However, these sites may not necessarily be the ones that are the most suitable or viable for continuing ancillary use and still a further assessment would need to be undertaken to ensure that it does not land bank sites which may be better developed for alternative uses. This would not be an effective use of these brownfield locations, particularly in the long-term. It would offer greater flexibility however, in comparison to option 1 and 2. On balance, there are both positives and negatives associated with this objective. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
6.	+ ?	+ ?	+ ?	✓		✓		Although safeguarding does not infer any further ancillary infrastructure development will take place, this option would safeguard existing vulnerable sites for recycled, recyclable and secondary aggregates which may directly support a reduction in the amount of extraction required overall. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.

7.	0	0	0					There is not a clear link between this option and the objective.
8.	+ +	+ +	+ +	✓		✓	✓	This option would be positive in safeguarding and supporting sites that would allow for minerals processing. It retains the opportunity and availability of sites for recycled and secondary aggregates as well as other ancillary functions where they are most vulnerable to alternative development. Where these can be utilised they will reduce the use of resources for the construction of new sites. It is considered that this would have a positive effect overall
9.	0	0	0					There is not a clear link between this option and the objective.
10.	0 ?	0 ?	?	✓		✓	✓	The safeguarding of existing sites with ancillary minerals functions is not likely to have a significant impact over and above the current baseline in the short-term as safeguarding does not infer that development will take place. However, where sites are not in use and have less potential for use in the future, safeguarding may create sites which become vacant and derelict although there would be more flexibility elsewhere with sites that are not safeguarded. Safeguarding them for the ancillary functions in the long-term therefore may stop development which has the potential to enhance (or detract from) heritage assets and their setting. Overall, the effects are likely to be neutral in the short-term becoming more uncertain in the future. Some uncertainty is noted as the stringency of any eventual safeguarding policy, and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development, is not known.
11.	0 ?	0 ?	0 ?	✓		✓	✓	Similarly to objective 10, the safeguarding of existing sites with ancillary minerals functions is not likely to have a significant impact over and above the current baseline in the short-term as safeguarding does not infer that development will take place. However, where they are not in use and have less potential for use in the future it may create sites which become vacant and derelict. Safeguarding them for ancillary functions in the long-term therefore may stop development which has the potential to enhance (or detract from) the landscape character. Overall, the effects are likely to be neutral or uncertain. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
12.	+	+	+	✓		✓	✓	Safeguarding sites with ancillary functions at risk from encroaching development would be positive in ensuring the viability of, and a choice of locations for, minerals processing in the future, although less so than option 1. This would be significantly positive where they perform well and are likely to be in use in the future. However, in reality it is likely that only some sites would have the potential for continuing use in the future depending upon their location and potential for different types of ancillary functions. Encroaching and nearby development may also produce a market for the products such as concrete, roads etc. A further assessment would need to be undertaken to ensure that suitable sites are safeguarded and others are allowed more

	?	?	?					flexibility to be developed for alternative uses and to maximise economic opportunities. This option is considered to have predominantly positive effects but also some uncertainty given that no appraisal of suitability would be carried out. Some uncertainty is also noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement and its effects is not known.
13.	? 0	?	? -	✓	✓	✓	✓	This option is unlikely to have significant effects in the short-term. However, this option may reduce enhancement opportunities where sites are have no potential to be used in the future and are retained but fall into a derelict state. Some uncertainty is noted as the stringency of any eventual safeguarding policy, and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development, is not known.
14.	? 0	?	? -	✓	✓	✓	✓	This option is unlikely to have significant effects in the short-term. However, this option may reduce enhancement opportunities where sites are have no potential to be used in the future and are retained but fall into a derelict state. Some uncertainty is noted as the stringency of any eventual safeguarding policy, and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development, is not known.
15.	0 ?	0 ?	0 ?	✓	✓	✓	✓	In the short-term it is unlikely that the situation will change from the present given that sites at risk of development would be safeguarded. However, the effects in the future on human health, noise, odour etc. will be determined through the type of use/facility on a particular site. Should this proximity reduce due to encroaching development, it is more likely to have adverse impacts on people health and well-being. So if sites are safeguarded which are most at risk of encroaching development it could be said that safeguarded sites would be more likely to be closer to development than other options. However, the total number of such sites (i.e. sites close to encroaching development) would be the same as option 1 and the safeguarding designation itself does not suggest the site would be redeveloped. So the SA does not predict an effect arising from safeguarding alone. Some uncertainty is noted as the stringency of any eventual safeguarding policy, and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development, is not known.
16.	0 ?	0 ?	0 ?	✓			✓	The safeguarding of existing sites is unlikely to change the current baseline. Some uncertainty is noted as the stringency of any eventual safeguarding policy, and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development, is not known.
17.	0	?	?	✓	✓		✓	This option is unlikely to have significant effects in the short-term. However, this option may reduce enhancement opportunities for the benefit of the population where sites have no potential to be used in the future and are safeguarded. Some uncertainty is noted as the stringency of any eventual safeguarding policy

	?							and therefore the likelihood of displacement and its effects on communities is unknown.

Option 4

This option would safeguard all known sites for concrete batching, roadstone manufacture, other concrete products manufacture and the handling, processing and distribution of recycled and secondary aggregate against encroaching or replacement development which would prevent the land being used for ancillary aggregate purposes, unless a suitable alternative location for the displaced use is found or it is considered that the need for the alternative development outweighs the need to retain the infrastructure.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0	✓			✓	As safeguarding does not infer any ancillary infrastructure development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
	?	?	?					

2.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any ancillary infrastructure development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
3.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any ancillary infrastructure development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
4.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any ancillary infrastructure development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.

5.	+ ?	+ ?	+ ?	✓	✓	✓		Similarly to option 2 and 3, this option would be positive in safeguarding sites at risk from encroachment or redevelopment which would have a positive impact on the reuse and effective use of land unless a suitable alternative is found. Suitable alternatives, should they not be an existing safeguarded site, would be subject to alternative policy regarding the location of ancillary functions. In general, this approach provides greater flexibility in comparison to options 1, 2 and 3 for maximising the potential of various sites. On balance, this is likely to have predominantly more positive effects. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
6.	+ ?	+ ?	+ ?	✓		✓		Although to a lesser extent than options 1, 2 and 3 this option would safeguard existing sites for recycled, recyclable and secondary aggregates which may directly support a reduction in the amount of extraction required. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
7.	0	0	0					There is not a clear link between this option and the objective.
8.	+	+	+	✓		✓	✓	This option would be positive in safeguarding and supporting sites that would allow for minerals processing although to a lesser extent than options 1, 2 and 3 as under this option alternative development may be considered to outweigh the need to retain the infrastructure. It retains the opportunity and availability of sites for recycled and secondary aggregates as well as other ancillary functions, including consideration of alternative locations which may be more suitable. Where these can be utilised they will reduce the use of resources for the construction of new sites. It is considered that this would have a positive effect overall
9.	0	0	0					There is not a clear link between this option and the objective.
10.	0 ?	0 ?	?	✓		✓	✓	The safeguarding of existing sites with ancillary minerals functions are not likely to have a significant impact over and above the current baseline in the short-term as safeguarding does not infer that further development will take place. However, this option would create more flexibility to create more suitable alternative locations should this be appropriate as well as safeguarding other sites. Safeguarding existing sites is least likely to impact on the historic environment but effects from new sites are uncertain; these will however, be subject to alternative policies on the location of ancillary mineral functions. Overall, the effects are likely to be neutral in the short-term becoming more uncertain in the future. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or

								consequences of any displaced development is not known.
11.	0 ?	0 ?	?	✓		✓	✓	Similarly to objective 10, the safeguarding of existing sites with ancillary minerals functions is not likely to have a significant impact over and above the current baseline in the short-term as safeguarding does not infer that development will take place. However, where they are not in use and have less potential for use in the future this option would allow flexibility in redeveloping the site as long as suitable alternative can be found. This has the potential to enhance the landscape character or detract from it subject to alternative policy regarding the location of ancillary functions. Some uncertainty is also noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
12.	+ ?	+ ?	+ ?	✓		✓	✓	Safeguarding sites with ancillary functions at risk from encroaching development would be positive in ensuring a choice of locations for minerals processing in the future. However, this option would allow flexibility in deciding the relative merits of a site and relocating functions to alternative locations. It would allow redevelopment of sites where a suitable alternative could be found or the alternative development outweighs the need to retain the infrastructure. The flexibility would help to maximise economic benefits/opportunities for a site There may be some conflict where a site is in use but has encroaching development and a market for the products such as concrete, roads etc. Overall, the effects of this option are considered to have predominantly positive effects by creating some flexibility for change. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
13.	? 0	?	?	✓	✓	✓	✓	This option is unlikely to have significant effects in the short-term. Where sites are redeveloped in the future, there may be potential for positive or negative effects for local communities but this is subject to relocation of a site and its potential use. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
14.	? 0	?	?	✓	✓	✓	✓	This option is unlikely to have significant effects in the short-term. Where sites are redeveloped in the future, there may be potential for positive or negative effects for recreation but this is subject to relocation of a site and its potential use. Effects in the long term are uncertain however. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.

15.	? 0	? 0	+ ?	✓	✓	✓	✓	In the short-term it is unlikely that the situation will change from the present given that sites would be safeguarded. However, the effects in the future on human health, noise, odour etc. will be determined through the type of use/facility on a particular site and its location. Should this proximity reduce due to encroaching development, it is more likely to have adverse impacts on people health and well-being. However, where this occurs this option allows the opportunity to consider sites for redevelopment, which may be positive subject to the ancillary function's relocation. This would also be subject to alternative policy regarding the location of ancillary functions. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
16.	0 ?	0 ?	0 ?	✓			✓	The safeguarding of existing sites is unlikely to change the current baseline. New sites / changes in use would be subject to alternative policy regarding the location of ancillary functions, including the implications on flood risk and drainage. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
17.	0 ?	+ ?	+ ?	✓	✓		✓	This option is unlikely to have significant effects in the short-term. However, in the medium to long term, this option allows alternative uses to be considered should their need outweigh the existing use and an alternative location can be found. This has potential to be positive for enabling a changing population to meet their needs in the long-term. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.

Proposed Alternative Option 5: (and) This option would safeguard the surface infrastructure for oil and gas developments

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0 ?	0 ? ?	0 ?	✓			✓	Effects are as other options.
2.	0 ?	0 ?	0 ?	✓			✓	Effects are as other options.
3.	0 ?	0 ?	0 ?	✓			✓	Effects are as other options.
4.	0 ?	0 ?	0 ?	✓			✓	Effects are as other options.
5.	+ - ?	+ - ?	+ - ?	✓	✓	✓	✓	The addition of this option would be positive in safeguarding sites at risk from encroachment or redevelopment which would have a positive impact on safeguarding and using land efficiently. However, these sites may not necessarily be the ones that are the most suitable or viable for accommodating surface infrastructure in the future and a further assessment would need to be undertaken to ensure that the option does not land bank sites which may be better developed for alternative uses. Also, where sites are not in use and are unlikely to have potential now or in the future or are currently redundant, this would essentially land bank sites which may be developed for alternative uses. This would not be an effective use of these brownfield locations, particularly in the long-term and may open to challenge sites for redevelopment purposes. On balance, there are both positives and negatives associated with this objective. Some uncertainty is also noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
6.	0 ?	0 ?	0 ?	✓			✓	As safeguarding does not infer any ancillary infrastructure development will take place there is no predicted effect. Were development to take place it would need to accord with other policies in the plan. Some uncertainty is noted as the stringency of any eventual safeguarding policy is not yet known so displacement effects on development cannot yet be considered.
7.	0	0	0					There is not a clear link between this option and the objective.

8.	+	+	+	✓			✓	The addition of this option would be indirectly positive in terms of safeguarding minerals as safeguarding surface infrastructure would ensure that oil and gas surface infrastructure would be retained for future use, thus reducing the need to create new infrastructure.
9.	0	0	0					There is not a clear link between this option and the objective.
10.	0 ?	0 ?	?	✓		✓	✓	The safeguarding of existing sites is not likely to have a significant impact over and above the current baseline in the short-term as safeguarding does not infer that development will take place. However, where safeguarded sites are not in use and have less potential for use in the future it may create sites which become vacant and derelict. Retaining them for the long-term therefore may stop development which has the potential to enhance (or detract from) heritage assets and their setting. Overall, the effects are likely to be neutral in the short-term becoming more uncertain in the future. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
11.	0 ?	0 ?	?	✓		✓	✓	Similarly to objective 10, the safeguarding of existing sites is not likely to have a significant impact over and above the current baseline in the short-term as safeguarding does not infer that development will take place. However, where safeguarded sites are not in use and have less potential for use in the future it may create sites which become vacant and derelict. Retaining them for the long-term therefore may stop development which has the potential to enhance (or detract from) the landscape character. Overall, the effects are likely to be neutral in the short-term becoming more uncertain in the long-term. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement along with the nature, location or consequences of any displaced development is not known.
12.	+ 0	+ 0	+ 0	✓		✓		Safeguarding surface infrastructure for oil and gas developments would be positive in ensuring the viability of oil and gas extraction in the future. This potentially retains a future economic opportunity. Some uncertainty is noted as the stringency of any eventual safeguarding policy and therefore the likelihood of displacement and its effects are unknown.
13.	? 0	? 0	? -	✓	✓	✓	✓	Effects are as other options.
14.	0 ?	?	- ?	✓	✓	✓	✓	Effects are as option 1.

15.	0 ?	0 ?	0 ?	✓			✓	Effects are as option 1.
16.	0 ?	0 ?	0 ?	✓			✓	Effects are as option 1.
17.	0 ?	?	?	✓	✓		✓	Effects are as option 1.

Summary of Assessment
Option 1 is likely to have economic benefits through enabling choice for minerals operators. However, it is possible that pursuing this option may result in the creation of vacant sites with associated effects on landscape and community safety and wellbeing. Option 2 has similar effects, though at a lower scale. Options 3 and, most significantly, 4 are likely to create more flexibility around future alternative uses for these sites than Option 1, with Option 4 providing the most economic benefits in this respect.

The addition of Option 5 is likely to result in some minor positive effects in relation to encouraging safeguarding, achieving sustainable economic growth and efficient land use.

All of the options are likely to have uncertain social and environmental impacts, dependent upon the nature of any displaced development.

Recommendations
On balance, it is considered that Option 4 combined with Option 5 would have the most sustainability benefits. However, Option 4 (or a combined option 4 /5) would benefit from considering which sites have the most potential for continuing use in the future.

Presumption in Favour of Sustainable Minerals and Waste Development (id58)

Assumptions – It is assumed that the Joint Plan will contain sufficient policies to cover all types of minerals and waste development which may come forward. In effect the policy is a process policy (i.e. a way in which an application should be dealt with rather than for assessing the merits of a proposed development) as it is saying that proposals which accord with the plan would be approved. See Chapter 8 of the Issues and Options document for wording of the Presumption in Favour of Sustainable Development model policy (as produced by the Planning Inspectorate). It is assumed that the model policy would remain, as it would be in the Joint Plan, although it is acknowledged that national policy may change with unknown implications.

Option 1
This option would use the wording of the model policy with a minor adjustment to replace the word 'council' with 'authority' to reflect it being a Joint Plan involving both Councils and a National Park Authority and to replace reference to 'neighbourhood plans' with a reference to 'and other elements of the development plan where relevant'.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	- ?	✓	✓	✓	✓	In the short and medium term there would be no effects by having this policy in place as it is essentially saying that proposals which accord the Plan would be approved, which is what would generally happen either with or without this policy. In the long term effects may arise through the application of the final strand of the model policy relating to out of date plans, should the plan become out of date and not be replaced. This part of the model policy appears to afford less weight to protecting biodiversity than could be afforded through the Joint Plant through stating that any adverse effects must 'significantly and demonstrably' outweigh the benefits. In the long term the NPPF may also be amended or replaced, with uncertain implications for biodiversity.
2.	0	0	-	✓		✓	✓	In the short and medium term there would be no effects by having this policy in place as it is essentially saying that proposals which accord the Plan would be approved, which is what would generally happen either with or without this policy. In the long term effects may arise through the application of the final strand of the model

			?					policy relating to out of date plans, should the plan become out of date and not be replaced. This part of the model policy appears to afford less weight to protecting water quality than it is assumed the Joint Plan will through stating that any adverse effects must 'significantly and demonstrably' outweigh the benefits. In the long term the NPPF may also be amended or replaced, with uncertain implications for water resources.
3.	0	0	0					There are not predicted to be any effects on this objective.
4.	0	0	- ?	✓		✓	✓	In the short and medium term there would be no effects by having this policy in place as it is essentially saying that proposals which accord the Plan would be approved, which is what would generally happen either with or without this policy. In the long term effects may arise through the application of the final strand of the model policy relating to out of date plans, should the plan become out of date and not be replaced. This part of the model policy appears to afford less weight to protecting air quality than it is assumed the Joint Plan will through stating that any adverse effects must 'significantly and demonstrably' outweigh the benefits. In the long term the NPPF may also be amended or replaced, with uncertain implications for transport and emissions.
5.	0	0	- ?	✓		✓		In the short and medium term there would be no effects by having this policy in place as it is essentially saying that proposals which accord the Plan would be approved, which is what would generally happen either with or without this policy. In the long term effects may arise through the application of the final strand of the model policy relating to out of date plans, should the plan become out of date and not be replaced. This part of the model policy appears to afford less weight to protecting agricultural land than it is assumed the Joint Plan will through stating that any adverse effects must 'significantly and demonstrably' outweigh the benefits. In the long term the NPPF may also be amended or replaced, with uncertain implications for air quality.
6.	0	0	0					There are not predicted to be any effects on this objective.
7.	0	0	0					There are not predicted to be any effects on this objective.
8.	0	0	0					There are not predicted to be any effects on this objective.
9.	0	0	--	✓		✓		In the short and medium term there would be no effects by having this policy in place as it is essentially saying that proposals which accord the Plan would be approved, which is what would generally happen either with or without this policy. In the long term effects may arise through the application of the final strand of the model policy – this could have uncertain and potentially significantly negative implications for planning for waste facilities for which national guidance is contained in the PPS10 (to be replaced by updated guidance shortly) rather than the NPPF.
10.	0	0	-	✓		✓	✓	In the short and medium term there would be no effects by having this policy in place as it is essentially saying that proposals which accord the Plan would be approved, which is what would generally happen either with or without this policy. In the long term effects may arise through the application of the final strand of the model

			?					policy relating to out of date plans, should the plan become out of date and not be replaced. This part of the model policy appears to afford less weight to protecting the historic environment than it is assumed the Joint Plan will through stating that any adverse effects must 'significantly and demonstrably' outweigh the benefits. In the long term the NPPF may also be amended or replaced, with uncertain implications for the historic environment.
11.	0	0	- ?	✓		✓	✓	In the short and medium term there would be no effects by having this policy in place as it is essentially saying that proposals which accord the Plan would be approved, which is what would generally happen either with or without this policy. In the long term effects may arise through the application of the final strand of the model policy relating to out of date plans, should the plan become out of date and not be replaced. This part of the model policy appears to afford less weight to protecting landscape than it is assumed the Joint Plan will through stating that any adverse effects must 'significantly and demonstrably' outweigh the benefits. In the long term the NPPF may also be amended or replaced, with uncertain implications for the landscape.
12.	0	0	+ ?	✓			✓	In the short and medium term there would be no effects by having this policy in place as it is essentially saying that proposals which accord the Plan would be approved, which is what would generally happen either with or without this policy. The final strand of the policy is pro-development and should the Plan become out of date in the longer term would act in favour of granting permission which is likely to be beneficial for the economy. On a cumulative scale however should a number of minerals and waste developments take place with limited control this could begin to have negative effects on the economy overall as the quality of environment diminishes.
13.	0	0	+	✓			✓	In the short and medium term there would be no effects by having this policy in place as it is essentially saying that proposals which accord the Plan would be approved, which is what would generally happen either with or without this policy. The final strand of the policy is pro-development and should the Plan become out of date in the longer term would act in favour of granting permission which is likely to be beneficial for job creation.
14.	0	0	- ?	✓		✓	✓	In the short and medium term there would be no effects by having this policy in place as it is essentially saying that proposals which accord the Plan would be approved, which is what would generally happen either with or without this policy. In the long term effects may arise through the application of the final strand of the model policy relating to out of date plans, should the plan become out of date and not be replaced. This part of the model policy appears to afford less weight to maintaining opportunities for recreation than it is assumed the Joint Plan will through stating that any adverse effects must 'significantly and demonstrably' outweigh the benefits. In the long term the NPPF may also be amended or replaced, with uncertain implications on recreation and leisure.
15.	0	0	-	✓		✓	✓	In the short and medium term there would be no effects by having this policy in place as it is essentially saying that proposals which accord the Plan would be approved, which is what would generally happen either with or

			?					without this policy. In the long term effects may arise through the application of the final strand of the model policy relating to out of date plans, should the plan become out of date and not be replaced. This part of the model policy appears to afford less weight to protecting local communities than it is assumed the Joint Plan will through stating that any adverse effects must 'significantly and demonstrably' outweigh the benefits. In the long term the NPPF may also be amended or replaced, with uncertain implications for protection of communities.
16.	0	0	0					No effects
17.	0	0	+	✓			✓	In the short and medium term there would be no effects by having this policy in place as it is essentially saying that proposals which accord the Plan would be approved, which is what would generally happen either with or without this policy. In the longer term the final strand of the policy may allow more minerals development to come forward by placing a presumption on granting permission. If this did occur there would be more opportunities for shortening supply chains and more minerals available to support the population.

Option 2
Develop a more specific phrasing based on the national presumption but which promotes not only working proactively with applicants, but also with other stakeholders including consultees and communities jointly to find solutions to planning issues, in line with the draft vision of the Joint Plan.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0	0	?	✓	✓	✓	✓	In the short and medium term there would be no effects by having this policy in place as it is essentially saying that proposals which accord the Plan would be approved, which is what would generally happen either with or without this policy. In the long term effects may arise through the application of the final strand of the model policy relating to out of date plans, should the plan become out of date and not be replaced, although by working with stakeholders and communities as well as applicants it is considered more likely that any biodiversity and geo-diversity issues could be resolved.
2.	0	0	?	✓		✓	✓	In the short and medium term there would be no effects by having this policy in place as it is essentially saying

								that proposals which accord the Plan would be approved, which is what would generally happen either with or without this policy. In the long term effects may arise through the application of the final strand of the model policy relating to out of date plans, should the plan become out of date and not be replaced, although by working with stakeholders and communities as well as applicants it is considered more likely that any water quality issues could be resolved.
3.	0	0	0					No effects
4.	0	0	?	✓		✓	✓	In the short and medium term there would be no effects by having this policy in place as it is essentially saying that proposals which accord the Plan would be approved, which is what would generally happen either with or without this policy. In the long term effects may arise through the application of the final strand of the model policy relating to out of date plans, should the plan become out of date and not be replaced, although by working with stakeholders and communities as well as applicants it is considered more likely that any air quality issues could be resolved.
5.	0	0	?	✓		✓		In the short and medium term there would be no effects by having this policy in place as it is essentially saying that proposals which accord the Plan would be approved, which is what would generally happen either with or without this policy. In the long term effects may arise through the application of the final strand of the model policy relating to out of date plans, should the plan become out of date and not be replaced, although by working with stakeholders and communities as well as applicants it is considered more likely that any issues relating to agricultural land could be resolved.
6.	0	0	0					No effects
7.	+	+	+		✓		✓	Throughout the Plan period, positive engagement with communities will help to ensure that resilience to climate change is factored into decision making.
8.	0	0	0					No effects
9.	0	0	--	✓		✓		In the short and medium term there would be no effects by having this policy in place as it is essentially saying that proposals which accord the Plan would be approved, which is what would generally happen either with or without this policy. In the long term effects may arise through the application of the final strand of the model policy – this could have uncertain and potentially significantly negative implications for planning for waste facilities for which national guidance is contained in the PPS10 (to be replaced by updated guidance shortly) rather than the NPPF.
10.	0	0	?	✓		✓	✓	In the short and medium term there would be no effects by having this policy in place as it is essentially saying that proposals which accord the Plan would be approved, which is what would generally happen either with or without this policy. In the long term effects may arise through the application of the final strand of the model policy relating to out of date plans, should the plan become out of date and not be replaced, although by working with stakeholders and communities as well as applicants it is considered more likely that any potential effects on the historic environment could be resolved.

11.	0	0	?	✓		✓	✓	In the short and medium term there would be no effects by having this policy in place as it is essentially saying that proposals which accord the Plan would be approved, which is what would generally happen either with or without this policy. In the long term effects may arise through the application of the final strand of the model policy relating to out of date plans, should the plan become out of date and not be replaced, although by working with stakeholders and communities as well as applicants it is considered more likely that any potential effects on the landscape could be resolved.
12.	0	0	+	✓			✓	In the short and medium term there would be no effects by having this policy in place as it is essentially saying that proposals which accord the Plan would be approved, which is what would generally happen either with or without this policy. In the longer term, should the Plan become out of date there may positive effects on this objective as there would be a presumption of approving planning applications, although the involvement of consultees and communities under this option may help to ensure that any issues are addressed prior to permission being granted and would ensure development comes forward in a more controlled way than under option 1.
13.	+ +	+ +	+ +	✓		✓		The policy specifically supports the involvement of communities in decision making and is therefore likely to have a positive effect on the vitality and viability of local communities.
14.	0	0	?	✓		✓		In the short and medium term there would be no effects by having this policy in place as it is essentially saying that proposals which accord the Plan would be approved, which is what would generally happen either with or without this policy. In the long term effects may arise through the application of the final strand of the model policy relating to out of date plans, should the plan become out of date and not be replaced, although by working with stakeholders and communities as well as applicants it is considered more likely that any potential effects on recreation opportunities could be resolved.
15.	+ +	+ +	+ +	✓		✓		The option would have strong positive effects on this objective by involving communities in the decision making process thereby allowing communities the chance to highlight issues that have the most potential to affect local wellbeing.
16.	+	+	+	✓			✓	Throughout the Plan period, positive engagement with communities will help to ensure that implications for flooding are factored into decision making.
17.	+ +	+ +	+ +	✓			✓	This option also strongly supports the sub objective ‘to enable the community to contribute to and have influence in decision making’. In the short and medium term there would be no effects by having this policy in place as it is essentially saying that proposals which accord the Plan would be approved, which is what would generally happen either with or without this policy. In the longer term the final strand of the policy may allow more minerals development to come forward by placing a presumption on granting permission, although this would be in a more controlled way than under option 1. If this did occur there would be more opportunities for shortening supply chains.

Option 3
Use the model wording (under either option 1 or 2 above) as a starting point but adapt it to specifically state that within the North York Moors National Park and the AONBs the starting point for any decisions will be ensuring that development is consistent with delivering sustainable development within the context of statutory National Park purposes. For major development in these areas the starting point for consideration of applications would be the major development test.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+ +	✓	✓	✓	✓	This option would have positive effects by reaffirming the approach for the National Park and AONBs upon which policies elsewhere in the Plan would be based. In the longer term, whilst the model policy refers to policies in the NPPF restricting development being applied even when plan policies become out of date, it is not immediately clear what the approach for National Parks should be and the addition of this point would help to clarify this. As part of the statutory purposes relate to conserving and enhancing the wildlife of the Park this option would have positive effects against this objective. A large part of the National Park is also SAC and SPA and the option would therefore also have positive effects in relation to these. For elsewhere in the Plan area effects would be as either option 1 or 2 above.
2.	+	+	+	✓			✓	This option would have positive effects by reaffirming the approach for the National Park and AONBs upon which policies elsewhere in the Plan would be based. In the longer term, whilst the model policy refers to policies in the NPPF restricting development being applied even when plan policies become out of date, it is not immediately clear what the approach for National Parks should be and the addition of this point would help to clarify this. Protecting the environment of the Park through delivering of the statutory National Park purposes is likely to lead to protection of water quality. For elsewhere in the Plan area effects would be as either option 1 or 2 above.
3.	0	0	0					No significant effects. However, there may be potential positive impacts where development is placed in more accessible locations than the National Park and AONBs under this policy but it is not considered that this is

								significant enough to warrant a positive score.
4.	+	+	+	✓			✓	This option would have positive effects by reaffirming the approach for the National Park and AONBs upon which policies elsewhere in the Plan would be based. In the longer term, whilst the model policy refers to policies in the NPPF restricting development being applied even when plan policies become out of date, it is not immediately clear what the approach for National Parks should be and the addition of this point would help to clarify this. Protecting the environment of the Park through delivering of the statutory National Park purposes is likely to lead to protection of air quality. For elsewhere in the Plan area effects would be as either option 1 or 2 above.
5.	+	+	+	✓			✓	This option would have positive effects by reaffirming the approach for the National Park and AONBs upon which policies elsewhere in the Plan would be based. In the longer term, whilst the model policy refers to policies in the NPPF restricting development being applied even when plan policies become out of date, it is not immediately clear what the approach for National Parks and AONBs should be and the addition of this point would help to clarify this. Protecting the environment of the Park through delivering of the statutory National Park purposes is likely to lead to protection of soil. Agricultural land is generally not of a high quality in the National Park and therefore there would be no effects on this sub-objective. For elsewhere in the Plan area effects would be as either option 1 or 2 above.
6.	0	0	0					No significant effects. However, there may be potential positive impacts where development is placed in more accessible locations than the National Park and AONBs under this policy but it is not considered that this is significant enough to warrant a positive score.
7.	0	0	0					No effects
8.	0	0	0					No effects, although it is acknowledged that restricting minerals extraction in the National Park and AONBs may lead to increased use of previously used materials in and around these areas.
9.	0	0	0					No effects
10.	+	+	+ +	✓		✓	✓	This option would have positive effects by reaffirming the approach for the National Park and AONBs upon which policies elsewhere in the Plan would be based. In the longer term, whilst the model policy refers to policies in the NPPF restricting development being applied even when plan policies become out of date, it is not immediately clear what the approach for National Parks and AONBs should be and the addition of this point would help to clarify this. As part of the statutory purposes relate to conserving and enhancing the Park's cultural heritage this option would have positive effects against this objective. For elsewhere in the Plan area effects would be as either option 1 or 2 above.
11.	+	+	+ +	✓		✓	✓	This option would have positive effects by reaffirming the approach for the National Park and AONBs upon which policies elsewhere in the Plan would be based. In the longer term, whilst the model policy refers to policies in the NPPF restricting development being applied even when plan policies become out of date, it is not immediately clear what the approach for National Parks and AONBs should be and the addition of this

								point would help to clarify this. As part of the statutory purposes relate to conserving and enhancing the natural beauty of the Park this option would have positive effects against this objective. For elsewhere in the Plan area effects would be as either option 1 or 2 above.
12.	?	?	?	✓		✓	✓	This option would reaffirm the approach for the National Park and AONBs upon which the policies elsewhere in the Plan are based which may have negative effects for the economy by providing a more restrictive approach to new development in the Park. However, cumulatively it is considered that there could be positive effects as much of the National Park's economy relies on tourism which could be undermined by the presence of minerals or waste developments. For elsewhere in the Plan area effects would be largely as either option 1 or 2 above, although it is acknowledged that maintaining the tourism value of the National Park has a knock-on benefit for the wider area by attracting visitors to North Yorkshire as a whole. Effects are also potentially uncertain elsewhere in the plan area given the policy may provide locational bias outside of the protected landscapes. Net effects may be positive but on balance still uncertain.
13.	?	?	?	✓		✓	✓	This option would reaffirm the approach for the National Park and AONBs upon which the policies elsewhere in the Plan are based which may have negative effects in relation to jobs in the minerals and waste sectors by providing a more restrictive approach to new development in the Park. However, cumulatively it is considered that there could be positive effects as many of the National Park's communities and jobs are reliant on tourism which could be undermined by the presence of minerals or waste developments. For elsewhere in the Plan area effects would be as either option 1 or 2 above.
14.	+	+	+ +	✓	✓	✓	✓	This option would have strong positive effects in relation to the second statutory purpose of National Parks[112] which the NPPF is currently silent on (and would therefore not be considered under the final strand of the model policy should the Plan become out of date). It would clarify that effects on promoting opportunities for the understanding and enjoyment of the Park by the public would always be a consideration in decision making. In the short term there may be minor positive effects of clarifying up front the policy position for the National Park. For elsewhere in the Plan area effects would be as either option 1 or 2 above.
15.	0	0	0					No effects
16.	0	0	0					No effects
17.	-	-	-	✓			✓	In the short term and medium term any proposals for minerals extraction would be considered against the other policies in the Plan and any effects resulting from the inclusion of this policy are likely to be minor as it is reaffirming the approach taken throughout the Plan. Such minor effects could include, for example, instances where consideration of implications on special qualities (as reaffirmed by this option) result in less minerals development coming forward in the National Park and the AONBs there may be less minerals available to support the population. In the longer term, should the plan become out of date, the option may

[112] The second statutory purpose is to 'Promote opportunities for the understanding and enjoyment of the special qualities of the Park by the public'.

								restrict minerals and waste developments in the Park which under the model policy may have been acceptable.

Summary of assessment

The assessment has revealed that under Options 2 and 3 more positive effects are likely, particularly in the longer term should policies in the Plan be considered to become out of date. Option 2 would have significant positive effects in relation to community engagement and may also enable other effects of development to be mitigated through this engagement process. Option 3 would provide significant positive effects for the landscape and environment of the National Park and the AONBs.

A significant negative effect of using the model policy under both Options 1 and 2 is that, through just referring to the NPPF and not PPS10 or its replacement, in the longer term it would provide no policy basis for the consideration of waste proposals. Negative effects under Option 3 are associated with potentially restricting or controlling minerals and waste developments coming forward in the longer term, however this may be compared against the potential for cumulative negative effects on the economy (in terms of tourism and maintaining the wider North Yorkshire area as an attractive location for investment) should development be allowed to go ahead with limited control.

In the short and medium term the positive effects are negligible as all options essentially state that development which accords with the Plan should go ahead, which is generally the case either with or without such a policy.

Recommendations

It is likely that a combination of Options 2 and 3 would provide the most positive effects on the sustainability objectives, provided reference to national waste planning policy is included alongside reference to the NPPF. Reference to ‘national policy’ rather ‘NPPF’ would resolve this issue and would account for any changes to the NPPF in the future, although would still retain an element of uncertainty.

Local Amenity and Cumulative Impacts (id59)

Option 1
Proposals will be supported where it can be demonstrated that unacceptable effects (including cumulative effects) on local amenity will not arise, including as a result of: noise, dust, vibration, odour and other emissions to air, vermin and litter, visual impact, the public rights of way network and access to open space.

Proposals will be expected to prevent adverse impacts through avoidance, with use of robust mitigation measures where avoidance is not practicable.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	-	✓		✓		Whilst this approach expects unacceptable effects to be demonstrated, it lacks specific consideration for biodiversity. Whilst this is covered by alternative options, local nature conservation sites, for example, can contribute to local amenity and may be impacted cumulatively. It is recommended that this is incorporated as appropriate as currently, this may have negative impacts.
2.	-	-	-	✓		✓		Whilst this approach expects unacceptable effects to be demonstrated, it lacks specific consideration for water quality. Whilst this is covered by alternative policy options, proposals may impact on the water environment which links water quality and recreation/local amenity. It is recommended that this is incorporated as appropriate and the effects of this could be adverse.
3.	+ ?	+ ?	+ ?	✓		✓		This would be positive in protecting the PRoW network when considering proposals. Also, unacceptable effects from transport in terms of noise impacts due to proximity may positively benefit local communities.
4.	+	+	+	✓		✓		This option would have a positive impact on air quality by ensuring the effects are known and mitigated where necessary.
5.	0	0	0					There is no clear link between this policy and the objective.
6.	+	+	+	✓		✓		Ensuring that emissions to the air are identified and mitigated where necessary should have a positive impact on climate change.

7.	0	0	0					There is no clear link between this policy and the objective.
8.	0	0	0					There is no clear link between this policy and the objective.
9.	+	+	+	✓	✓	✓	✓	One of the considerations for supporting any proposals will be litter. This will be positive in ensuring that any waste generated will be considered in terms of local amenity.
10.	0	0	0					There is no clear link between this policy and the objective. However, this option does cover visual amenity which is likely to have a positive impact for the historic environment in locations where this is applicable.
11.	+	+	+	✓	✓	✓	✓	By considering the factors above it is likely to have a positive impact on the landscape indirectly by minimising significant effects from noise, odour, air quality, visual impact and access to open space.
12.	?	?	?	✓	✓	✓		Avoiding or mitigating any effects from proposals for minerals and waste may have impacts on the viability of the proposal. The significance of this will depend upon the scale and type of impacts to be addressed.
13.	+	+	+	✓	✓	✓		This option would have direct positive effects on ensuring that the conditions to maintain the vitality and functionality of the local community would not be adversely effected through environmental effects of new development.
14.	+	+	+	✓		✓		This would be positive by ensuring that PRoW and open spaces are not adversely affected or where they are, they are appropriately mitigated.
15.	++	++	++	✓	✓	✓		The would directly consider the impacts of noise, dust, vibration, odour and other emissions to air, vermin and litter, visual impact and access to open space. All of these aspects would have positive impacts on health and well-being over the lifetime of the plan. The significance of the impact would depend upon the 'unacceptable effects'.
16.	0	0	0					There is no clear link between this policy and the objective.
17.	0	0	0					There is no clear link between this policy and the objective.

Option 2
In addition to the matters outlined in option 1, this option would specifically encourage applicants to conduct early and meaningful engagement with local communities, in line with statements of community involvement, prior to submission of an application, and to reflect the outcome of those discussions in the design of the proposals.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	-	✓		✓		As option 1
2.	-	-	-	✓		✓		Whilst this approach expects unacceptable effects to be demonstrated, it lacks specific consideration for water quality. Whilst this is covered by alternative policy options, proposals may impact on the water environment which links water quality and recreation/local amenity. It is recommended that this is incorporated as appropriate and the effects of this could be adverse.
3.	+ ?	+ ?	+ ?	✓		✓		This would be positive in protecting the PRoW network when considering proposals. Also, unacceptable effects from transport in terms of noise impacts due to proximity may positively benefit local communities.
4.	+	+	+	✓		✓		This option would have a positive impact on air quality by ensuring the effects are known and mitigated where necessary.
5.	0	0	0					There is no clear link between this policy and the objective.
6.	+	+	+	✓		✓		Ensuring that emissions to the air are identified and mitigated where necessary should have a positive impact on climate change.
7.	0	0	0					There is no clear link between this policy and the objective.
8.	0	0	0					There is no clear link between this policy and the objective.
9.	+	+	+	✓	✓	✓	✓	One of the considerations for supporting any proposals will be litter. This will be positive in ensuring that any waste generated will be considered in terms of local amenity.
10.	0	0	0					There is no clear link between this policy and the objective. However, this option does cover visual amenity which is likely to have a positive impact for the historic environment in locations where this is applicable.
11.	+	+	+	✓	✓	✓	✓	By considering the factors above it is likely to have a positive impact on the landscape indirectly by minimising significant effects from noise, odour, air quality, visual impact and access to open space.
12.	?	?	?	✓	✓	✓		Avoiding or mitigating any effects from proposals for minerals and waste may have impacts on the viability of the proposal. The significance of this will depend upon the scale and type of impacts to be addressed.
13.	+	+	+	✓	✓	✓		As Option 1
14.	+	+	+	✓		✓		This would be positive by ensuring that PRoW and open spaces are not adversely affected or where they are, they are appropriately mitigated.
15.	++	++	++	✓	✓	✓		As option 1
16.	0	0	0					There is no clear link between this policy and the objective.
17.	+	+	+					As Option 1

Summary of assessment
Both Options 1 and 2 would minimise negative effects and may lead to positive effects on communities and the local environment. Option 2 would provide additional greater positive effects by supporting the involvement of local communities.

Recommendations
To maximise the positive opportunities for local amenity, the SA recommends that option 2 is taken forward.

Transport of Minerals and Waste and Associated Traffic Impacts (id60)

Assumptions – The wider strategic locational approach to new minerals and waste development which could help reduce the overall need for transportation have been considered in the individual minerals and waste sections. It is assumed that non-road transport includes rail, water, pipelines and underground conveyor systems.

Option 1
This option would give priority to proposals for minerals and waste development which would enable transport of minerals and waste via a sustainable (non-road) transport mode.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0 ?	+ - ? ?	+ - ?	✓	✓	✓	✓	In terms of a general move from existing road transport to alternative modes, in the short term there is likely to be a continuation of existing trends in transportation through the use of existing infrastructure. New infrastructure may have effects on habitats and wildlife, depending on the location, scale and nature of the development. Effects may be greater during the construction phase, particularly in relation to pipelines and tunnels where in the longer term effects may lessen. There could also be positive effects on this objective through reducing greenhouse gas emissions and its adverse impacts on biodiversity and geodiversity.
2.	0 ?	?	?	✓	✓	✓	✓	In terms of a move from existing road transport to alternative modes, in the short term there is likely to be a continuation of existing trends in transportation through the use of existing infrastructure. Where is it identified that waste and minerals could be exported using waterways as an alternative to road transport in the future, there is the potential for water quality to be negatively impacted in the longer term through more frequent use increasing the likelihood of adverse impacts. These effects however are uncertain and predominantly localised to the Selby area which has infrastructure suitable or potentially suitable for this method of transportation. Should new infrastructure be developed as a non-road method of transportation, there is potential for effects on groundwater and surface water, particularly during the construction phase.

3.	0	+	+	✓		✓		In the short term there is likely to be a continuation of existing trends in transportation. However, this option supports a modal shift away from road transportation to the use of other modes of transporting minerals and waste. This should have a positive impact on helping reduce road transportation and mileage, including its associated emissions. There is potential for this to positively impact over time as the drive to reduce road transportation in favour of more sustainable modes is considered. However, the success of this would be dependent upon a step change to the predominant movement of minerals and waste by road. It will also still be dependent upon where there is the potential to implement alternatives to road transport in relation to the location of the processing of waste and minerals extraction. The baseline shows that there are a limited number of locations where alternatives to road transport may be used without new infrastructure.
4.	0	+	+	✓	✓	✓		In the short term there is likely to be a continuation of existing trends in transportation. However, given that this option would support the transportation of waste and minerals via alternative methods to road transportation, it is likely to have a positive effect on air quality overall (on the assumption that these modes release fewer emissions). The significance of this may increase over time should there be a positive shift towards using these more sustainable modes. However, some local effects (e.g. dust from vehicles) may have a localised impact result depending on the routes chosen.
5.	0 -	0 -	0 -	✓		✓		There are likely to be neutral effects from a modal shift to more sustainable transportation of waste and minerals on soil and land efficiency. However there may be effects relating to loss of agricultural land through the development of new infrastructure, and the development of tunnels in particular may require the use of agricultural land for depositing excavated material.
6.	0	+	+	✓		✓		In the short term there is likely to be a continuation of existing trends in transportation. However, given that this option would support the transportation of waste and minerals via alternative methods to road transportation, it is likely to have a positive effect on climate change overall (on the assumption that these modes release fewer emissions). The significance of this may increase over time should there be a positive shift towards using these more sustainable modes. However, the baseline shows that there are a limited number of locations where alternatives to road transport may be used without new infrastructure. Overall, it is still considered that there would be a minor positive effect from this approach.
7.	0	0	0	✓		✓		There is no clear link between the policy and the objective
8.	+ -	+ -	+ -	✓			✓	Should the policy result only in a move from road transport to the use of existing non-road infrastructure it would help to support a decrease in fuels used for the transportation of them. This is considered to have a minor positive indirect effect. However, should the policy result in the development of new infrastructure to support transportation by non-road methods this is likely to result in the need to use resources which would have a minor negative impact upon this objective.

9.	0	0	0					There is no clear link between the policy and the objective
10.	0	0	0					Whilst removal of road traffic may have positive effects on historic assets currently affected by road traffic, there may be effects resulting from the development of new infrastructure. There may in particular be effects in relation to excavations required for pipelines and the disposal of excavated materials associated with tunnels.
	?	?	?					
11.	?	?	?	✓	✓	✓	✓	It is likely that effects on the landscape would be determined by the mode chosen to use for the movement of waste and minerals, its route and frequency of use. Where roads are less frequently used, it is possible that there may be positive impacts through a reduction in noise, vibration and visual impact. The development of new infrastructure may have negative effects on the landscape, particularly during the construction phase. A tunnel for transportation may lead to changes in the landscape through the requirement to deposit excavated materials, which in the short term in particular may have particularly significant negative effects prior to vegetation re-establishing. There may be negative effects associated in particular with the construction phase of the development of any pipelines whilst in the longer term effects may lessen.
	+	+	+					
12.	-	-	-					The effectiveness of this approach will be influenced by the viability of implementing a modal shift towards more sustainable modes of transporting waste and minerals. It is likely that road transportation will remain the predominant mode where alternative infrastructure is not in close proximity and too expensive to develop. Positively, the option would not preclude other minerals and waste development, it would just prioritise sites where they do have this opportunity. Consideration should also be sought for access to markets to consider whether this would be the best way to move products to the market. Overall, the effects on the economy are also uncertain but could be minor negative.
	?	?	?					
13.	+	+	+	✓	✓	✓		Reducing the amount of road traffic through prioritising development using alternative modes should have positive effects where they remove vehicles from travelling through local communities minimising adverse effects encountered such as through noise and vibration. This significance of this would be determined by the net benefit of alternative routes used.
14.	+	+	+		✓	✓		Within the baseline the National Park and AONB are acknowledged to be 'tranquil'. A shift towards using alternative to road transportation may have a positive impact on maintaining tranquillity within the area although this is subject to the other modes causing less intrusion. There may be short term impacts on tourism during the construction phase of any new infrastructure. Depending on location, new infrastructure may also result in effects to rights of way.
	?	?	?					
15.	+	+	+		✓	✓		Prioritising the transportation of minerals and waste away from road travel should have direct positive effects on the health and well-being of communities. It is anticipated that this would help reduce noise, dust, odour and vibration, although it is accepted that this would be location specific. In addition, there could be road safety and traffic accident improvements through the reduction of HGVs on the roads. Any new infrastructure required helping prioritise minerals and waste would need to consider impacts on health and well-being; the

	-	-	-					impacts of which would be determined by type and location of the infrastructure. On balance, the localised net benefits of reducing road transportation of minerals and waste are positive. Short term negative effects may be experienced by communities close to locations where new infrastructure is developed, during the construction phase.
16.	0 ?	0 ?	?					This option would need to take account of flood risk to ensure that it would not directly or indirectly affect flood risk through the switch to sustainable modes of transportation. Any development to enable transportation by water is likely to fall within the Government's definition of water compatible, though will still be required to not increase the chances of flooding elsewhere. In summary while effects are expected to be minimal, there remains some uncertainty with this option that can only be resolved at a site specific level of detail.
17.	0	0	0					There is no clear link to this objective

Option 2

This option would not seek to give preferential consideration to proposals which would include non-road modes of transport but would require all proposals involving significant transport of minerals or waste by road to demonstrate that the development would, taking into account minerals resource constraints where relevant, be well located in relation to sources of arisings or markets and in relation to suitable road networks.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0	= - ?	= - ?	✓	✓	✓		Similarly to option 1, this option is likely to be a continuation of existing trends in transportation but over the entire plan period as it reflects the current situation. The severity of impacts on biodiversity and geodiversity would still be determined by location and type development and specific biodiversity considerations would still need to accord with other policies relating to biodiversity, habitats and wildlife. There could also be positive effects on this objective through reducing greenhouse gas emissions and its adverse impacts on biodiversity and geodiversity
2.	0	?	?					Similarly to option 1, this option is likely to be a continuation of existing trends in transportation but over the

								entire plan period as it reflects the current situation. This option would not give preference to alternative to road transportation and therefore where it is identified that waste and minerals could be exported using waterways in any proposal, it is still relevant to consider the likely impacts on water quality. Currently these effects are uncertain and predominantly localised to the Selby area, which has infrastructure suitable or potentially suitable for this method of transportation.
3.	0	+ -	+ -	✓		✓		This option would not preference alternative modes to road travel meaning that there is a potential that this may conflict with reducing transport miles, emissions and the use of sustainable modes. However, this is likely to continue the current situation and reflect the limited potential to actually implement a step change across the plan area due to the availability of alternatives, as detailed within the baseline. Positively, this policy would require a demonstration of the relationship to markets/ arisings and the road network to ensure they are well located. This implies that consideration for mileage and travel method would be given careful consideration and should provide a baseline from which to detail mitigation measures and conditions. On balance, this policy is likely to have a neutral impact in the short-term but the impacts in the long-term would be dependent upon the location and volume of road transportation for minerals and waste.
4.	0	- ?	- ?	✓	✓	✓		This option is likely to have neutral to negative impacts on air quality given that it is likely to continue supporting road transportation. However, the effects may be localised to those routes used for heavy vehicles. The significance of this is in the future will be based upon the location and volume of road transportation.
5.	0	0	0					There are likely to be neutral effects from this option on soil and land efficiency given that the existing road network system could be utilised.
6.	0	-	-	✓		✓		This option is likely to have neutral to negative impacts on climate change over the plan given that it is likely to continue supporting road transportation. Whilst this is likely to be a continuation of the present and reflects the dispersed nature of extraction/processing, in comparison to option 1 wherein sustainable modes would be have preference, this option is likely to have net negative effects.
7.	0	0	0					There is no clear link between the policy and the objective
8.	0	0	0					Whilst this would not directly affect the extraction of minerals, it would not support a decrease in fuels used for the transportation of them. This is considered to have neutral effects on the baseline situation.
9.	0	0	0					There is no clear link between the policy and the objective
10.	?	?	?					Specific historic environment and setting considerations would still need to accord with other policies relating to the historic environment, heritage assets and their settings. Localised effects from this option may arise where routes take vehicles through areas with sensitive or vulnerable historic assets. However the extent of this is likely to be limited should the main road network be used.

11.	?	?	?	✓	✓	✓	✓	Specific landscape considerations would still need to accord with other policies relating to landscape. Localised effects from this option may arise where routes take vehicles through areas with sensitive or vulnerable landscapes, such as in the National Park and AONB and the frequency to which they are travelling. However the extent of this is likely to be limited should the main road network be used and demonstrated through any proposal. Any demonstration should seek to minimise impacts from noise, vibration and visual impact.
12.	+	+	+	✓	✓	✓		The impacts on viability through implementation of alternative sustainability modes are likely to be negligible in comparison to option 1, which would be positive. Also, this option allows more freedom to location extraction sites and transport minerals directly to markets / associated uses/processing as well as utilise existing linkages. Overall, this option is likely to be positive for the economy.
13.	0	?	?	✓	✓	✓		In comparison to option 1, this option is likely to have a neutral through the continuation of current practice. However, over the plan period the impacts become more uncertain as communities in proximity of new extraction/waste processing sites may become affected.
14.	0	0	0					The impacts on this objective are likely to be neutral.
15.	-	-	-		✓	✓		This option in comparison to option 1 is likely to have more negative effects. Currently, people can be affected by actions and the results of transportation of waste and minerals. This option is not likely to help improve road safety associated with large vehicles for example and there will a continuation of localised effects in terms of noise, vibration and dust. The localised effects may vary as different sites become active or inactive.
16.	0	0	?					Any development and associated road transport would need to be assessed for flood risk as per other policies within the plan. The flood risk and drainage implications would also need to be considered should other modes be proposed through applications. Transportation by water is likely to fall within the Government's definition of water compatible, though will still be required to not increase the chances of flooding elsewhere. On balance, it is likely that there would be neutral effects in the short with some long-term uncertainty.
17.	0	0	0					There is no clear link to this objective

Option 3

This option could be used with either Option 1 or Option 2 above and would set out criteria to address various potential impacts arising from unavoidable road transport of minerals and waste, including:

- Access arrangements appropriate to the volume and nature of any road traffic generated
- Suitable arrangements for on-site vehicle manoeuvring, parking and loading/unloading
- Level of traffic within the capacity of the local road network
- Mitigation of adverse traffic impacts where necessary by traffic controls, highway improvements and traffic routing agreements.
- The use of green travels plans.

In all cases involving significant new traffic generation a transport assessment would be required to demonstrate that opportunities for sustainable transport modes have been taken up and that safe and suitable access to the site can be achieved for all people.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					There may be no effects. However, specific biodiversity considerations would need to accord with other policies relating to biodiversity, habitats and wildlife.
2.	0	0	0					No clear link between the policy and this objective
3.	+	+	+	✓		✓		This would have a positive effect if used in conjunction with both options 1 and 2. In combination with either option but perhaps more with option 2, this would ensure that sustainable modes have been utilised where available and that mitigation is implemented where applicable. This would also have positive implications for congestion through an understanding of the impact of the site on the existing road network and any improvements which may be necessary. Incorporating this option would also expand the remit of considering transportation of waste and minerals to also the workers associated with the site/facility in ensuring access for all. Having this option would also require an understanding of how people get to and from the site as well as a green travel plan to ensure this can be done in the most sustainable way. Overall, this is considered to have a positive effect.
4.	+	+	+	✓	✓		✓	Whilst this option does not explicitly list air quality, there may be indirect positive effects from the requirements set out. Localised effects may be reduced through the consideration for existing local traffic and the road network system. The transport assessment would also seek to demonstrate that transportation has been

								considered in the most sustainable way and that would require an understanding the level of emissions as well as vehicle types associated with waste and minerals which would affect air quality. Overall, it is considered that this may have a positive net effect on this objective.
5.	0	0	0					There is no clear link between the policy and the objective.
6.	+	+	+	✓	✓		✓	Similarly to effect on objective 4, the net effect for climate change may be indirectly improved through the implementation of this option, particularly in combination with option 2 which would not preference sustainable modes.
7.	0	0	0					There are no clear links between the policy and the objective.
8.	0	0	0					There are no clear links between the policy and the objective.
9.	0	0	0					There are no clear links between the policy and the objective.
10.	0	0	0					There are no clear links between this policy and the objective.
11.	?	?	?	✓	✓		✓	Adding this option onto either option 1 or 2 may have indirect effects on the landscape. The determination of routes, traffic volumes and any road network improvements could positively or negatively affect localised areas in relation to the extraction or waste sites, particularly in the National Park and AONB as well as other sensitive landscapes within the plan area. The results of this are currently uncertain.
12.	+	+	+	✓	✓		✓	Understanding the impacts from road transportation is likely to contribute to the successful running of the associated sites through consideration for routes to key markets as well as access for workers to and from the site. However, where mitigation measures may be required, this may add significant cost to any development and impact upon viability, although this is subject to location and type of mitigation required. The net benefits of ensuring the successful running of the site are considered to outweigh the impacts on viability of implementing mitigation in the long-term.
13.	+	+	+	✓	✓		✓	The consideration of the local road network as well as suitable arrangements for on-site vehicle manoeuvring, parking and loading/unloading should help to minimise effects on local communities. This will help to set out the workings of the site and mitigate noise and traffic (congestion) where necessary and consequently have a direct benefit on the maintaining an areas functionality. Any scheme would also have to be subject to further social considerations which may impact on local communities.
14.	0	0	0					There are no clear links between this policy and the objective.
15.	+	+	+	✓	✓		✓	The consideration of the local road network as well as suitable arrangements for on-site vehicle manoeuvring, parking and loading/unloading should help to minimise effects on peoples' health and well-being through consideration for the workings of the site. This option would consider safety in relation to road transportation

	?	?	?					which would be positive. However, road transportation of mineral and waste overall may still have negative effects on noise, vibration and odour. In order to have a significantly positive effect, the plans would also need to be subject to other policy consideration for health and wellbeing. On balance, this is likely to be more positive than just pursuing option 1 and 2 individually although to what extent is uncertain.
16.	0	0	0					There are clear links between this options and the objective
17.	+	+	+	✓	✓		✓	Incorporating this option would also expand the remit of considering transportation of waste and minerals to also the workers associated with the site/facility in ensuring access for all. Having this option would require an understanding of how people get to and from the site as well as a green travel plan to ensure this can be done in the most sustainable way. Overall, this is considered to have a positive effect on ensuring the needs of the workers in relation to any sites/transportation of minerals and waste.

Proposed alternative option 4: (Or) This option would give priority to proposals for minerals and waste development which would enable transport of minerals and waste via a sustainable (non road) transport mode. Proposals for waste and non energy minerals developments should demonstrate that the development would, taking into account minerals resource constraints where relevant, be well located in relation to sources of arisings or markets and in relation to suitable road networks.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0 ?	+ - ?	+ - ?	✓	✓	✓	✓	Similar to options 1, there is likely to be a continuation of existing trends in transportation in the short term. Beyond that this option may generate a need for more infrastructure to service sustainable transport. New infrastructure may have effects on habitats and wildlife, depending on the location, scale and nature of the development. Effects may be greater during the construction phase, particularly in relation to pipelines and tunnels where in the longer term effects may lessen. Locating relevant development well in relation to markets, arisings and suitable road networks would lead to uncertain effects.

								There could also be positive effects on this objective through reducing greenhouse gas emissions and its adverse impacts on biodiversity and geodiversity
2.	0 ?	?	?		✓	✓		Similar to option 1, there is likely to be a continuation of existing trends in transportation. The use of waterways for transporting minerals and waste as a sustainable mode of transport creates the potential for water quality to be negatively impacted in the longer term through more frequent use. These effects are uncertain however and predominantly affect the Selby area which has infrastructure suitable or potentially suitable for this method of transportation. Locating relevant development well in relation to markets, arisings and suitable road networks would lead to uncertain effects.
3.	+ + + ?	+ + + ?	+ + + ?	✓		✓		This option would have broadly positive effects on this objective by helping to reduce road transportation and mileage including its associated emissions. However, this will depend on the rate at which minerals and waste transportation transfers from the existing road based transport to more sustainable modes. Locating relevant development well in relation to markets, arisings and suitable road networks would also lead to positive effects. Together impacts may range from minor to major positive, but with some uncertainty.
4.	+ ?	+ ?	+ ?	✓			✓	This option would have a positive effect on this objective by supporting the transportation of waste and minerals via alternative methods to road transportation which would reduce adverse impacts on air quality by reducing emissions. However, this will depend on the rate at which minerals and waste transportation transfers from the existing road based transport to more sustainable modes. Locating relevant development well in relation to markets, arisings and suitable road networks would also lead to unknown effects, depending on the air quality already there.
5.	0 -	0 -	0 -	✓		✓	✓	There are likely to be neutral effects from a modal shift to more sustainable transportation of waste and minerals on soil and land efficiency. However there may be effects relating to loss of agricultural land through the development of new infrastructure, and the development of tunnels in particular may require the use of agricultural land for depositing excavated material. Locating relevant development well in relation to markets, arisings and suitable road networks would lead to

	?	?	?					uncertain effects depending on whether this option would make it any more likely to be situated on high quality farmland (which is unknown).
6.	+ + + ?	+ + + ?	+ + + ?	✓		✓		This option would have positive effects on this objective by supporting the transportation of minerals and waste by more sustainable methods of transport thereby reducing emissions and the causes of climate change. . However, the baseline shows that there are a limited number of locations where alternatives to road transport may be used without new infrastructure. Overall, it is still considered that there would be at least a minor positive effect from this approach. Together impacts may range from minor to major positive, but with some uncertainty (as the take up pace of this policy is not known) Locating relevant development well in relation to markets, arisings and suitable road networks would also lead to positive effects.
7.	0	0	0					This option would have no effect on responding and adapting to the effects of climate change.
8.	+	+	+	✓		✓		This option would help to support a reduction in the use of fuel which would have a minor positive effect on this objective.
9.	0	0	0					This option would have no effect on minimising waste generation and prioritising the management of waste within the waste hierarchy.
10.	+ ?	+ ?	+ ?	✓			✓	This option would have minor positive effects on conserving and enhancing the historic environment, heritage assets and their settings through a reduction in road traffic which would reduce emissions and pollution which can adversely affect historic buildings and structures. This may be offset to a degree where new transport related infrastructure is required adding uncertainty to the assessment.
11.	+ ?	+ ?	+ ?	✓	✓	✓	✓	It is likely that effects on the landscape would be determined by the mode chosen to use for the movement of waste and minerals, its route and frequency of use. Where roads are less frequently used, it is possible that there may be positive impacts through a reduction in noise, vibration and visual impact. The development of new infrastructure may have negative effects on the landscape, particularly during the construction phase. Locating relevant development well in relation to markets, arisings and suitable road networks would also lead to unknown effects.
12.	- ?	- ?	- ?	✓			✓	This option could place restrictions on the development of some new minerals and waste schemes and the effects on achieving sustainable economic growth and jobs is therefore negative to uncertain.
13.	-	-	-	✓			✓	This option could place restrictions on the development of some new minerals and waste schemes and the

	?	?	?					effects on maintaining and enhancing the viability and vitality of local communities is therefore negative to uncertain as future jobs could be lost..
14.	+ ?	+ ?	+ ?		✓	✓		Within the baseline the National Park and AONB are acknowledged to be 'tranquil'. A shift towards using alternative to road transportation may have a positive impact on maintaining tranquillity within the area although this is subject to the other modes causing less intrusion. There may be short term impacts on tourism during the construction phase of any new infrastructure. Depending on location, new infrastructure may also result in effects to rights of way. Locating relevant development well in relation to markets, arisings and suitable road networks would also lead to unknown effects on tranquillity and thus the recreational value of communities, though it would reduce traffic noise across the plan area.
15.	+ -	+ -	+ -	✓	✓	✓	✓	This option could have a positive effect on the health and well-being of local communities by reducing road transport and the associated noise, dust, odour and vibration. There may also be positive effects on road safety. These effects could be temporarily undermined if new development is needed to support non road modes of transport but this will depend on the location in relation to local communities.
16.	?	?	?					The effects of this option on flood risk and reducing the risk of flooding are uncertain as locations for development of transport infrastructure and minerals and waste sites are unknown
17.	0	0	0					No clear link

Proposed alternative option 5: (Or) This option would not seek to give preferential consideration to proposals which would include non road modes of transport

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	

1.	-	-	-					This option would imply a continuation of current trends of transportation of minerals by road. The severity of impacts on biodiversity and geo-diversity would be determined by the location and type of development proposed and specific biodiversity considerations would still need to accord with other policies relating to biodiversity, habitats and wildlife. In the long term the continuation of current transportation trends could have an adverse impact on the health of habitats and wildlife.
2.	?	?	?					Similar to option 1, there is likely to be a continuation of existing trends in transportation. This option would not encourage the use of waterways for transporting minerals and waste which may avoid future damage to water supplies. However, water quality is often affected by run off from roads, particularly from minerals transport, which can increase the turbidity of watercourses or affect pollution loads. This effect is expected to be minor negative.
3.	--	--	--					This option would have adverse effects on this objective by allowing current trends of transportation by road to continue in the long term which would not help to reduce transport miles and associated emissions.
4.	--	--	--					This option would have adverse effects on this objective by allowing current trends of transportation by road to continue in the long term which would not help to protect and improve overall air quality. The effects are likely to be most severe on those routes used most frequently by heavy vehicles.
5.	0	0	0					No significant effects noted.
6.	--	--	--					By allowing current trends of transportation of minerals by road to continue there could be adverse effects on the objective as this will exacerbate the causes of climate change through continued greenhouse gas emissions.
7.	0	0	0					No clear link between the option and the objective.
8.	0	0	0					No clear link between the option and the objective.
9.	0	0	0					No clear link between the option and the objective.
10.	-	-	-					This option could have adverse effects where routes take vehicles through areas with sensitive or vulnerable historic assets although this will be restricted to the main road network.
11.	-	-	-					This option could have adverse effects, particularly on tranquillity, where routes take vehicles through areas with sensitive or vulnerable landscapes such as the National Park and AONB and this option would continue this effect in the long term.
12.	0	0	0					No clear link between the option and the objective.
13.	- --	- --	- --					This option could have adverse effects where routes take heavy goods vehicles through local communities. These impacts could in some locations be quite severe.
14.	0	0	0					No clear link between the option and the objective.

15.	- --	- --	- --					This option could have adverse effects on the well-being, health and safety of local communities where routes take vehicles through settlements. These impacts could in some locations be quite severe.
16.	0	0	0					No clear link between the option and the objective.
17.	-	-	-					Potential adverse effects by allowing a continuation of existing trends of transportation by road which does not enable needs to be met sustainably.

Proposed alternative option 6: (Or) This option would support proposals where the proposed transportation method is that which would result in the lowest greenhouse gas emissions.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0 ?	+ - ?	+ - ?					In the short term, existing trends of transportation of minerals and waste by road is likely to continue. In the longer term there could be both positive effects on this objective through reducing greenhouse gas emissions and its adverse impacts on biodiversity and geo-diversity and some negative impacts from new transport infrastructure.
2.	0 ?	?	?					In terms of a move from existing road transport to alternative modes, in the short term there is likely to be a continuation of existing trends in transportation by road. Where is it identified that waste and minerals could be exported using waterways as an alternative to road transport in the future, there is the potential for water quality to be negatively impacted in the longer term through more frequent use increasing the likelihood of adverse impacts. These effects however are uncertain and predominantly localised to the Selby area which has infrastructure suitable or potentially suitable for this method of transportation. Should new infrastructure be developed as a non-road method of transportation, there is potential for effects on groundwater and surface water, particularly during the construction phase.

3.	+	+ ?	+ ?					Although in the short term existing trends of transportation by road are likely to continue, in the long term a move towards more sustainable modes of transport would reduce transport miles and emissions which would have a positive effect on this objective. It may however be found that improvements in efficient vehicles or alternative fuels promotes a shift back to roads, generating more road traffic.
4.	0	+	+					In the short term, existing trends are likely to continue but in the long term a reduction in greenhouse gas emissions would have positive effects on protecting and improving air quality.
5.	0	0	0					No clear link between the option and the objective.
6.	0	+ +	+ +					In the short term, existing trends are likely to continue but in the long term a reduction in greenhouse gas emissions would have positive effects on helping to reduce the causes of climate change.
7.	0	0	0					No clear link
8.	0	+	+					In the short term, existing trends are likely to continue but in the long term a move to more sustainable modes of transport will reduce dependency on fossil fuels and the use of resources.
9.	0	0	0					No clear link between the option and the objective.
10.	0	+	+					A reduction in greenhouse gas emissions would have positive effects on this objective by reducing pollution and emissions which can damage historic buildings and structures, though it is those on main heavy goods vehicle routes that are likely to see most benefit. It may however be found that improvements in efficient vehicles or alternative fuels promotes a shift back to roads, generating more road traffic and more impacts on the historic environment.
11.	0	0 -	0 -					Probably no significant impact, however it may however be found that improvements in efficient vehicles or alternative fuels promotes a shift back to roads, generating more road traffic and thus impacts on tranquillity..
12.	0	0	0 +					No clear direct link between the option and the objective. Though for listed companies, which are required to report on their carbon footprint through the Carbon Reduction Commitment this may be seen positively by future investors.
13.	0	0 -	0 -					No clear link between the option and the objective unless improvements in efficient vehicles or alternative fuels promotes a shift back to roads, generating more road traffic and thus impacts on communities
14.	0	0	0					No clear link between the option and the objective.

15.	0	+ -	+ -					In the short term existing trends of transportation by road are likely to continue but a long term reduction in greenhouse gas emissions would have positive effects on the wellbeing of local communities by reducing emissions. Communities living near to routes used by heavy goods vehicles would benefit in particular, though it may however be found that improvements in efficient vehicles or alternative fuels promotes a shift back to roads, generating more road traffic and thus impacts on communities
16.	0	0	+				✓	In the short term, existing trends of transportation by road are likely to continue but in the long term a reduction in greenhouse gas emissions could help to reduce climate change effects including incidences of flooding.
17.	+	+	+					Reducing greenhouse gas emissions would help to address the need for resources more sustainably.

Summary of assessment

Option 1 is likely to have a number of positive environmental and social effects through reducing use of road vehicles, though for some objectives there may also be some local negative impacts if the option requires new infrastructure (such as pipelines) to be built. Option 1 could also have implications for minerals supply due to relatively low availability of alternative modes of transport across the Plan area. Option 2 is likely to have greater positive economic effects through providing a more flexible approach although may result in effects on air quality, noise and vibration on local communities. Option 3 would result in additional positive effects for the local environment, climate change and communities where used in conjunction with Option 1 or 2.

Option 4 would have impacts that are broadly similar to a combination of options 1 and 2 and potentially has greater benefits in terms of an overall reduction in traffic and a reduction in greenhouse gas emissions as it presents opportunities for both sustainable location and sustainable mode, though like many other options there is considerable uncertainty in the assessment. It may also be more restrictive than some other options generating possible negative effect on the economy SA objective.

Option 5 is much more negative than other options, as this will broadly allow a continuation of current trends in transport which will work against several of the SA objectives (e.g. climate change / air pollution / wellbeing).

Option 6 is broadly positive in relation to most SA objectives, and particularly the climate change objective, though may also lead to some negative effects, e.g. if future improvements in alternative fuels allow high levels of low carbon vehicles to continue to be used.

Recommendations

Option4 combined with option 3 are considered to be most sustainable. .

North York Moors National Park and the AONBs (id61)

Option 1
Include the Major Development Test[113], as worded in the NPPF, and rely on generic Development Management policies for considering non-major development in the National Park and AONBs.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓	✓	✓	✓	There would be positive effects in relation to the effects of major development on biodiversity as the major development test requires effects on the environment to be considered, but the option would not provide any additional protection relating to the special qualities and objectives of these designated areas that are specific to these areas.
2.	+	+	+	✓			✓	There may be indirect positive effects on water quality in the National Park and AONBs should development be more restricted in these areas as a result of this option.
3.	+	+	+	✓			✓	There could be indirect positive effects on transport miles should the option direct development away from the National Park and AONBs. This would also tend to push such development to parts of the plan area that are better served by high quality transport infrastructure or are closer (though not always) to large markets (having a positive effect on the plan area as a whole).
4.	+	+	+	✓			✓	Under this option there may be positive effects on air quality in the National Park and AONBs as the major development test includes consideration of impacts on the environment. There may be negative effects on air quality elsewhere in the Plan area should this option direct development to other locations, however it is considered that due to air quality being part of the special qualities of these areas that on balance the effects would be positive.
5.	-	-	-	✓		✓		Agricultural land quality in the National Park and the AONBs is generally low so there are unlikely to be any particularly positive effects from restricting development in these areas. However, there may be negative effects should the policy direct development to areas outside of the National Park and AONBs which generally

[113] The wording of the 'Major Development Test' is paragraph 116 of the NPPF.

								have higher quality agricultural land.
6.	0	0	0					No clear link
7.	0	0	0					No clear link
8.	0	0	0					No clear link
9.	0	0	0					No clear link
10.	+	+	+	✓		✓	✓	Effects under this option would be positive in relation to major developments, as the major development test includes consideration of effects on the environment, but without the approach provided for by this option for non-major developments effects on the cultural heritage, in the context of the National Park or AONB designation, would not be considered – consideration would only be given to effects on the assets themselves[114].
11.	+	+	+	✓		✓		Under this option effects would be positive in relation to major developments as the major development test includes consideration of effects on the landscape. For smaller developments, positive effects would occur should the landscape policy of the Plan contain reference to impact on the landscape of the National Park and AONBs.
12.	+	+	+	✓			✓	The major development test contains consideration of impacts on the local economy and therefore this option would have positive effects on this objective.
13.	+	+	+	✓			✓	Under this option consideration would be given to the impact on the local economy, which would include the tourism sector. In addition, should the option restrict major developments in the National Park and AONBs this would help to retain the tourism attraction element of these designations.
14.	+	+	+	✓			✓	Under this option, the major development test includes consideration of any effects on recreational opportunities and would therefore have a positive effect in relation to major developments.
15.	0	0	0					No clear link
16.	0	0	0					No clear link
17.	0	0	0					No clear link

[114] The first National Park purpose is to 'Conserve and enhance the natural beauty, wildlife and cultural heritage of the Park' thus the historic environment of the Park is a fundamental part of its designation.

Option 2
Include the Major Development Test, as in option 1, but also include a criteria based policy setting out the factors that should be considered for any development in the National Park and AONBs, including non-major development. For the National Park this could include specific consideration of impact upon the Park's special qualities, effects of providing opportunities for understanding and enjoyment of the National Park, effects on tranquillity and effects on the image and brand of the Park and, more generally, the ability to achieve the aims of the National Park Management Plan. For AONBs this could include effects on the special qualities and on the ability to achieve the aims of the AONB Management Plans.
In relation to major development, this option would include detailed explanations around each of the strands of the Major Development Test to explain what considerations would be relevant in the case of minerals and waste developments.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+ +	+ +	+ +	✓	✓	✓	✓	Under this option, in addition to applying the 'usual' biodiversity and wildlife considerations, consideration would also be given to effects on wildlife in the context of this being part of the purpose of designation as National Park or AONB, and would enable specific local objectives in this respect to be considered.
2.	+	+	+	✓			✓	There may be indirect positive effects on water quality in the National Park and AONBs should development be more restricted in these areas as a result of this option.
3.	+	+	+	✓			✓	There could be indirect positive effects on transport miles should the option direct development away from the National Park and AONBs.
4.	+ +	+ +	+ +	✓			✓	Effects on this objective would be particularly positive in the National Park where one of the special qualities is identified as 'clear, unpolluted, air' - effects on this special quality would form part of the consideration of any proposals.
5.	0	0	0					Agricultural land quality in the National Park and the AONBs is generally low so there are unlikely to be any effects from restricting development in these areas.
6.	0	0	0					No clear link
7.	0	0	0					No clear link
8.	0	0	0					No clear link
9.	0	0	0					No clear link

10.	+ +	+ +	+ +	✓		✓	✓	This option would enable consideration to be given to historic assets and cultural heritage within the context of their importance to the National Park or AONB designation.
11.	+ +	+ +	+ +	✓		✓	✓	Under this option there would be significant positive effects for the landscape as additional consideration would be given to the landscape of the National Park and AONBs in terms of the special qualities of these designated areas.
12.	+	+	+	✓			✓	The major development test contains consideration of impacts on the local economy and would therefore have positive effects against this objective. Outside of the major development test, whilst smaller developments may be more restricted which have negative effects at the local level, at the cumulative level this could have a positive effect on the economy of the National Park and the AONBs which is supported by the high quality environment, particularly in relation to tourism which is a major part of the economies of these areas.
	-	-	-					
13.	+ +	+ +	+ +	✓			✓	This option would help to support tourism in the National Park and the AONBs through the need to consider these elements of the National Park and AONB Management Plans.
14.	+ +	+ +	+ +	✓		✓		This option would have positive effects on this objective through specifically stating that consideration should be given to effects on opportunities for understanding and enjoying the National Park and on any recreation aims set out in the AONB Management Plans.
15.	0	0	0					No clear link
16.	0	0	0					No clear link
17.	0	0	0					No clear link

Option 3[115]

In association with either option 1 or option 2, for development outside of National Parks and AONBs this option would require consideration to be given to the effects on the setting and views out of these protected areas. These considerations would also apply to the setting of and views out of the adjacent Yorkshire Dales National Park.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

[115] This assessment considers the effects of this additional option only, not the effects of options 1 or 2 which it would act in combination with

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					There may be minor positive effects should mitigation to protect the landscape result in landscaping which also provide biodiversity benefits, but it is considered that not sufficiently significant to warrant a positive score.
2.	0	0	0					No clear link
3.	0	0	0					No clear link
4.	0	0	0					No clear link
5.	-	-	-	✓		✓		This option may lead to development being directed away from the lower quality agricultural land around the National Park and AONBs and towards the higher quality land elsewhere, thus potentially having a negative effect on this objective.
6.	0	0	0					No clear link
7.	0	0	0					No clear link
8.	0	0	0					No clear link
9.	0	0	0					No clear link
10.	0	0	0					No clear link
11.	+ +	+ +	+ +	✓		✓		This option would help to also protect the settings of the National Parks and AONBs, which is not covered within national policy, and would therefore have a strong positive effect on these areas. Minerals and waste developments by their nature are often large scale and industrial in appearance and could be particularly damaging to the setting of these areas. Although there may be localised negative effects on landscapes elsewhere in the Plan area, on balance affording a high level of protection to nationally protected areas is strongly positive.
12.	+ / -	+ / -	+ / -	✓			✓	This option could have negative effects on the economy by restricting development around National Parks and AONBs. On the other hand, effects could be positive due to the importance of the tourism sector to the economies of these areas, which could be harmed by minerals and waste developments in close proximity.
13.	+	+	+	✓			✓	This option will help to support tourism in these protected areas by maintaining the quality of environment (which includes the setting) that attracts visitors.
14.	+ +	+ +	+ +	✓			✓	This option will help to maintain the recreation experience of these protected areas by restricting developments that would detract from the quality of environment (including views from and to the areas, particularly upland areas).

15.	0	0	0					No clear link
16.	0	0	0					No clear link
17.	0	0	0					No clear link

Summary of assessment

Option 2 scores more positively than Option 1, particularly in relation to sustainability objectives that reflect the special qualities of these areas, such as those related to biodiversity, landscape, cultural heritage and clean air. Whilst the assessment recognises there may be negative effects for the economy of these areas through restricting minerals and waste developments it also identifies potential positive effects on the tourism economy of maintaining these high quality environments. Option 3, which could be applied in combination with either Option 1 or Option 2, would on balance have positive effects for the environment of the Plan area, although recognises there may be localised negative effects elsewhere should development be directed away from these protected areas and their surroundings.

Recommendations

It is recommended that a combination of Options 2 and 3 be pursued.

Minerals and Waste Development in the Green Belt (id62)

Assumptions – Section 9 of the NPPF states that Green Belts are in place to serve the following purposes:

- check unrestricted sprawl of large built up areas,
- prevent neighbouring towns merging into each other,
- assist in safeguarding the countryside from encroachment
- preserve the setting and special character of historic towns,
- assist in urban regeneration (paragraph 80);

Option 1

Include a specific policy supporting waste development and minerals extraction and minerals ancillary development within the Green Belt unless it conflicts with the purposes of the Green Belt designation. This option would rely on national planning policy on minerals and waste development in the Green Belt. The NPPF defines minerals extraction as 'not inappropriate' in the Green Belt provided the openness of the Green Belt is maintained (para 90). Draft updated national waste planning policy proposes removing the current approach in PPS10 which requires planning authorities to give significant weight to the locational needs and wider environmental and economic benefits when considering waste proposals in the Green Belt therefore not giving waste proposals any more weight than other proposals.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					There is no clear link between this policy and the objective. There are links between safeguarding open land and biodiversity. However, these are explored within another policy option.
2.	0	0	0					There is no clear link between this policy and the objective.
3.	0	0	0					Any waste and minerals development would need to link into the existing road network. This is not likely to have a severe impact on the purposes of the Green Belt however. The likely effects are therefore neutral.
4.	0	0	0					There is no clear link between this policy and the objective.
5.	+	+	+	✓		✓		The effects on soils and land efficiency could be positive or negative depending on the land being proposed

	-	-	-					for use. This would be location dependent and in comparison to the baseline, it is likely that high quality agricultural areas overlap with the greenbelt. This option is likely to have more negative effects from minerals extraction which is a permitted use, as opposed to waste which is not, under the NPPF. Waste development may be more directed to areas with previously developed land.
6.	?	?	?	✓			✓	The net effects on climate change are uncertain.
7.	0	0	0					There is no clear link between this policy and the objective.
8.	0	0	0					There is no clear link between this policy and the objective.
9.	-	-	-	✓			✓	This option may not enable locations within the south of the plan area to be easily approved for waste development even though their contribution to the waste management network may outweigh negative impacts from their location. It is likely that this may have a minor negative effect.
10.	-	-	-	✓	✓	✓		The NPPF approach would allow mineral extraction in the Green Belt but only where it did not cause conflict with the reason for its designation. This would require an understanding of a sites context and impact in relation to the primary purposes of the Green Belt designation for that area, which is positive. The majority of Green Belt in the plan area is designated to preserve the character and settings of historic towns and city's such as York. Any effects may therefore range from minor to significant depending on the associated operations which would be required, as it is likely that significant effects would be from visual impact of the site. Whilst the NPPF would not allow extraction where there is a conflict, given the language used by the NPPF, the significance of the effects is not explicit and could be open to challenge. Under this option waste development would not automatically be considered within the Green Belt. Any proposal would need to prove its effects similarly to other development against other policies stated within the plan. Overall there is the potential for harmful effects but this is location specific and therefore also uncertain.
	+	+	+					
11.	-	-	-	✓	✓	✓		The greenbelt designations are primarily landscape focussed. The NPPF approach would allow mineral extraction in the Green Belt but only where it did not cause conflict with the reason for its designation. This would require an understanding of a sites context and impact in relation to the primary purposes of the Green Belt designation for that area. The majority of greenbelt in the plan area is designated to preserve the character and settings of historic towns and city's such as York. The effects may therefore range from minor to significant depending on the associated operations which would be required, as it is likely that significant effects would be from visual impact of the extraction site. Whilst the NPPF would not allow extraction where there is a conflict, given the language used by the NPPF, the significance of the effects is not explicit and could be open to challenge. Under this option waste development would not automatically be considered within the Green Belt. Any proposal would need to prove its effects similarly to other development against other policies stated within the plan.
	+	+	+					
12.	+	+	+	✓		✓		This option may have positive effects for enabling the best locations for extraction to be considered should

	-	-	-					they fall within the greenbelt area. However, this option may prove more difficult for locating waste sites given that they are not specifically supported.
13.	0	0	0					There is no clear link between this policy and the objective.
14.	?	?	?	✓		✓	✓	The location of minerals and waste sites in general would also need to balance with areas used for recreational purposes inside and outside of the greenbelt areas. This would be location specific and consequently, the effects are uncertain.
15.	0	0	0					There is no clear link between this policy and the objective.
16.	0	0	0					There is no clear link between this policy and the objective.
17.	0	0	0					There is no clear link between this policy and the objective.

Option 2[116]

Allow a more flexible local approach to waste development proposals in the green belt subject to demonstration that the development would make a significant contribution to the provision of an appropriate overall network of facilities, enabling waste to be moved up the hierarchy and managed in proximity to arisings, and where particularly high standards of siting, design and mitigation of any impacts can be achieved.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					There is no clear link between this policy and the objective.
2.	0	0	0					There is no clear link between this policy and the objective.
3.	0	0	0					Any waste development would need to link into the existing road network. This should not have severe impact on the purposes of the Green Belt however. The likely effects are therefore neutral.
4.	0	0	0					There is no clear link between this policy and the objective.
5.	+	+	+	✓		✓		Effects are similar to Option 1. The effects on soils and land use efficiency could be positive or negative depending on the land being proposed for use and its agricultural land use value.
	-	-	-					
6.	?	?	?	✓			✓	The net effects on climate change are uncertain.
7.	0	0	0					There is no clear link between this policy and the objective.
8.	0	0	0					There is no clear link between this policy and the objective.
9.	++	++	++	✓	✓	✓		This option would help to ensure that the best locations across the plan area are considered for the location of waste sites through further consideration for their contribution to waste management. This policy specifies that new development in Green Belt would need to demonstrate that it would enable waste to be moved up the hierarchy and managed in proximity to arisings. This is likely to meet the needs for waste management across the plan area and have a positive effect in relation to this objective.

[116] In this assessment, because the default position for minerals would be the NPPF, only the effects of waste development are considered.

10.	- ?	- ?	- ?	✓	✓	✓		The effects would be comparable to Option 1 in terms of potential conflict with the purpose of the greenbelt in relation to waste development. However, the approach set out by this policy would not necessarily refuse development where it is in conflict with the purposes of designation. The "high standards of siting, design and mitigation" would need to specifically include Green Belt considerations, similarly to Option 1, to ensure that impacts on this were minimised. Overall there is the potential for location specific harmful effects and therefore there is also some uncertainty (as specific locations are not yet known).
11.	- ?	- ?	- ?	✓	✓	✓		The effects would be comparable to Option 1 in terms of potential conflict with the purpose of the Green Belt in relation to waste development. However, the approach set out by this policy would not necessarily refuse development where it is in conflict with the purposes of designation. The "high standards of siting, design and mitigation" would need to specifically include Green Belt considerations, similarly to Option 1, to ensure that impacts on this were minimised.
12.	+	+	+ ?	✓		✓		This option may have a positive effect on this objective as the increased flexibility would enable the best locations for extraction/waste management to be considered should they fall within the greenbelt area.
13.	0	0	0					There is no clear link between this policy and the objective.
14.	?	?	?	✓		✓	✓	The location of minerals and waste sites in general would also need to balance with areas used for recreational purposes inside and outside of the greenbelt areas. This would be location specific and consequently, the effects are uncertain.
15.	0	0	0					There is no clear link between this policy and the objective.
16.	0	0	0					There is no clear link between this policy and the objective.
17.	0	0	0					There is no clear link between this policy and the objective.

Option 3[117]

This option would represent an alternative to Option 2 by only providing a more flexible approach to waste development in the Green Belt where the development would be located at existing Green Belt waste management facilities within the Plan area, as well as being subject to the other criteria outlined in Option 2.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					There is no clear link between this policy and the objective.
2.	0	0	0					There is no clear link between this policy and the objective.
3.	0	0	0					Any waste development would need to link into the existing road network. This should not have severe impact on the purposes of the Green Belt however. The likely effects are therefore neutral.
4.	0	0	0					There is no clear link between this policy and the objective.
5.	+	+	+					The effects on soils and land efficiency could be more positive in comparison to Option 2. Where sites are already in use, this option may enhance land use efficiency and it can be assumed that issues with regards to soils may already be managed through a regulatory regime.
6.	?	?	?	✓			✓	The net effects on climate change are uncertain.
7.	0	0	0					There is no clear link between this policy and the objective.
8.	0	0	0					There is no clear link between this policy and the objective.
9.	+	+	+	✓	✓	✓		This option would help to ensure that the existing locations across the plan area are considered for waste management. This is likely to have a positive effect given that sites which may already be managing waste and are within the Green Belt could be considered. However, this may limit the opportunities elsewhere in the Green Belt where other sites may be more preferable to existing sites.
	-	-	-					
10.	?	?	?	✓	✓	✓		This option would consider sites already managing waste within the Green Belt but not new locations for

[117] In this assessment, because the default position for minerals would be the NPPF, only the effects of waste development are considered.

	+	+	+					waste management. There may be two main effects to consider; firstly this approach may help to minimise the use of alternative locations should an existing location be suitable for use and secondly, using an existing site may not have greater impact as the site is already in use. However, particular existing locations may have a detrimental impact and all proposed locations would also be subject to implementation of the "high standards of siting, design and mitigation" to ensure that impacts on this objective were minimised. Minimising completely new sites may be beneficial for this objective by not allowing development which may conflict with the reason for a locations' Green Belt designation. On balance, the overall effects may be more positive than option 2 but remain uncertain.
11.	? +	? +	? +	✓	✓	✓		This option would consider sites already managing waste within the Green Belt but not new locations for waste management. There may be two main effects to consider; firstly this approach may help to minimise the use of alternative locations should an existing location be suitable for use and secondly, using an existing site may not have greater impact as the site is already in use. However, particular existing locations may have a detrimental impact and all proposed locations would also be subject to implementation of the "high standards of siting, design and mitigation" to ensure that impacts on this objective were minimised. Minimising completely new sites may be beneficial for this objective by not allowing development which may conflict with the reason for a locations' Green Belt designation. On balance, the overall effects may be more positive than option 2 but remain uncertain.
12.	+	+	+ ?	✓		✓		This option may have a positive effect on this objective as the increased flexibility would enable the existing locations for waste management within the Green Belt to be considered for further development. As existing infrastructure is already in place, this may minimise costs and enable waste management facilities to be located close to waste arisings.
13.	0	0	0					There is no clear link between this policy and the objective.
14.	?	?	?	✓	✓	✓		The location of minerals and waste sites in general would also need to balance with areas used for recreational purposes inside and outside of the Green Belt areas. This would be location specific and consequently, the effects are uncertain.
15.	0	0	0					There is no clear link between this policy and the objective.
16.	0	0	0					There is no clear link between this policy and the objective.
17.	0	0	0					There is no clear link between this policy and the objective.

Proposed alternative option 4: (Or) This option would support development within the Green Belt where it can be demonstrated that the location is required for operational reasons.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					There is no clear link between this policy and the objective.
2.	0	0	0					There is no clear link between this policy and the objective.
3.	+	+	+					It is possible that one of the operational reasons that requires the location of a development in greenbelt is proximity to transport infrastructure. In such a situation a minor positive effect may result however there is much uncertainty as effects would be location/development specific.
	?	?	?					
4.	0	0	0					There is no clear link between this policy and the objective.
5.	+	+	+					The effects on soils and land efficiency could be positive or negative depending on the land being proposed for use. This would be location dependent and in comparison to the baseline, however it is likely that high quality agricultural areas overlap with the greenbelt.
	-	-	-					
6.	?	?	?					The net effects on climate change are uncertain.
7.	0	0	0					There is no clear link between this policy and the objective.
8.	0	0	0					There is no clear link between this policy and the objective.
9.	+	+	+					This option would help to ensure that should the most viable location for minerals and waste development lie

	?	?	?					in the Green Belt, that these locations are supported. This is likely to aid in meeting the needs for waste management in particular across the plan area, although no particular emphasis is provided on managing waste as high up the waste hierarchy as possible. Effects are therefore considered to be minor positive with some uncertainty.
10.	- -- ?	- -- ?	- -- ?					This option could lead to a potential conflict with the purpose of the Green Belt designation. Under this option the operational requirements of a development would be given greater weight than the protection of the Green Belt designation as a development may be supported in locations where it would conflict with the purposes of Green Belt if the location can be shown to be required for operational reasons. This may have a visual impact upon the historic character and setting of the City of York and other settlements in the south of the plan area (where areas of Green Belt are located). Although there is some uncertainty, potential for harmful effects exists, ranging from minor to significant depending on the nature and location of development.
11.	- -- ?	- -- ?	- -- ?					This option could lead to a potential conflict with the purpose of the Green Belt designation. Under this option the operational requirements of a development would be given greater weight than the protection of the Green Belt designation as a development may be supported in locations where it would conflict with the purposes of Green Belt if the location can be shown to be required for operational reasons. This may have a landscape impact particularly in relation to encroachment on the countryside and the setting and special character of historic towns. Although there is some uncertainty, potential for harmful effects exists, ranging from minor to significant depending on the nature and location of development.
12.	+ -	+ -	+ -					This option may have positive effects for enabling the development of sites that need to be located in Green Belt for operational reasons and may not otherwise be feasible elsewhere. However, where development in the Green Belt conflicts with the purpose of the designation, for example, through negative impacts upon the setting or character of historic towns, this may have a negative economic impact e.g. upon tourism in the localised area.
13.	0	0	0					There is no clear link between this policy and the objective.
14.	?	?	?					The location of minerals and waste sites in general would also need to balance with areas used for recreational purposes inside and outside of the greenbelt areas. This would be location specific and consequently, the effects are uncertain.
15.	0	0	0					There is no clear link between this policy and the objective.
16.	0	0	0					There is no clear link between this policy and the objective.

17.	+	+	+					This option would support development in Green Belt that is required to be located there for operational reasons. This may positively contribute towards the sub-objective 'to enable development and wider activity to meet the needs of the population'.

Summary of assessment

Option 1 is likely to have positive effects on the landscape and historic environment as they are part of the reason for local Green Belt designation. However, this may result in effects on the economy and minerals supply through potentially restricting extraction in the Green Belt. Under Option 2 there would be no local policy basis for the consideration of minerals proposals in the Green Belt so effects would, by default, be the same as option 1, although with greater uncertainty as to what the policy framework would be.

Option 1 may have implications for provision of sufficient waste management facilities around York and the southern part of the Plan area. However, Option 2 would enable a more flexible approach which would deal with these issues, although could result in effects similar to Option 1 on the landscape and historic character and setting of the historic towns and cities. Similarly, Option 3 would have a flexible approach to location using existing sites in the greenbelt. This option may have positive implications for land use efficiency and potentially minimise additional adverse effects on the landscape and historic environment although it is acknowledged that it may also reduce opportunities where alternative locations in the Green Belt may be preferable.

Option 4 has the potential to result in negative impacts upon cultural heritage and landscape as it would support development that would conflict with the purpose of the Green Belt designation where it can be shown that development is required in that location for operational purposes. This may however lead to some positive effects in relation to the economy, transport and addressing the needs of a changing population as it would enable necessary development.

Recommendations

It is recommended that option 1 is pursued for minerals and option 3 pursued for waste. However, to minimise the effects on the green belt, more specific criteria could be developed, particularly in relation to waste sites in option 3, to address outstanding concerns regarding the historic character and landscape setting.

Landscape (id63)

Assumptions – For this assessment it is assumed that developers will read the National Policy Framework and other relevant Local Plans alongside the policies that arise from these options. It is also assumed that whether the options are pursued or not, there will remain a continued demand for minerals and waste development within the Plan Area.

Option 1

This option would support proposals which demonstrate that unacceptable impact on the landscape would not arise, having regard to the nature and purpose of any statutory or non-statutory designations that apply, including the setting of these designations, and taking into account any mitigation measures. In ensuring there will be no unacceptable landscape impact consideration should be given to the wider landscape character and context of the site (including visual impact) in the design of the scheme and any mitigation measures proposed, including the need where relevant for landscaping proposals to take into account any impacts on the setting of local settlements and to be developed and implemented alongside measures to protect and where practicable enhance biodiversity, geo-diversity, the historic environment and local amenity.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+ +	✓	✓	✓		The option would have beneficial effects in the short term as it provides for landscaping, design and other mitigation measures that, where practicable, support biodiversity and geodiversity. In the longer term a cumulative positive effect could occur as more biodiversity friendly landscaping proposals are implemented.
2.	-	-	-		✓		✓	There is some uncertainty as to this option's effect on water quality and supply. For instance, the emphasis placed on regard for the setting of statutory and non-statutory landscapes may encourage some clustering of sites away from these designations (and towards other constraints such as Nitrate Vulnerable Zones or Source Protection Zones). This effect is likely to be moderated by the fact that such 'regard' includes the taking into account of mitigation measures (design and landscaping may reduce some effects on water), and the consideration that minerals at least must extracted where they are found.
	?	?	?					
3.	0	0	0	✓			✓	Although effects are small scale, if this option results in a shift away from protected landscapes and their settings it is likely to also result in sites that are situated closer to markets and are more accessible to employees.
	+	+	+					

4.	0	0	0					No clear link
5.	-	-	-	✓		✓		By steering land away from the most sensitive landscapes (which are often on land of lower soil quality) this option will increase the likelihood that negative effects may occur on the best and most versatile land in central parts of the Plan Area.
6.	+	+	+	✓			✓	This option supports Objective 6's sub objective: 'promote carbon storage through appropriate land management' This is because it steers inappropriate development away from areas with the highest existing carbon storage, and also allows for some benefits from carbon sequestration to be realised through biodiversity friendly landscaping. A less certain, but positive effect, may also be that the option reduces journey distances, and thus carbon used, by limiting the potential for development in the less accessible parts of the plan area (i.e. the protected landscapes).
7.	+	+	+	✓		✓		By integrating landscaping with the local biodiversity context, this option is likely to increase the permeability / connectivity of local areas for the movement of wildlife, and potentially offer other small scale benefits such as slowing water run – This is likely to increase adaptive capacity[118] for climate change.
8.	0	0	0					No clear link
9.	0	0	0					No clear link
10.	+	+	+	✓		✓		The option makes a clear link to enhancing the historic environment, which should benefit this objective.
11.	+ +	+ +	+ +	✓	✓	✓		This option is very compatible with most SA sub objectives.
12.	+	+	+		✓		✓	This option, by protecting the purpose and setting of National Parks and AONBs, and through consideration of historic environment, will help maintain the allure of many of the Plan Area's and wider area's tourism assets, such as the National Parks and the setting of the City of York. This will encourage local economic activity. This effect is expected to be relatively small scale (assuming that minerals and waste development would still happen, only somewhere else or with more informed mitigation).
	0	0	0					
13.	+	+	+	✓	✓		✓	This option, by protecting the purpose and setting of National Parks and AONBs, and through consideration of historic environment, will help maintain the allure of many of the Plan Area's and wider area's tourism assets, such as the National Parks and the setting of the City of York, thus benefitting this SA objective.
	0	0	0					
14.	+	+	+	✓			✓	This option would help protect the recreation value of National Parks and AONBs by steering inappropriate / unacceptable development away from them.

[118] Adaptive capacity is the 'ability or potential of a system to respond successfully to climate variability and change'. So creating a more 'connected' landscape allows species to move to more favourable areas if conditions become less favourable in their original habitat. See IPCC, 2007. IPCC Fourth Assessment Report [URL: http://www.ipcc.ch/publications_and_data/ar4/wg2/en/ch17s17-3.html]

15.	0 +	0 +	0 +	✓			✓	This option is likely to maintain a high quality environment with some benefits to overall wellbeing[119].
16.	-	-	-	✓		✓		While there will be some benefits to the reduction of flood risk that result from landscaping proposals, the protections afforded to designated landscapes are likely to steer development away from the higher parts of the plan area and towards areas of greater flood risk.
17.	0	0	0					No clear link

[119] See for example: Verlade et al, 2007. Health effects of viewing landscapes – landscape types in environmental psychology. Urban Forestry and Greening (6) 2007, pp199 – 212

Option 2

This option would not set out a specific local policy for protection and enhancement of the landscape and would rely on national policy in the NPPF, together with any other relevant policies in the development plan[120], including the general criteria policy set out earlier in this chapter. Landscape policy in the NPPF states that the planning system should protect and enhance valued landscapes (para 109) and should give great weight to conserving landscape and scenic beauty in National Parks and AONBs (para 115).

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	?	?	?					It is uncertain what the effects of this option would be as the NPPF[121] does not make explicit the link between landscape and biodiversity outside of national parks and AONBs, and it is uncertain as to the extent that other plan policies would cover issues such as protection of setting and character until preferred options are expressed (though some options put forward would seem likely to offer benefits to biodiversity / geodiversity that could be implemented concurrently to landscaping (e.g. some of the biodiversity and geodiversity and sustainable design options)). A greater level of uncertainty would result under this option in the longer term as the implications of future revisions to national policy are unknown.
2.	- ?	- ?	?		✓		✓	As with option 1 this option may increase the likelihood that sensitive water receptors might come into the scope of minerals and waste sites. Effects may be moderated by other policies in the plan (though until options have been considered this is uncertain), other plans, and the emphasis on avoiding water pollution in the NPPF.

[120] This includes this Local plan and district level Local Plans

[121] Although protected in relation to certain categories of development, paragraphs 114 and 115 of the NPPF are most relevant. These paragraphs maintain the character of distinctive and protected landscapes, but do little to direct a contextual approach, including biodiversity context, at a local (perhaps not particularly distinctive) level.

								A greater level of uncertainty would result under this option in the longer term as the implications of future revisions to national policy are unknown.
3.	0 +	0 +	?	✓			✓	As with option 1, although effects are small scale, if this option results in a shift away from protected landscapes and their settings it is likely to also result in sites that are closer to markets and more accessible to employees. A greater level of uncertainty would result under this option in the longer term as the implications of future revisions to national policy are unknown.
4.	0	0	0					No clear link
5.	-	-	?	✓		✓		As with option 1, by steering land away from the most sensitive landscapes (which are often on land or lower soil quality) this option will increase the likelihood that negative effects my occur on the best and most versatile land in central parts of the Plan Area. A greater level of uncertainty would result under this option in the longer term as the implications of future revisions to national policy are unknown.
6.	+	+	?	✓			✓	Although option 1 performs better against this objective, by adhering to the NPPFs requirements for the landscape and scenic beauty of protected landscapes, areas that are highly beneficial for carbon storage will be avoided, and journey lengths to market will be less. A greater level of uncertainty would result under this option in the longer term as the implications of future revisions to national policy are unknown.
7.	?	?	?					It is uncertain as to whether this option would benefit adaptation to climate change as other policies in this plan are not yet developed, and local policies in other plans have been created with other forms of development in mind (rather than the distinctive requirements associated with landscaping in and around minerals and waste sites). Further uncertainty would result under this option in the longer term as the implications of future revisions to national policy are unknown.
8.	0	0	0					No clear link

9.	0	0	0					No clear link
10.	?	?	?					No specific link is made between landscaping and the historic environment in this option. Other plans are in different stages of development so this option would be subject to potential inconsistencies in the district level approach to landscaping and the historic environment (though in some areas there may be a positive effect – for instance Hambleton's Development Policies DPD makes a strong link between general design of development and its historic context). Further uncertainty would result under this option in the longer term as the implications of future revisions to national policy are unknown.
11.	+	+	?	✓	✓	✓		This option is broadly positive (but not as much as option 1). Only a minor positive effect can be reported as there is no emphasis on protecting the setting of protected landscapes in the NPPF, and while local plans have landscape policies, these are at different stages of development and ultimately may differ in application. A greater level of uncertainty would result under this option in the longer term as the implications of future revisions to national policy are unknown.
12.	+	+	?	✓			✓	This option, by relying on the NPPF and other plans would deter development from National Parks and AONBS, thus protecting key tourism assets, but not as strongly as option 1 as this option would be less likely to protect the setting of these tourism assets. It also, through the protection afforded by the NPPF, would protect the setting of heritage assets, again allowing for a small scale benefit to economic activity (assuming that minerals and waste development would still happen, only somewhere else or with more informed mitigation). A greater level of uncertainty would result under this option in the longer term as the implications of future revisions to national policy are unknown.
	0	0						
13.	+	+	?	✓			✓	This option, by relying on the NPPF and other plans would deter development from National Parks and AONBS, thus protecting key tourism assets, but not as strongly as option 1 as it would be less likely to protect the setting of these tourism assets. A greater level of uncertainty would result under this option in the longer term as the implications of future revisions to national policy are unknown.
	0	0						

14.	+	+	?	✓			✓	In a similar way to option 1, this option would help protect the recreation value of National Parks and AONBs by steering inappropriate / unacceptable development away from them. (The recreational value under option 1 may be slightly higher due to its emphasis on protecting settings). A greater level of uncertainty would result under this option in the longer term as the implications of future revisions to national policy are unknown.
15.	0 +	0 +	?	✓			✓	This objective is likely to maintain a high quality environment with some benefits to overall wellbeing. However, the lack of emphasis on landscaping under this option (while appropriate landscaping is required by the NPPF, and it may be covered in some local plans) may reduce the prospect of high quality environments at a local scale. A greater level of uncertainty would result under this option in the longer term as the implications of future revisions to national policy are unknown.
16.	-	-	?	✓		✓		The protection afforded to designated landscapes are likely to steer a major proportion of minerals and waste development away from the higher parts of the plan area and towards areas of greater flood risk. Under this option there is no explicit emphasis on landscaping (well-designed landscaping can play a role in reducing flood risk). A greater level of uncertainty would result under this option in the longer term as the implications of future revisions to national policy are unknown.
17.	0	0	0					No clear link

Summary of assessment

Generally these options have a neutral to positive effect on sustainable development, with Option 1 performing moderately better against a number of objectives. A greater level of uncertainty would result under Option 2 as the implications of future revisions to national policy are unknown.

The most positive associations under option 1 relate to biodiversity / geodiversity, climate change mitigation and adaptation, heritage, landscapes and recreation. Similar benefits would result from Option 2, though with greater uncertainties in relation to climate change adaptation and the historic environment. Under both options there are minor negative effects on soils and flooding, largely due to development being favoured in the more fertile lowlands (and thus often in floodplain), which are less recognised for their landscapes, and on water.

Recommendations
In terms of this sustainability appraisal, while there are benefits and dis-benefits associated with both options, option 1 is favoured. However, policies elsewhere in the Local Plan should address the potential negative effects associated with soils, flooding and the water environment.

Biodiversity and Geodiversity (id64)

Assumptions: It is assumed that, under Options 3, 4 and 5 biodiversity offsetting would not be used as a means of making unacceptable development acceptable.

Option 1
This option would not set out specific local policy for protection and enhancement of biodiversity and geodiversity and would rely on national policy in the NPPF, together with any other relevant policies in the development plan. In summary, biodiversity policies in the NPPF state that the planning system should minimise impacts on biodiversity and provide net gains where possible, contributing to ecological networks (para 109), preserve, restore or re-create priority habitats, ecological networks and protect or recover priority species, prevent harm to geological conservation assets (para 117) and only approve development where significant harm can be avoided, mitigated or as a last resort compensated for, avoid the loss of irreplaceable habitats, protect statutorily protected sites and encourage opportunities to incorporate biodiversity in and around developments (para 118).

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+ +	+ +	?	✓	✓	✓	✓	The option would have positive effects on biodiversity as the NPPF contains policies to protect and enhance biodiversity. By not having a policy in the Plan however this may suggest that biodiversity has reduced importance and could lead to uncertainties in the longer term should national policy change. In the longer term effects would be uncertain should national policy be amended or replaced.
2.	+	+	?	✓			✓	The option could have indirect positive effects on water quality as protecting and enhancing areas for biodiversity is likely to ensure that water quality and particularly water body status (as recorded in River Basin Management Plans written to fulfil the Water Framework Directive) is protected. In the longer term effects would be uncertain should national policy be amended or replaced.
3.	0	0	0					No clear link

4.	+	+	?	✓			✓	The option could have indirect positive effects on air quality[122] as protecting and enhancing areas for biodiversity is likely to ensure that air quality is protected. It is however acknowledged that trees and plants are a source of volatile organic compounds which can result in localised air quality health related issues but it is considered on balance effects would be positive. In the longer term effects would be uncertain should national policy be amended or replaced.
5.	+	+	?	✓			✓	This option is likely to have positive effects on soil quality as protecting and enhancing biodiversity is likely to involve protecting soils. In the longer term effects would be uncertain should national policy be amended or replaced.
6.	0	0	0					No clear link
7.	+	+	?	✓		✓		The NPPF requires planning policies to promote the preservation, restoration and re-creation of ecological networks, however it does not set out any specific requirements in relation to how this would relate to the consideration of a planning application and positive effects may therefore be limited. In the longer term effects would be uncertain should national policy be amended or replaced.
8.	0	0	0					No clear link
9.	0	0	0					No clear link
10.	0	0	0					No clear link
11.	+	+	?	✓			✓	The option could have indirect positive effects on landscape as protecting and enhancing areas for biodiversity is likely to also ensure that the landscape is protected, as habitats are an integral part of the landscape. In the longer term effects would be uncertain should national policy be amended or replaced.
12.	- +	- +	?		✓		✓	The option may have a negative effect should it lead to the prevention of a particular development, however overall the protection and enhancement of biodiversity is integral the provision of an environment which is attractive for investors and may have positive effects in this respect. In the longer term effects would be uncertain should national policy be amended or replaced.
13.	- +	- +	?		✓		✓	The option may have a negative effect should it lead to the prevention of a particular development, however overall the protection and enhancement of biodiversity is integral the provision of an environment which is attractive for investors, and therefore leads to job creation, and may have positive effects in this respect. Also, maintaining biodiversity can help to maintain an attractive environment which supports tourism. In the longer term effects would be uncertain should national policy be amended or replaced.
14.	+	+	?	✓			✓	Protecting and enhancing biodiversity for recreation, particularly in the National Park in terms of providing opportunities for understanding and enjoying the Park (the second statutory purpose). Elsewhere, there are

[122] References at http://urbanforestrynetwork.org/benefits/air%20quality.htm and http://laqm.defra.gov.uk/documents/What_impact_do_trees_have_on_air_pollutant_concentrationsv1.pdf highlight the positive effects of trees on air quality.

								likely to be similar benefits where the recreational experience is supported by the presence of habitats and wildlife. In the longer term effects would be uncertain should national policy be amended or replaced.
15.	0	0	0					No clear link
16.	0	0	0					No clear link
17.	-	-	?	✓			✓	Protecting biodiversity may have negative effects on this objective should it result in minerals developments not coming forward, leading to a lack of materials for development and other uses. In the longer term effects would be uncertain should national policy be amended or replaced.

Option 2

This option would support proposals which demonstrate that unacceptable impacts on biodiversity and geodiversity would not arise, having regard to any statutory or non-statutory designations and/or legal protections that apply as well as any agreed local priority habitats, habitat networks and species, looking to avoid effects and, where this is not possible, mitigate effects. Proposals should look to contribute towards the delivery of agreed biodiversity and geodiversity objectives, including those set out in agreed Biodiversity or Geodiversity Action Plans, or in line with agreed priorities of any relevant Local Nature Partnership, with the aim of achieving net gains for biodiversity or geodiversity where feasible.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	**Impact / timescale**			**Type of effect**				**Analysis**
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	+ +	+ +	+ +	✓	✓	✓	✓	This option would have strong direct positive effects against this objective by ensuring development is only supported where there would be no unacceptable impact on biodiversity and geodiversity. It provides greater links with local nature conservation objectives than option 1 by including reference to Local Nature Partnerships (of which there is currently one in the Joint Plan area) and to local Biodiversity and Geodiversity Action Plans, thus enabling consideration to be given to effects on local priorities.
2.	+	+	+	✓			✓	The option could have indirect positive effects on water quality as protecting and enhancing areas for biodiversity is likely to ensure that water quality is protected.
3.	0	0	0					No clear link
4.	+	+	+	✓			✓	The option could have indirect positive effects on air quality as protecting and enhancing areas for biodiversity

								is likely to ensure that air quality is protected.
5.	+	+	+	✓			✓	This option is likely to have positive effects on soil quality as protecting and enhancing biodiversity is likely to involve protecting soils.
6.	+	+	+					Maintaining habitats in situ would have positive effects related to maintaining stores of carbon, particularly should this relate to grasslands, heathland and woodlands.
7.	+	+	+ +	✓		✓	✓	This option would enable consideration to be given to the effects a development may have on local habitat networks, enabling these to specifically be protected or enhanced, thus providing a contribution towards climate change adaptation. Over the longer term effects may become more positive, either in respect of the creation of better networks or the significance of the networks as effects of climate change increase. Retaining habitats also plays an important role in moderating the effects of climate change, such as through flood risk regulation and (in urban areas) temperature regulation.
8.	0	0	0					No clear link
9.	0	0	0					No clear link
10.	0	0	0					No clear link
11.	+	+	+	✓			✓	The option could have indirect positive effects on landscape as protecting and enhancing areas for biodiversity is likely to also ensure that the landscape is protected, as habitats are an integral part of the landscape.
12.	- / +	- / +	- / +		✓		✓	The option may have a negative effect should it lead to the prevention of a particular development, however overall the protection and enhancement of biodiversity is integral the provision of an environment which is attractive for investors and may have positive effects in this respect. Linking with local biodiversity objectives may be particularly beneficial as these have been set in the context of the economy and characteristics of the local area.
13.	- / +	- / +	- / +		✓		✓	The option may have a negative effect should it lead to the prevention of a particular development, however overall the protection and enhancement of biodiversity is integral to the provision of an environment which is attractive for investors, and therefore leads to job creation, and may have positive effects in this respect. Also, maintaining biodiversity can help to maintain an attractive environment which supports tourism. Linking with local biodiversity objectives may be particularly beneficial as these have been set in the context of the economy and characteristics of the local area.
14.	+	+	+	✓			✓	The Special Qualities of the National Park includes 'A special mix of upland, lowland and coastal habitats; a wide variety of wildlife dependent on these' and therefore protecting and enhancing biodiversity in the National Park will have positive effects on providing opportunities for understanding and enjoying the Park (the second statutory purpose). Elsewhere, there are likely to be similar benefits where the recreational experience is supported by the presence of habitats and wildlife.

15.	0	0	0					No clear link
16.	0	0	0					No clear link
17.	-	-	-	✓			✓	Protecting biodiversity may have negative effects on this objective should it result in minerals developments not coming forward, leading to a lack of materials for development and other uses.

Option 3

Where impacts cannot be avoided and mitigation is not feasible and the need for the development overrides the need to protect the site, habitat or species, this option would support the principle of biodiversity offsetting in relation to fully compensating for any losses and would require any gains to be related to the planning authority area in which the loss occurred.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	+ +	+ +	+ +	✓		✓	✓	This option would enable gains for biodiversity to be secured where new development is permitted which would result in biodiversity losses. It is assumed that the policy would not provide a means to approve development which would otherwise be unacceptable. These gains could contribute to local priorities for biodiversity. Some uncertainty exists around irreplaceable habitats such as ancient woodland as the loss of such features could not be replaced through offsetting and this option would not therefore provide benefits for such habitats.
	?	?	?					
2.	0	0	0					No clear link
3.	0	0	0					No clear link
4.	0	0	0					No clear link
5.	0	0	0					No clear link
6.	?	?	?					While offsetting may lead to net gains for the biomass contained in habitats, it is less clear if that portion of the carbon held in underlying substrates would be retained, or allowed time to mature. For instance, loss of deep peat substrate may lead to loss of a carbon store.

7.	+	+	+ +	✓			✓	This option may provide opportunities to secure enhancements to habitat networks which would help species in adapting to the effects of climate change. Overall the benefits would become greater over time.
8.	0	0	0					No clear link
9.	0	0	0					No clear link
10.	0	0	0					No clear link
11.	0	0	0					No clear link
12.	?	?	?	✓			✓	The option may have some effect on the viability of development although at this stage this is not known. This will need to be ascertained as part of the production of the Plan should this option be pursued (as required by paragraph 173 of the NPPF).
13.	?	?	?	✓			✓	The option may have some effect on the viability of development, therefore affecting job creation, although at this stage this is not known. This will need to be ascertained as part of the production of the Plan should this option be pursued (as required by paragraph 173 of the NPPF).
14.	0	0	0					No clear link
15.	+	+	+	✓			✓	If the offsetting provision is replacing a biodiversity asset that also had value to the local community, this option would have positive effects as it would be replacing the asset with a new (larger) one within the same area. If this option is pursued this could be reinforced through the inclusion of a requirement to provide the offset in a location where the community could still benefit.
16.	0	0	0					No clear link
17.	0	0	0					No clear link

Option 4

Where impacts cannot be avoided and mitigation is not feasible and the need for the development overrides need to protect the site, habitat or species, this option would support the principle of biodiversity offsetting in relation to fully compensating for any losses and would not specify where the gains should take place.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓		✓	✓	Whilst this option would provide benefits for biodiversity which would not be realised without the option, these benefits may not relate to the Joint Plan area and would therefore not contribute to local biodiversity priorities. It is assumed that the policy would not provide a means to approve development which would otherwise be unacceptable. Some uncertainty exists around irreplaceable habitats such as ancient woodland as the loss of such features could not be replaced through offsetting and this option would not therefore provide benefits for such habitats.
	?	?	?					
2.	0	0	0					No clear link
3.	0	0	0					No clear link
4.	0	0	0					No clear link
5.	0	0	0					No clear link
6.	?	?	?					While offsetting may lead to net gains for the biomass contained in habitats, it is less clear if that portion of the carbon held in underlying substrates would be retained, or allowed time to mature. For instance, loss of deep peat substrate may lead to loss of a carbon store.
7.	+	+	+ +	✓			✓	This option may provide opportunities to secure enhancements to habitat networks which would help species in adapting to the effects of climate change, and the benefits would increase over time as more offsets are secured. However these benefits may occur in locations away from the Joint Plan area but would nevertheless assist with wider adaptation to climate change. At a local scale, however, some benefits conferred by habitats may be lost, for instance the cooling and air pollution intake benefits of trees.
	-	-	-					
8.	0	0	0					No clear link
9.	0	0	0					No clear link
10.	0	0	0					No clear link
11.	0	0	0					No clear link
12.	?	?	?	✓			✓	The option may have some effect on the viability of development although at this stage this is not known. This will need to be ascertained as part of the production of the Plan should this option be pursued (as required by paragraph 173 of the NPPF).
13.	?	?	?	✓			✓	The option may have some effect on the viability of development, therefore affecting job creation, although at

								this stage this is not known. This will need to be ascertained as part of the production of the Plan should this option be pursued (as required by paragraph 173 of the NPPF).
14.	0	0	0					No clear link
15.	-	-	-	✓			✓	This option would enable the offset to be provided for in any location which could result in the loss of an asset which is valued by the community, should the site to be developed hold value with the community for its wildlife interest.
16.	0	0	0					No clear link
17.	0	0	0					No clear link

Proposed option 5: (And) Under this option biodiversity offsetting would not be applied where harm relates to international and national statutory protected sites

Note: It is assumed that this option would act in combination with either option 3 or 4.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	-	-	-	✓		✓		As it is assumed that offsetting would not be used to make unacceptable development acceptable (i.e. the development is acceptable in its own rights without offsetting) this option would represent a lost opportunity to secure additional gains for biodiversity (e.g. adding to ecological networks, or securing local off site compensation).
2.	0	0	0					No clear link
3.	0	0	0					No clear link
4.	0	0	0					No clear link
5.	0	0	0					No clear link
6.	0	0	0					No clear link
7.	-	-	-	✓		✓		As it is assumed that offsetting would not be used to make unacceptable development acceptable (i.e. the

								development is acceptable in its own rights without offsetting) this option would represent a lost opportunity to secure additional gains which would contribute to improving habitat networks and reducing the vulnerability of biodiversity to climate change.
8.	0	0	0					No clear link
9.	0	0	0					No clear link
10.	0	0	0					No clear link
11.	0	0	0					No clear link
12.	?	?	?	✓			✓	Offsetting may have some effect on the viability of development although at this stage this is not known. This will need to be ascertained as part of the production of the Plan should this option be pursued (as required by paragraph 173 of the NPPF). As the requirements for offsetting are reduced under this option it is likely that any effects would be reduced (but remain uncertain).
13.	?	?	?	✓			✓	Offsetting may have some effect on the viability of development, therefore affecting job creation, although at this stage this is not known. This will need to be ascertained as part of the production of the Plan should this option be pursued (as required by paragraph 173 of the NPPF). As the requirements for offsetting are reduced under this option it is likely that any effects would be reduced but remain uncertain.
14.	0	0	0					No clear link
15.	-	-	-	✓		✓		Under this option where there is loss of or harm to international or national protected sites which also have value for recreational purposes, there would be no requirement for this to be replaced.
16.	0	0	0					No clear link
17.	0	0	0					No clear link

Proposed option 6: (Or) Under this option development would not be permitted where there would be overall losses to biodiversity

Note: It is assumed that 'overall' implies that short term and/or local losses could be mitigated by long term and/or more distant enhancements.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale	Type of effect	Analysis

	S	M	L	P	T	D	I	
1.	+ +	+ +	+ +	✓		✓		Under this option no overall losses would be permitted, and longer term enhancements would still take place, and it would therefore have significantly positive effects for biodiversity.
2.	+ ?	+ ?	+ ?	✓			✓	The option may lead to lower levels of development coming forward, and could therefore have indirect positive effects on maintaining water quality and supply in the Plan area. However, effects may be displaced to locations outside the Plan area should there be a need for the development.
3.	-	-	-		✓		✓	The option may lead to lower levels of development coming forward in the Plan area which may increase the distance over which minerals and waste need to be transported.
4.	+ ?	+ ?	+ ?	✓			✓	The option may lead to lower levels of development coming forward, and could therefore have indirect positive effects on maintaining water quality and supply in the Plan area. However, effects may be displaced to locations outside the Plan area should demand for the development still need to be met.
5.	+ ?	+ ?	+ ?	✓			✓	The option may lead to lower levels of development coming forward, and could therefore have indirect positive effects on protecting soil and land in the Plan area. However, effects may be displaced to locations outside the Plan area should need for the development still need to be met.
6.	-	-	-	✓			✓	The option may lead to lower levels of development coming forward in the Plan area which may increase the distance over which minerals and waste need to be transported and therefore increase greenhouse gas emissions.
7.	+	+	+ + -	✓	✓	✓	✓	The option would support the protection and enhancement of habitat networks. However, should less quarry development be permitted in the Plan area there may be fewer opportunities for flood storage in the longer term.
8.	+	+	+	✓			✓	This option may lead to lower levels of development coming forward which may lead to more demand for re-use of previously used resources partly displacing extraction of minerals from elsewhere to make up supply.
9.	+	+	+	✓			✓	This option may lead to lower levels of development coming forward which may lead to more demand for re-use of previously used resources.
10.	+ -	+ -	+ -	✓		✓	✓	The option may lead to lower levels of development coming forward, and could therefore have indirect positive effects on protecting heritage assets in the Plan area, although this could be offset by the potential for displacement of effects to elsewhere. However, should the option restrict the availability of building stone for the repair of assets this would have a negative against this objective.
11.	+ -	+ -	+ -	✓		✓	✓	The option may lead to lower levels of development coming forward, and could therefore have indirect positive effects on protecting heritage assets in the Plan area, although this could be offset by the potential for displacement of effects to elsewhere. However, should the option restrict the availability of building stone this may have a negative effect on protecting and enhancing townscapes where the building stone used is

								fundamental to the character of the town.
12.	-	--	--	✓			✓	The option may restrict the amount of minerals and waste development coming forward or affect the viability of development and may therefore have a negative effect on the economy in relation to supply of minerals to support the economy and jobs in the minerals and waste sectors.
13.	-	--	--	✓			✓	The option may restrict the amount of minerals and waste development coming forward or affect the viability of development and may therefore have a negative effect on the economy in relation to supply of minerals to support the economy and jobs in the minerals and waste sectors, potentially leading to effects on the viability and vitality of communities.
14.	+ ?	+ ?	+ ?	✓			✓	The option may lead to lower levels of development coming forward, and could therefore have indirect positive effects on protecting recreational assets in the Plan area. However, effects may be displaced to locations outside the Plan area should demand for the development still need to be met.
15.	+	+	+	✓			✓	The option may lead to lower levels of development coming forward, and could therefore have indirect positive effects on protecting the health, safety and wellbeing in the Plan area in relation to the effects of minerals and waste developments.
16.	-	-	--	✓			✓	The option may lead to lower levels of quarry development coming forward in the Plan area which would result in fewer opportunities for flood storage in the longer term.
17.	-	--	--	✓			✓	The option may lead to lower levels of development coming forward which may result in a shortage of supply of minerals and lack of facilities for waste management, particularly in the medium to longer term.

Summary of assessment

Whilst Option 1 would enable a level of protection and enhancement to be afforded to biodiversity and geodiversity, it would not provide direct links with meeting the objectives or local priorities established for example through the Local Nature Partnership and the local Biodiversity and Geodiversity Action Plans. Option 2 would have greater benefits for biodiversity in the Joint Plan by linking with local objectives. In the longer term effects under Option 1 would be uncertain as the implications of any future changes to national policy are unknown

Both Option 3 and Option 4, where considered together with earlier options, would enable gains to be made for biodiversity which are not currently realised, yet option 3 would have greater benefits in terms of contributing to biodiversity objectives in the Joint Plan area on the basis that offsetting is not considered to be a means of making the development itself acceptable. Option 5 would reduce the benefits provided by either Option 3 or 4.

Whilst Option 6 would provide the greatest benefits for biodiversity within the Plan area, it could reduce the availability of minerals and the possibilities for providing waste facilities, and possibly displace effects to elsewhere.

Recommendations
It is recommended that options 2 and 3 be followed but that reference is included to ensuring that any offsetting includes consideration of replacing the community and climate regulation value attached to the biodiversity of the site to be developed.

Historic Environment (id65)

Option 1
This option would not set out specific local policy for conservation and enhancement of the historic environment and would rely on national policy in the NPPF, together with any other relevant policies in the development plan.
In summary, the NPPF policy on the historic environment relates to protecting and enhancing the significance of heritage assets - permission should not be granted for proposals which would lead to substantial harm or loss of the significance of a designated asset unless public benefits outweigh this loss and where harm is less than significant or relates to a non-designated asset, this should be weighed against the benefits (paras 126-141)

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					There is no clear link between this policy and the objective for biodiversity/geodiversity.
2.	0	0	0					There is no clear link between this policy and the objective for water and water quality.
3.	0	0	0					There is no clear link between this policy and the objective for sustainable transport.
4.	0	0	0					There is no clear link between this policy and the objective for air quality.
5.	0	0	0					There is no clear link between this policy and the objective for soil/efficient use of land.
6.	0	0	0					There is no clear link between this policy and the objective for the cause of climate change.
7.	0	0	0					There is no clear link between this policy and the objective for adapting to climate change.
8.	?	?	?	✓	✓	✓		Considerations for the historic environment may restrict the locations for resources development (therefore restricting the amount of resources used) should the most suitable places also coincide with areas of importance. Using the local level policy (i.e. district/borough level local plans) may reduce the flexibility of approach to minerals and waste development, particularly around York. However, this is location specific and therefore the effects are currently uncertain. Also, in the longer term it is uncertain whether the NPPF / PPS10 will still remain in their present format.
9.	?	?	?	✓	✓	✓		Considerations for the historic environment may restrict the locations for waste management should the most

								suitable places also coincide with areas of importance. Using the local level policy (i.e. district/borough level local plans) may reduce the flexibility of approach to minerals and waste development, particularly around York. This is location specific and therefore the effects are currently uncertain. Also, in the longer term it is uncertain whether the NPPF / PPS10 will still remain in their present format.
10.	+	+	? +	✓	✓	✓		The NPPF seeks to restrict development that would cause material harm to a designated heritage asset or it's setting that is not outweighed by economic, social and environmental benefit. In addition, any proposals would rely on the Local Plans for each district/borough and North York Moors Core Strategy which would set out localised historic environment policy. In weighing applications that affect non designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset in light of these documents. Given the amount of designated and non-designated heritage assets, particularly centred in the historic towns and cities such as York, there could be conflicts between the need for development and the historic environment that would need to be determined at application stage. Using the NPPF approach leaves the interpretation of 'significance' more open than defining it through specific criteria. Also, in the longer term it is uncertain whether the NPPF / PPS10 will remain in their present format.
11.	+	+	+ ?	✓	✓	✓		Rural and urban landscapes across the plan area interrelate with the setting of heritage assets, and development of waste and mineral sites could impact upon these. However, the NPPF seeks to restrict development that would cause material harm to a designated heritage asset or its setting that is not outweighed by economic, social and environmental benefit. In addition, any proposals would rely on the Local Plans for each district/borough and North York Moors Core Strategy which would set out localised historic environment policy. In weighing up applications that affect non designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset in light of these documents. Given the amount of designated and non-designated heritage assets, particularly centred in the historic towns and cities such as York, there could be conflicts between the need for development and the historic landscape that would need to be determined at application stage. Using the NPPF approach leaves the interpretation of 'significance' open, which may cause some uncertainty particularly where heritage assets are within close proximity or a view is identified which can be a subjective judgement. Also, in the longer term it is uncertain whether the NPPF / PPS10 will remain in their present format.
12.	?	?	?	✓	✓	✓	✓	Across the plan area there are particular areas where the historic environment and key views towards heritage assets are drivers for the economy. Where these are affected, there may be a negative impact. However, this would be subject to location and type of development. The NPPF seeks to restrict development that would cause material harm to a designated heritage asset or its setting that is not outweighed by economic, social and environmental benefit. In weighing up applications that affect non designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage

								asset. The effects are currently unknown. Also, in the longer term it is uncertain whether the NPPF / PPS10 will remain in their present format.
13.	0	0	0					There is no clear link between this policy and the objective for local communities.
14.	+	+	+ ?					The NPPF seeks to restrict development that would cause material harm to a designated heritage asset or its setting that is not outweighed by economic, social and environmental benefit. This protection of historic assets and features may have minor positive effects on providing opportunities for leisure (as some historic features are also tourism attractions) and on enabling opportunities for learning. There is some uncertainty in the longer term as it is uncertain whether the NPPF/PPS10 will remain in their present form.
15.	0	0	0					There is no clear link between this policy and the objective for health, well-being and safety.
16.	0	0	0					There is no clear link between this policy and the objective for flood risk.
17.	0	0	0					There is no clear link between this policy and the objective for addressing the needs of the population.

Option 2

This option would indicate that heritage assets will be conserved in line with the requirements of the NPPF (see option1) but would encourage proposals, where practicable, to deliver enhancements to the setting and/or secure improved access to and understanding of the asset for the longer term, linking into existing projects or initiatives where possible.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	**Impact / timescale**			**Type of effect**				**Analysis**
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0	0	0					There is no clear link between this policy and the objective for biodiversity/geodiversity.
2.	0	0	0					There is no clear link between this policy and the objective for water and water quality.
3.	0	0	0					There is no clear link between this policy and the objective for sustainable transport.
4.	0	0	0					There is no clear link between this policy and the objective for air quality.
5.	0	0	0					There is no clear link between this policy and the objective for soil/efficient use of land.
6.	0	0	0					There is no clear link between this policy and the objective for the cause of climate change.

7.	0	0	0					There is no clear link between this policy and the objective for adapting to climate change.
8.	?	?	?	✓	✓	✓		Considerations for the historic environment may restrict the locations for resources development should the most suitable places also coincide with areas of importance. Using the local level policy (i.e. district/borough level local plans) may reduce the flexibility of approach to minerals and waste development, particularly around York. However, this is location specific and therefore the effects are currently uncertain. Also, in the longer term it is uncertain whether the NPPF / PPS10 will still remain in their present format.
9.	?	?	?	✓	✓	✓		Considerations for the historic environment may restrict the locations for waste management should the most suitable places also coincide with areas of importance. Using the local level policy (i.e. district/borough level local plans) may reduce the flexibility of approach to minerals and waste development, particularly around York. This is location specific and therefore the effects are currently uncertain. Also, in the longer term it is uncertain whether the NPPF / PPS10 will still remain in their present format.
10.	+	+	+ ?	✓	✓	✓		Similarly to option 1, the NPPF seeks to restrict development that would cause material harm to a designated heritage asset or it's setting that is not outweighed by economic, social and environmental benefit. In addition, any proposals would rely on the Local Plans for each district/borough and North York Moors Core Strategy which would set out localised historic environment policy. In considering applications that affect non designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset in light of these documents. This option offers enhancement where practicable to gain benefit through minerals and waste development. This should have a positive impact on the historic environment subject to its implementation but is likely to be in the long-term following restoration. However, in the longer term it is uncertain whether the NPPF / PPS10 will remain in their present format.
11.	+	+	?	✓	✓	✓		Similarly to option 1, the rural and urban landscapes across the plan area interrelate with the setting of heritage assets, which development of waste and mineral sites could impact upon and the NPPF seeks to restrict development that would cause material harm to a designated heritage asset or its setting that is not outweighed by economic, social and environmental benefit. In addition, this option would rely on the Local Plans for each district/borough and North York Moors Core Strategy which would set out localised Landscape policies for consideration in any proposals. This option also offers enhancement where practicable to gain benefit through minerals and waste development, which has the potential to positive effect the landscape subject to the enhancement type and its implementation. However, in the longer term it is uncertain whether the NPPF / PPS10 will remain in their present format.
12.	+ -	+ -	?	✓	✓	✓		This option is likely to reduce negative impacts on the economy where the historic environment is of importance as enhancements may provide opportunities to benefit the economy. However, the policy states 'where practicable' and depending on the type and scale of the enhancement, it causes uncertainty for the chance of enhancements or mitigation for the historic environment. On balance, there are both uncertain

								positive and negative effects.
13.	0	0	0					There is no clear link between this policy and the objective for local communities.
14.	+	+	+ ?					Conserving heritage assets and where practicable delivering enhancements to the setting and/or securing improved access to and understanding of the asset for the longer term may result in positive effects on this objective. This is because improved access and understanding of heritage assets would be positive in terms of enabling learning opportunities, whilst enhancements to the setting of heritage assets and improved access may provide enhanced leisure opportunities. There is some uncertainty in the longer term as it is uncertain whether the NPPF/PPS10 will remain in their present form.
15.	0	0	0					There is no clear link between this policy and the objective for health, well-being and safety.
16.	0	0	0					There is no clear link between this policy and the objective for flood risk.
17.	0	0	0					There is no clear link between this policy and the objective for addressing the needs of the population.

Option 3
Under either option 1 or option 2, this option would seek to protect the setting of the City of York by supporting proposals which do not compromise the setting.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	**Impact / timescale**			**Type of effect**				**Analysis**
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0	0	0					There is no clear link between this policy and the objective for biodiversity/geodiversity.
2.	0	0	0					There is no clear link between this policy and the objective for water and water quality.
3.	0	0	0					There is no clear link between this policy and the objective for sustainable transport.
4.	0	0	0					There is no clear link between this policy and the objective for air quality.
5.	0	0	0					There is no clear link between this policy and the objective for soil/efficient use of land.
6.	0	0	0					There is no clear link between this policy and the objective for the cause of climate change.

7.	0	0	0					There is no clear link between this policy and the objective for adapting to climate change.
8.	? +	? +	? +	✓	✓	✓		Any facilities around York which have the potential for mineral extraction would need to protect the setting of York under this option. In combination with either option 1 or 2, this would make the criteria for locating development less flexible. This may reduce the number of locations considered as suitable or require mitigation to be implemented to minimise negative impacts on the setting. Whilst these effects could be negative, the severity would depend upon location.
9.	? -	? -	? -	✓	✓	✓		Any facilities around York which have the potential for waste development would need to protect the setting of York under this option. In combination with either option 1 or 2, this would make the criteria for locating development less flexible. This may reduce the number of locations considered as suitable or require mitigation to be implemented to minimise negative impacts on the setting. Whilst these effects could be negative, the severity would depend upon location.
10.	+ +	+ +	+ +	✓	✓	✓		In combination with options 1 or 2, this option would provide a higher level of protection for York which has designated greenbelt surrounding the city to preserve its character and setting. This option is therefore considered to have a significantly positive effect.
11.	+	+	+	✓	✓	✓		In combination with options 1 or 2, this option would provide a higher level of protection for York which has designated greenbelt surrounding the city to preserve its character and setting. This option would ensure that the settings of the city, including its landscape features are not compromised through development. This option is therefore considered to have a significantly positive effect for the City of York.
12.	+ -	+ -	+ -	✓	✓	✓		York is an economic driver in the region for the city's heritage and landscape setting. Protecting this setting is therefore likely to reduce negative impacts as a result of development. However, this may reduce the number of locations considered as suitable or require mitigation to be implemented to minimise negative impacts on the setting, which has implications for costs and flexibility.
13.	0	0	0					There is no clear link between this policy and the objective for local communities.
14.	0	0	0					There is no clear link between this policy and the objective for recreation and leisure.
15.	0	0	0					There is no clear link between this policy and the objective for health, well-being and safety.
16.	0	0	0					There is no clear link between this policy and the objective for flood risk.
17.	0	0	0					There is no clear link between this policy and the objective for addressing the needs of the population.

Proposed alternative option 4: (Or) In conjunction with either Option 1 or Option 2, this option would seek to protect the setting of the City of York and other historic settlements in the Plan area by supporting proposals which do not compromise their settings.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					There is no clear link between this policy and the objective for biodiversity/geodiversity.
2.	0	0	0					There is no clear link between this policy and the objective for water and water quality.
3.	0	0	0					There is no clear link between this policy and the objective for sustainable transport.
4.	0	0	0					There is no clear link between this policy and the objective for air quality.
5.	0	0	0					There is no clear link between this policy and the objective for soil/efficient use of land.
6.	0	0	0					There is no clear link between this policy and the objective for the cause of climate change.
7.	0	0	0					There is no clear link between this policy and the objective for adapting to climate change.
8.	? +	? +	? +	✓	✓	✓		Any facilities around historic settlements in the plan area which have the potential for mineral extraction would need to protect the settings of these settlements under this option. In combination with either option 1 or 2, this would make the criteria for locating development less flexible (more so than option 3 as all historic settlements rather than just the City of York would be included). This may considerably reduce the number of locations considered as suitable or require mitigation to be implemented to minimise negative impacts on the setting. Whilst these effects could be negative, the severity would depend upon location.
9.	? -	? -	? -	✓	✓	✓		Any facilities around historic settlements which have the potential for waste development would need to protect the setting of these settlements under this option. In combination with either option 1 or 2, this would make the criteria for locating development less flexible. This may reduce the number of locations considered as suitable or require mitigation to be implemented to minimise negative impacts on the setting. Whilst these effects could be negative, the severity would depend upon location.
10.	++	++	++	✓	✓	✓		In combination with options 1 or 2, this option would provide a higher level of protection for the settings of York and other historic settlements in the plan area. This option is therefore considered to have a significantly positive effect.

11.	+ +	+ +	+ +	✓	✓	✓		In combination with options 1 or 2, this option would provide a higher level of protection for York and other historic settlements in the plan area. This option would ensure that the settings of the historic settlements, including their landscape features are not compromised through development. This option is therefore considered to have a significantly positive effect.
12.	+	+	+	✓	✓	✓		Historic settlements in the plan area (particularly larger settlements such as York, Harrogate, Scarborough, Knaresborough etc. which have strong tourism economies) are an economic driver in the region. Protecting these settings is therefore likely to reduce negative impacts as a result of development. However, this may significantly reduce the number of locations considered as suitable (particularly for waste developments which have a need to be located close to waste arisings) or require mitigation to be implemented to minimise negative impacts on the setting, which has implications for costs and flexibility.
	-	-	-					
13.	0	0	0					There is no clear link between this policy and the objective for local communities.
14.	0	0	0					There is no clear link between this policy and the objective for recreation and leisure.
15.	0	0	0					There is no clear link between this policy and the objective for health, well-being and safety.
16.	0	0	0					There is no clear link between this policy and the objective for flood risk.
17.	0	0	0					There is no clear link between this policy and the objective for addressing the needs of the population.

Summary of assessment

All of the options would provide positive effects for both the historic environment and landscape of the Plan area. Option 1 would present an element of uncertainty as the implications of any future revisions to national policy are unknown. Option 2 would have greater positive effects through the requirement for enhancements. Options 3 and 4, where used together with earlier options, would have significant positive effects for the setting of the City of York (option 3 and 4) and other historic settlements (option 4).

Recommendations

In order to maximise the protection of the historic environment but also balance the economic needs of providing flexible choices, the SA recommends that option 1 and option 4 are taken forward. However, there would need to be further work undertaken on this latter option to define 'historic settlement'.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

Water Environment (id66)

Option 1.
This option would not set out a specific local policy for the protection of the water environment and would rely on national policy in the NPPF, together with any other relevant policies in the development plan. In summary, water policies in the NPPF require that strategies should take account of water supply and demand (para. 94), permitted operations should not have unacceptable adverse impacts on water (para. 109) and new and existing development should not contribute to or be put at unacceptable risk from, or being adversely affected by unacceptable levels of water pollution.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	?	✓	✓		✓	Following the NPPF's approach to water would have benefits for biodiversity, as it prevents new and existing development from being adversely affected by, or contributing to, unacceptable levels of water pollution. This will help protect water based protected sites for nature conservation and would generally protect aquatic biodiversity. However, in the longer term it is uncertain whether changes might be made to the NPPF that would change the level of protection afforded.
2.	+	+	?	✓	✓	✓	✓	The NPPF approach helps prevent new and existing development from being adversely affected by unacceptable levels of water pollution and permitted operations should not have unacceptable adverse impacts on water. However this option does not consider some elements of the water environment as explicitly as option 2 (e.g. NVZs, SPZs). This would have a positive effect on this water objective in the short and medium term. However, in the longer term it is uncertain whether changes might be made to the NPPF that would change the level of protection afforded.
3.	0	0	0					No clear link
4.	0	0	0					No clear link
5.	0	0	0					No clear link
6.	0	0	0					No clear link
7.	+	+	?	✓			✓	The NPPF's approach to water should protect water supply and quality, which are both vulnerable to climate change. Following this approach will increase resilience to climate change. However, in the longer term it is

								uncertain whether changes might be made to the NPPF that would change the level of protection afforded.
8.	0	0	0					No clear link
9.	0	0	0					No clear link
10.	0	0	0					No clear link
11.	0	0	0					No clear link
12.	+	+	?	✓		✓		A clean and steady water supply is an essential requirement for many businesses that operate in the plan area, including many recreation businesses, farming and industries that extract water. The NPPF approach would broadly support this. However, in the longer term it is uncertain whether changes might be made to the NPPF that would change the level of protection afforded
13.	+	+	?	✓		✓		Waterways are at the heart of many communities. This approach will protect them. However, in the longer term it is uncertain whether changes might be made to the NPPF that would change the level of protection afforded.
14.	+	+	?	✓		✓		A clean and steady water supply is an essential requirement for many recreational activities that take place in the plan area. The NPPF approach would broadly support this. However, in the longer term it is uncertain whether changes might be made to the NPPF that would change the level of protection afforded
15.	+	+	?					A clean and steady water supply is an essential prerequisite of several aspects of health and wellbeing. The NPPF approach would broadly support this. However, in the longer term it is uncertain whether changes might be made to the NPPF that would change the level of protection afforded
16.	-	-	-					While the NPPF sets out an approach to dealing with flood risk, this option only refers to water quality and supply.
17.	+	+	+					A clean and steady supply of water would help meet the needs of the population.

Option 2

Proposals will be supported where it can be demonstrated, when considered against the following criteria, that unacceptable adverse (including cumulative) effects can be avoided or have been appropriately mitigated and, where possible, that the development would provide enhancements to the locality. Consideration would be given to:

- Impacts on water quality (surface or underground) and water supply and flows, including effects on Nitrate Vulnerable Zones and Groundwater Source Protection Zones
- Impact on and from ground and surface water flooding, following the principles of the sequential test in relation to flood risk.

Potential for the development to contribute to the provision of flood alleviation or other climate change mitigation benefits related to the water environment.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+ +	+ +	+ +	✓	✓		✓	This option would protect water resources from effects on water quality by making explicit links to features such as Nitrate Vulnerable Zones, and maintained flows. It also avoids unacceptable adverse effects of flooding. This will significantly benefit aquatic / riparian biodiversity.
2.	+ +	+ +	+ +	✓	✓		✓	This approach sets out detailed considerations in relation to surface and groundwater, and includes avoiding unacceptable effects. This will have strong positive effects (which are potentially stronger than option 1)
3.	0	0	0					No clear link
4.	0	0	0					No clear link
5.	0	0	0					No clear link
6.	0	0	0					No clear link
7.	+ +	+ +	+ +	✓	✓	✓	✓	This option protects surface and groundwater and includes impact on groundwater and surface water flooding. All of these things are vulnerable to climate change, and the option can be seen to make a significant contribution to the response to climate change.
8.	0	0	0					No clear link
9.	0	0	0					No clear link
10.	0	0	0					No clear link

11.	0	0	0					No clear link
12.	+ +	+ +	+ +	✓		✓		A clean and steady water supply is an essential requirement for many businesses that operate in the plan area, including many recreation businesses, farming and industries that extract water. Reduced flood risk is also important to continued business success. This approach would provide strong support for this.
13.	+ +	+ +	+ +	✓		✓		Waterways are at the heart of many communities. This approach will protect them. This approach would also help protect communities from flooding. This will contribute significantly to sustained community vitality.
14.	+	+	+	✓		✓		A clean and steady water supply is an essential requirement for many recreational activities that take place in the plan area. This approach would support this.
15.	+ +	+ +	+ +	✓	✓	✓	✓	A clean and steady water supply is an essential prerequisite of several aspects of health and wellbeing. And reduced flood risk is of key importance to safety in many communities. This approach would strongly support this.
16.	+ +	+ +	+ +	✓		✓		This approach considers impacts on flooding and supports the sequential approach which strongly supports this objective. It also supports consideration of the potential for flood alleviation.
17.	+	+	+	✓	✓	✓	✓	A clean and steady supply of water would help meet the needs of the population

Summary of assessment

Both options report positive effects in relation to biodiversity, the water environment, climate change adaptation, the economy, community vitality, recreation, health and wellbeing and meeting the needs of a changing population. However, these are generally stronger for Option 2 than for Option 1. Option 1 could have negative effects on flooding by resulting in the Plan having no reference to the need to consider impacts on and from flooding, while Option 2 strongly supports the sustainability objective to minimise flood risk. In the long term, there is uncertainty with Option 1 in relation to the continued operation of the NPPF in its present format.

Recommendations

The SA recommends that option 2 is pursued.

Strategic Approach to Reclamation and Afteruse (id67)

Assumptions – This assessment assumes that the development has been approved under other policies in the Plan and that these options would not form the basis for consideration of whether development at the site is acceptable, and therefore only considers the effects of the reclamation itself, not the extraction.

Option 1

This option would support reclamation and afteruse proposals across the whole of the Plan area which meet a number of general criteria which, where relevant and particularly for larger scale workings, have demonstrably:

- been brought forward in discussion with local communities and other relevant stakeholders and where practicable reflect the outcome of those discussions
- taken into account the wider context of the development proposed, including the implications for the development of other significant permitted or proposed development in the area and the range of environmental and other assets and infrastructure that may be affected, including any important interactions between those assets and infrastructure
- reflected the potential for the proposed reclamation and/or afteruse to give rise to positive and adverse impacts, including cumulative impacts, and have sought where practicable to maximise potential overall benefits and minimise overall adverse impacts
- taken into account potential impacts on and from climate change factors
- made best use of onsite materials for reclamation purposes and only rely on the need for importation of waste where essential to deliver an appropriate standard of reclamation
- provided for progressive, phased restoration where appropriate
- provided for the longer term implementation and management of the agreed form of reclamation and any relevant afteruse (this would not apply to reclamation for agriculture or forestry where a statutory 5 year maximum aftercare period applies)

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓		✓	✓	The option requires consideration to be given to effects on environmental assets, which could include habitats and wildlife, and will therefore have a positive effect against this objective.

2.	+	+	+	✓		✓	✓	The option requires consideration to be given to effects on environmental assets, which could include the water environment, and will therefore have a positive effect against this objective.
3.	+	+	+		✓		✓	The option requires on-site materials to be used where possible and would therefore reduce the need for transportation as part of the reclamation process.
4.	+	+	+	✓		✓	✓	The option requires consideration to be given to effects on environmental assets, which could include air quality, and will therefore have a positive effect against this objective.
5.	+	+	+	✓		✓	✓	The option requires consideration to be given to effects on environmental assets, which could include soil resources, and will therefore have a positive effect against this objective.
6.	++	++	++	✓		✓	✓	The option requires schemes for reclamation and after-use to take into account potential impacts on climate change. Effects may be greater over time as more sites are restored.
7.	+	+	++	✓		✓	✓	The option requires schemes for reclamation and after-use to take into account potential impacts from climate change. It is not clear whether this is just impacts on the site itself, and the option could be more positive if it specified that consideration should also be given to how the scheme helps in wider adaptation to climate change, for example through provision of flood storage. Effects may be greater over time as more sites are restored.
8.	-	-	-	✓		✓		Through encouraging the use of on-site materials above the importation of previously used ones, this option would not help with reducing the use of materials and encouraging the re-use of materials.
9.	-	-	-	✓		✓		Through encouraging the use of on-site materials above the importation of previously used ones, this option would not help with encouraging the re-use of materials.
10.	+	+	+	✓		✓	✓	The option requires consideration to be given to effects on environmental assets, which could include the historic environment, and will therefore have a positive effect against this objective.
11.	+	+	+	✓		✓	✓	The option requires consideration to be given to effects on environmental assets, which could include the landscape, and will therefore have a positive effect against this objective.
12.	?	?	?	✓			✓	The option may have some effect on the viability of development although at this stage this is not known. This will need to be ascertained as part of the production of the Plan should this option be pursued (as required by paragraph 173 of the NPPF).
13.	0	0	0					No clear link
14.	0	0	0					No clear link
15.	++	++	++	✓		✓		The option will enable considerations related to the wellbeing of the community to be taken into account by requiring schemes to be developed through discussion with local communities.
16.	+	+	+	✓		✓	✓	The option requires schemes for reclamation and after-use to take into account potential impacts from climate change. It is not clear whether this is just impacts on the site itself, and the option could be more positive if it specified that consideration should also be given to how the scheme helps in wider adaptation to climate

								change, which could include provision of flood storage. Effects may be greater over time as more sites are restored for flood storage purposes.
17.	+ +	+ +	+ +	✓		✓		The option will enable considerations related to the wellbeing of the community to be taken into account by requiring schemes to be developed through discussion with local communities.

Option 2

In addition to the general criteria identified in Option 1, this option would seek to deliver a more targeted approach to minerals site reclamation and afteruse by supporting proposals which, where relevant, focus reclamation and/or afteruse proposals towards particular objectives including:

- In areas of best and most versatile agricultural land, maximising the protection and enhancement of soils and maximising the extent of best and most versatile land to be provided following reclamation and aftercare of the site
- Where opportunities allow, particularly in proximity to the rivers Swale and Ure, providing additional flood storage capacity to help minimise flooding in downstream locations
- Within the National Park and AONBs, focus on enhancing the special qualities and/or providing opportunities for the enjoyment and understanding of those special qualities
- Within airfield safeguarding zones, particularly where reclamation for biodiversity is involved, ensuring that reclamation and afteruse proposals respect safeguarding constraints whilst maximising the potential reclamation and afteruse benefits delivered by the site
- In proximity to significant heritage assets, ensuring that the significance of assets and their settings is sustained and where practicable enhanced and, also where practicable, that opportunities to facilitate enjoyment of the asset are provided
- Where the development is located within or adjacent to identified green infrastructure corridors, reflecting any locally agreed priorities for delivery of additional or enhanced green infrastructure and ecosystems services
- In proximity to major settlements within and adjacent to the Plan area, and subject to local amenity considerations, providing enhanced opportunities for informal and formal access and recreation
- Delivering enhancements for biodiversity and improvements to habitat networks, based on contributing towards established objectives
- In delivering any of the above, proposals should be compatible with the surrounding landscape, providing enhancements where possible.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+ +	+ +	+ +	✓		✓	✓	This option will have strong positive effects on this objective by stating that enhancements for biodiversity and improvements to habitats networks could be appropriate forms of reclamation.
2.	0	0	0					No clear link
3.	+ -	+ -	+ -		✓		✓	Providing opportunities for recreation close to major settlements could help to reduce transportation for leisure. However providing opportunities for enjoyment and understanding of the National Park and the AONBs could result in increased transport miles as these are generally further from the main settlements.
4.	0	0	0					No clear link
5.	+ +	+ +	+ +	✓		✓		The option will have strong positive effects on this objective by requiring reclamation schemes to protect and enhance soils and agricultural land in areas of the best and most versatile agricultural land.
6.	0	0	0					No clear link
7.	+ +	+ +	+ +	✓		✓		The option identifies specific areas where increasing flood storage capacity may be particularly beneficial and will therefore have a positive effect on this objective, bearing in mind increased flooding is a predicted effect of climate change.
8.	0	0	0					No clear link
9.	0	0	0					No clear link
10.	+ +	+ +	+ +	✓		✓		The option requires heritage assets and their settings to be protected and, if possible, enhanced with provision made for the enjoyment of them. It will therefore have positive effects against this objective.
11.	+ +	+ +	+ +	✓		✓		The option requires reclamation to protect and where possible enhance the landscape and will there have strong positive effects against this objective. The option will have further positive effects for the National Park and the AONBs by stating that in these areas the focus should be on enhancing the special qualities, which include landscape assets.
12.	0	0	0					No clear link
13.	0	0	0					No clear link
14.	+ +	+ +	+ +	✓		✓		The option is likely to lead to a range of benefits for recreation including that related to the special qualities of National Parks and AONBs , as part of Green Infrastructure and other opportunities close to major settlements. The range provided will increase in extent over time.
15.	+	+	+	✓			✓	The provision of recreation opportunities will provide health and wellbeing benefits for local communities. The extent of these will increase over time.
16.	+	+	+	✓		✓		The option identifies specific areas where increasing flood storage capacity may be particularly beneficial and

	+	+	+					will therefore have a positive effect on this objective.
17.	0	0	0					No clear link

Proposed alternative option 3: (Or) **This option would require restoration to a site to its previous use and condition. Only where this is not possible consideration would be given to alternative reclamation and afteruse proposals as set out under options 1 and 2.**

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0 + ?	0 + ?	0 + ?	✓		✓	✓	In some cases this option will result in restoration to biodiversity, as that would have been a component of previous use. In most case though, restoration will be to some form of agriculture, as that is the dominant land use in the Plan Area. Restoration to agriculture may bring some minor biodiversity benefits (e.g. to farmland birds). In cases where restoration to previous use is not possible effects would be as option 1 or 2, though it is unknown at this stage which option would apply.
2.	+ ?	+ ?	+ ?	✓		✓		Restoration to a previous use may to some extent restore some of the surface water run off patterns that may have existed prior to quarrying, and groundwater may restore to similar levels, though much would depend on how the site is restored (e.g. restoration by landfill infill could continue to alter hydrology). In cases where restoration to previous use is not possible effects would be as option 1 or 2, though it is unknown at this stage which option would apply.
3.	- ?	- ?	- ?	✓		✓		Restoration to previous use is likely to involve reinstatement of original overburden, which would save on traffic miles. However, to achieve the original levels on the site is likely to require some import of material. In cases where restoration to previous use is not possible effects would be as option 1 or 2, though it is unknown at this stage which option would apply.

4.	- ?	- ?	- ?	✓			✓	Restoration to previous use is likely to involve reinstatement of original overburden, which would save on traffic miles. However, to achieve the original levels on the site is likely to require some import of material. This would add to air pollution. In cases where restoration to previous use is not possible effects would be as option 1 or 2, though it is unknown at this stage which option would apply.
5.	+ + ?	+ + ?	+ + ?	✓		✓		This option will restore land. In many cases land will be restored to productive (i.e. Best and Most Versatile) land. In cases where restoration to previous use is not possible effects would be as option 1 or 2, though it is unknown at this stage which option would apply.
6.	- ?	- ?	- ?	✓			✓	The increased traffic mileage of this option will have a carbon footprint, albeit at a relatively small scale. In cases where restoration to previous use is not possible effects would be as option 1 or 2, though it is unknown at this stage which option would apply.
7.	+ ?	+ ?	+ ?	✓		✓	✓	As land will, in most cases, be restored to productive land this will help contribute to UK food security and reduce future reliance on imports from countries that may have more significant food security issues under climate change scenarios[123]. In cases where restoration to previous use is not possible effects would be as option 1 or 2, though it is unknown at this stage which option would apply.
8.	0 ?	0 ?	0 ?					No clear link. In cases where restoration to previous use is not possible effects would be as option 1 or 2, though it is unknown at this stage which option would apply.
9.	0 ?	0 ?	0 ?					No clear link. In cases where restoration to previous use is not possible effects would be as option 1 or 2, though it is unknown at this stage which option would apply.

[123] See BBC News, 2013. Climate Change Overseas Likely to Affect UK Food Supplies, 17 June 2013 [URL: http://www.bbc.co.uk/news/science-environment-22913559]

10.	- ?	- ?	- ?	✓		✓		Restoration to a previous use is, on its own, unlikely to fully recognise the important role that land management may play in retaining the historic character of an area or maintaining the setting of a particular heritage asset. While what was once farmed land may be restored to new farmed land, details may well be lost such as the original field pattern. In cases where restoration to previous use is not possible effects would be as option 1 or 2, though it is unknown at this stage which option would apply.
11.	- ?	- ?	- ?	✓		✓		Restoration to a previous use is, on its own, unlikely to fully recognise the important role that land management may play in retaining the landscape character of an area or maintaining the setting of a particular landscape / townscape asset. While what was once farmed land may be restored to new farmed land, details may well be lost such as the original field pattern or topography. In cases where restoration to previous use is not possible effects would be as option 1 or 2, though it is unknown at this stage which option would apply.
12.	0 ?	0 ?	0 ?					No significant effect on the economy. In cases where restoration to previous use is not possible effects would be as option 1 or 2, though it is unknown at this stage which option would apply.
13.	0 ?	0 ?	0 ?					No significant effect on community vitality. In cases where restoration to previous use is not possible effects would be as option 1 or 2, though it is unknown at this stage which option would apply.
14.	0 - ?	0 - ?	0 - ?	✓		✓		Restoration to a previous use is, on its own, unlikely to fully recognise the important role that land may have played as a recreational asset for local communities, particularly if rights of way or informal / permissive access is not re-instated. While what was once farmed land may be restored to new farmed land, details may well be lost such recreational usage. In cases where restoration to previous use is not possible effects would be as option 1 or 2, though it is unknown at this stage which option would apply.
15.	+ ?	+ ?	+ ?	✓		✓		Neighbours of quarry sites are likely to find restoration to the original land use a relatively desirable ultimate outcome for the land. This would therefore benefit community wellbeing. However, this effect may be less than other options if land is inaccessible. In cases where restoration to previous use is not possible effects would be as option 1 or 2, though it is

								unknown at this stage which option would apply.
16.	+ ? 	+ ? 	+ ? 	✓			✓	As sites are restored to largely agricultural use this would allow some limited retention of water in comparison to the drainage regimes that may have preceded restoration during the quarries lifetime (though essentially this will merely be a restoration of the original baseline). In cases where restoration to previous use is not possible effects would be as option 1 or 2, though it is unknown at this stage which option would apply.
17.	0	0	0					No clear link

Proposed alternative option 4: (Or) **This option would require restoration of oil and gas sites to their previous use and condition**

This assessment assumes that options 1, 2, or 3 would apply to all other minerals restoration schemes besides oil and gas.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	**Impact / timescale**			**Type of effect**				**Analysis**
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	? 0 +	? 0 +	? 0 +	✓		✓	✓	For most minerals sites options 1, 2 or 3 would apply (so effect is unknown, depending on option chosen). For oil and gas sites in some cases this option will result in restoration to biodiversity, as that would have been a component of previous use. In most case though, restoration will be to some form of agriculture, as that is the dominant land use in the Plan Area. Restoration to agriculture may bring some minor biodiversity benefits (e.g. to farmland birds). This effect, though similar to option 3, would be at a smaller scale due to it applying to a more limited category of development.

2.	? +	? +	? +	✓		✓		For most minerals sites options 1, 2 or 3 would apply (so effect is unknown, depending on option chosen). For oil and gas sites, restoration to a previous use may to some extent restore some of the surface water run off patterns that may have existed prior to quarrying,
3.	? 0	? 0	? 0	✓		✓		For most minerals sites options 1, 2 or 3 would apply (so effect is unknown, depending on option chosen) For oil and gas sites, restoration to previous use is likely to involve reinstatement of original overburden, which would save on traffic miles. That said, effects are likely to be negligible / insignificant given the total area likely to be restored,
4.	? 0	? 0	? 0	✓			✓	For most minerals sites options 1, 2 or 3 would apply (so effect is unknown, depending on option chosen) For oil and gas sites, restoration to previous use is likely to involve reinstatement of original overburden, which would save on traffic miles. This would reduce the air pollution arising from restoration to an alternative use. That said, effects are likely to be negligible given the total area likely to be restored,
5.	? +	? +	? +	✓		✓		For most minerals sites options 1, 2 or 3 would apply (so effect is unknown, depending on option chosen) For oil and gas sites, this option will restore land. In many cases land will be restored to productive (i.e. Best and Most Versatile) land.
6.	? 0	? 0	? 0	✓			✓	For most minerals sites options 1, 2 or 3 would apply (so effect is unknown, depending on option chosen) For oil and gas sites, this option will have only de minimus / insignificant effects on climate change.
7.	? +	? +	? +	✓		✓	✓	For most minerals sites options 1, 2 or 3 would apply (so effect is unknown, depending on option chosen) For oil and gas sites, as land will, in most cases, be restored to productive land this will help contribute, albeit at a low level, to UK food security and reduce future reliance on imports from countries that may have more significant food security issues under climate change scenarios[124].

[124] See BBC News, 2013. Climate Change Overseas Likely to Affect UK Food Supplies, 17 June 2013 [URL: http://www.bbc.co.uk/news/science-environment-22913559]

8.	? 0	? 0	? 0					For most minerals sites options 1, 2 or 3 would apply (so effect is unknown, depending on option chosen) For oil and gas sites, there is no clear link to this objective.
9.	? 0	? 0	? 0					For most minerals sites options 1, 2 or 3 would apply (so effect is unknown, depending on option chosen) For oil and gas sites, there is no clear link to this objective.
10.	? 0	? 0	? 0	✓		✓		For most minerals sites options 1, 2 or 3 would apply (so effect is unknown, depending on option chosen) For oil and gas sites, although there may be very small scale effects similar to those in the assessment of option 3, these are unlikely to be significant.
11.	? 0	? 0	? 0	✓		✓		For most minerals sites options 1, 2 or 3 would apply (so effect is unknown, depending on option chosen) For oil and gas sites, although there may be very small scale effects similar to those in the assessment of option 3, these are unlikely to be significant.
12.	? 0	? 0	? 0					For most minerals sites options 1, 2 or 3 would apply (so effect is unknown, depending on option chosen) For oil and gas sites, there are no significant effects on the economy.
13.	0 ?	0 ?	0 ?					For most minerals sites options 1, 2 or 3 would apply (so effect is unknown, depending on option chosen) For oil and gas sites there are no significant effects on community vitality.
14.	? 0 -	? 0 -	? 0 -	✓		✓		For most minerals sites options 1, 2 or 3 would apply (so effect is unknown, depending on option chosen) For oil and gas sites restoration to a previous use is, on its own, unlikely to fully recognise the important role that land may have played as a recreational asset for local communities, particularly if rights of way or informal / permissive access is not re-instated. While what was once farmed land may be restored to new farmed land, details may well be lost such recreational usage. However, this effect is likely to be at a very low to insignificant level.

15.	? +	? +	? +	✓		✓		For most minerals sites options 1, 2 or 3 would apply (so effect is unknown, depending on option chosen) For oil and gas sites, neighbours of such sites (if there are any) are likely to find restoration to the original land use a relatively desirable ultimate outcome for the land. This would therefore benefit community wellbeing. This effect will be at a lower level than option 3.
16.	? +	? +	? +	✓			✓	For most minerals sites options 1, 2 or 3 would apply (so effect is unknown, depending on option chosen). For oil and gas sites, as sites are restored to largely agricultural use this would allow some limited retention of water in comparison to the previous hard standing that may have preceded restoration during the oil / gas site's lifetime (though essentially this will merely be a restoration of the original baseline).
17.	0	0	0					No clear link

Summary of assessment

Option 1 is likely to lead to a range of positive environmental and social effects, including in relation to biodiversity, air and water quality, soils and agricultural land, landscape and reusing materials, with particularly strong positive effects recorded in relation to mitigating and adapting to climate change and engaging with communities. Uncertain effects are recorded in relation to sustainable waste management as the option provides less scope for wastes other than those generated on site to be used in reclamation with uncertain implications for the management of other wastes.

Acting in combination with Option 1, Option 2 is likely to result in stronger positive effects for biodiversity, agricultural land and soils, climate change adaptation (specifically reducing potential for flooding), the historic environment, landscape and opportunities for recreation. Minor negative effects may be observed in relation to impacts from transport should new areas for recreation in National Parks and AONBs be created, as these are generally distant from populations. However, these effects are unlikely to be significant due to the low level of extraction activity in these areas.

Option 3 would have a range of largely minor positive and negative effects on the environment and society. For instance, restoration to, what would usually be farmed land, would be likely to miss some of the associated features of farmed land such as historic field patterns. It may also have benefits, such as a benefit to food security highlighted under the climate change adaptation objective.

Option 4 would have similar effects to option 3, only at a smaller scale for oil and gas sites. It would also have uncertain effect related to which option it would work alongside.

Recommendations
It is recommended that both options 1 and 2 be followed. .

Sustainable Design, Construction and Operation of Development (id68)

Assumptions – The analysis assumes that Minerals and Waste Development will take place and that this policy addresses the design of the development,

Option 1

This option would support proposals for minerals and waste development which demonstrate that, where relevant, appropriate measures have been incorporated in the design, construction and operation of the development and where relevant, reclamation of the site in relation to:

- Minimisation of greenhouse gas emissions through incorporation of energy efficient siting, design and operational practices including those relating to bulk transport of minerals;
- Generation and utilisation of renewable or low carbon energy in a manner appropriate to the character and location of the development
- Minimisation of water consumption through incorporation for water efficiency measures, including the re-use of waste water originating from the development;
- Incorporation of measures to minimise flood risk associated with the development including use of SUDS and permeable surfacing
- A requirement for the relevant built elements of significant new minerals and waste developments to meet a minimum “very Good” BREEAM standard
- For energy from waste development the efficient use of energy generated by the development including, for development with the potential for generation of combined heat and power, the beneficial use of heat either on site or to serve other existing or propose development in the vicinity of the site.
- Implementation of planting comprising native species able to successfully adapt to climate change and where practicable, incorporation of areas of new wildlife habitat that would help to improve habitat connectivity.

Proposals for new minerals extraction and the treatment, recovery or disposal of waste should be accompanied by a climate change assessment showing how the proposals have taken into account impacts on and from climate change and include appropriate mitigation measures where necessary.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA obje	Impact / timescale	Type of effect	Analysis

	S	M	L	P	T	D	I	
1.	+	+	+	✓		✓		The demonstration though this option of how a site has supported native planting and/or areas of new wildlife habitat throughout the lifecycle of the site should have positive effects for biodiversity. The significance of these effects would be determined through the scale at which they were implemented and balanced against any harm which may occur as a result of the development.
2.	+	+	+	✓		✓		This option would seek demonstration that any development minimises water through efficiency and re-use. Whilst this is positive, the criteria set out do not tackle impacts on water quality which is applicable through good design and operation of the facility. This option would therefore have a minor positive.
3.	+	+	+					This option, as it promotes BREEAM and minimising greenhouse gases through bulk transport of minerals, would have a minor benefit on transport.
4.	+	+	+	✓		✓		This option is likely to have direct impacts on air quality through ensuring that design of the site minimises greenhouse gas emissions through the incorporation of energy efficient design and operation.
5.	+	+	+	✓		✓		This option would help to promote the use of land efficiently by supporting development that makes full use of the site in terms of minimising greenhouse gas emissions through the use of energy efficient siting and design.
6.	+	+	+	✓	✓	✓	✓	All the criteria set out in this option will have a positive effect on climate change directly and indirectly through requiring demonstration for minimising the causes of climate change such as greenhouse gas emissions and through the use of renewable energy technologies. In addition, new proposals would need to demonstrate through a climate change assessment how the proposals have taken this into account, including appropriate mitigation measures. This is likely to have a positive effect, particularly cumulatively across the plan area in the long-term. This has the potential to be significantly positive but this is dependent upon the balance of net harm against the measures put in place to mitigate any effects.
7.	+	+	+	✓		✓		The criteria set out in this option relating to flood risk and drainage, renewable energy, water consumption and native planting as well as building to BREEAM standards would help contribute to climate change adaptation by minimising the sites effects on the environment throughout the lifecycle of the site.
8.	+	+	+	✓		✓		This option would not influence the amount of minerals to be extracted but it would support that any buildings or operations on the site minimises the amount of energy and resources consumed through generating of energy on site or the use of renewable energy.
9.	+	+	+					Where developments re-use waste water this would be positive.
10.	+	+	+	✓		✓		This option promotes high quality design and landscaping which would be positive for this option in relation to the historic environment.
11.	+	+	+	✓		✓		This option promotes high quality design and landscaping which would be positive for this option in relation to the landscape.

12.	?	?	?	✓		✓		Sustainable design and construction should prove to be cost effective in operational terms through implementing measures which help with long-term cost saving, although it is acknowledged that the implementation of a highly sustainable site and operating facility may prove costly. The impacts of this would be facility and site dependent and therefore the impacts are unknown.
13.	0	0	0					There are no clear links between this policy and the objective for local communities.
14.	0	0	0					There are no clear links between this policy and the objective for recreation and leisure.
15.	0	+	+	✓		✓		The design of the facility can influence the health of workers and surrounding communities through noise, odour and emissions. By minimising greenhouse gas emissions this is likely to have a positive localised effect by minimising impacts on air quality. For this reason, the impacts in the short-term are likely to be neutral but more positive in the long-term depending the design of the site.
16.	+	+	+	✓		✓		This option takes into account the impact of flood risk and drainage in relation to sustainable design. This is considered positive in relation to minimising any effects associated with the development on people and businesses in the short-term long-term.
17.	0	0	0					There is no clear link between this policy and the objective for meeting the community's needs.

Option 2

For minerals and waste development this option sets out criteria which would, where relevant, apply in addition to the criteria set out in option 1, and which would also apply to proposals for new residential, industrial and commercial development, including development for which the District and Borough Councils in the NYCC part of the area are the planning authority. The additional criteria would seek to help deliver sustainable waste management and the sustainable use of minerals through:

- Implementation of measures to minimise waste generated during construction of the development, and implementation of measures to encourage or facilitate the re-use and recovery of any waste generated during construction of the development;
- Incorporation of appropriate space to enable waste arising during the use of the development to be sorted and stored prior to being collected for recycling or re-used;
- Use of sustainable construction materials where practicable, including the use of alternatives to primary-won aggregate;
- Re-use of existing buildings in preference to new build.

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SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0 ?	0 ?	0 ?	✓		✓		This option is unlikely to have impacts on biodiversity, although the requirements for extra space may have an effect. However, this would depend on the location and scale of additional development/space required.
2.	?	?	?	✓		✓		The effects from this option on water would depend on the location and scale of additional development/space required.
3.	0	0	0					There is not a clear link between this policy and the objective for sustainable transport.
4.	0	0	0					This option is not likely to have any effects further to those set out in option 1.
5.	+	+	+		✓	✓		This option is likely to require a higher land take given that room would be required to store materials for re-use and recycling. Whilst this may require more land, this may be on a temporary basis and conditions could be such that the land must return to its former use or enhanced following the sites completion. The additional criteria also support the re-use of buildings, which may encourage the use of previously developed where practicable.
6.	0	0	0					This option is not likely to have any effects further to those set out in option 1.
7.	0	0	0					This option is not likely to have any effects further to those set out in option 1.
8.	++	++	++	✓		✓		The additional criteria specified in this option advocate a sustainable approach to resources by supporting their re-use and recycling as well the use of sustainable materials where practicable. It would also support the re-use of building which may reduce the requirement for large volumes of building materials.
9.	++	++	++	✓		✓		This option adds additional criteria that are directly relevant to reducing waste through advocating the implementation of measures to reduce waste generated and encouraging/facilitating its re-use and recovery during construction. In addition, it also supports waste being sorted and stored prior to it being re-use or recycled. This would be positive overall in meeting this objective in comparison to option 1.
10.	?	?	?	✓		✓		The effects from this option on the historic environment would depend on the location and scale of additional development/space required.
11.	+	+	+	✓	✓	✓		Re-using building may have less of an impact should it be in a location of similar use. Impacts from the sorting and storage of waste may have negative effects on townscape.
12.	?	?	?	✓	✓	✓		This option may have implications for costs of construction. Re-using materials is likely to save money where it is practicable. However, supporting the sorting and storage of waste on site may have both costs benefits through enabling waste to be recovered for other uses but also potentially negative effects in terms of the

								timescales for development and costs for additional land. This is likely to be dependent upon the type of facility and its location.
13.	0	0	0					There are no clear links between this policy and the objective for local communities.
14.	0	0	0					There are no clear links between this policy and the objective for recreation and leisure.
15.	-	-	-					The storage of waste under this option may conflict with minimising the effects of odour and visual impacts although this will be dependent upon location. Any construction noise should be temporary. In comparison to option 1, the effects are likely to be uncertain and potentially negative on a temporary basis based upon the storage of waste prior to it being recycled or reused.
	?	?	?					
16.	0	0	0					This option is not likely to have any effects further to those set out in option 1.
17.	0	0	0					There is no clear link between this policy and the objective for meeting the community's needs.

Summary of assessment

The options for sustainable design and construction should have an overall positive effect on environmental sustainability objectives. The remit to support development which requires demonstration of how it minimises greenhouse gas emissions, reuses resources and promotes renewable technologies, as well as energy efficiency and high quality (through BREEAM), will have positive effects for climate change, air quality and resource use. Furthermore, Option 1's criteria support development with sustainable drainage systems and minimising flood risk which would have positive effects in the long-term for adapting to climate and minimising risk to people or businesses from flooding.

Option 2, which would be implemented in combination with Option 1, is beneficial by extending the criteria to include the effective management of waste through the lifecycle of the development further reducing resource use and waste arisings.

Both options have uncertain effects on the historic environment and landscape. Where practicable, the reuse of buildings would also minimise the land requirements elsewhere and may reduce impacts where they are co-located with similar uses. However, both options may have implications for the costs associated with developing a site given that the options would require high standards of sustainable design and construction to be met and additional mitigation where required. Also, option 2 may increase these costs through requiring more land for the sorting and storage of waste arising through the construction. These would need to be balanced with the gains that are likely to accrue through low running costs due to the energy efficiency of any development and cost reduction through reusing resources.

Recommendations

Whilst there are some economic implications from the implementation of this policy, it is considered that maximising the environmental benefits from this policy will have a net positive effect overall. It is therefore considered that option 1 in combination with option 2 should be taken forward.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13.

Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

Other Key Criteria for Minerals and Waste Development (id69)

Assumptions – This policy is used in addition to other development management policies set out within the plan.

Option 1
Proposals will be supported where it can be demonstrated, when considered against the following criteria, that unacceptable adverse (including cumulative) effects can be avoided or have been appropriately mitigated and, where possible, that the development would provide enhancements to the locality. Consideration would be given to:

- Impacts upon tranquillity and night skies
- Impacts relating to subsidence or land stability and the ability for these to be addressed satisfactorily
- The visual impact arising from the design, scale and location of the development
- Impact on best and most versatile agricultural land and the protection of soil resources through the life of the development
- Effects on opportunities for leisure an recreation and on Public Rights of Way and open access land, including the National Park impacts on opportunities for enjoyment for enjoyment ad understanding of the special qualities
- Public safety consideration
- Positive and negative impacts on the local economy.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓			✓	Understanding biodiversity and geodiversity is covered under another policy. However this option may have positive benefits indirectly by ensuring that consideration is given to tranquillity and dark night skies. Minerals and waste development may cause disturbance to wildlife due to noise and light during construction and operation. This option would ensure that this is taken into consideration within any proposals and is therefore considered to have a likely positive effect.
2.	0	0	0					There is no clear link between this policy and water quality / supply. These effects are covered under another policy.
3.	0	0	0					There is no clear link between this policy and transport. These effects are covered under another policy.
4.	0	0	0					There is no clear link between this policy and air quality. These effects are covered under another policy.

5.	+ +	+ +	+ +	✓	✓	✓		The criteria set out in this option would be positive towards ensuring consideration for the best and most versatile agricultural land and the protection of soil resources. This has the potential to have a significant positive effect when balanced against any mitigation measures depending upon the location and scale of adverse impacts identified.
6.	0	0	0					There is no clear link between this policy and climate change. These effects are covered under another policy.
7.	0	0	0					There is no clear link between this policy and adaptation to climate change. These effects are covered under another policy.
8.	0	0	0					There is no clear link between this policy and minimising resource use. These effects are covered under another policy.
9.	0	0	0					There is no clear link between this policy and minimising waste. These effects are covered under another policy.
10.	+ +	+ +	+ +	✓	✓	✓		The additional criteria set out in this policy would be valuable in supporting the historic character and setting through the consideration of visual impact as a result of the design, scale and location of development explicitly within any proposals. This is likely to have a particularly positive effect on the setting of heritage assets in-combination with other policies in the plan.
11.	+ +	+ +	+ +	✓	✓	✓		The additional criteria set out in this policy would be valuable in considering the visual impact as a result of the design, scale and location of development explicitly within any proposals. This is likely to have a positive effect on the landscape, particularly in locations where the landscape is designated for its importance such as the National Park and AONB but also in other areas where development may be exposed such as across the Vale of York.
12.	+ +	+ +	+ +	✓	✓	✓		This policy would help to identify positive and negative impacts on the economy. It enable a wider understanding of economic impacts resulting from waste and minerals development adding value to understanding the economic viability of any proposals individually. Through understanding this, positive mitigation can be determined to ensure any adverse effects are minimised. It could also identify where synergies are with local businesses and the influence that any development may have on the area. However, implementing mitigation measures where there are found to be adverse effects may also incur costs on the development and reduce the flexibility and choice of suitable locations. On balance however, the net benefits from understanding the wider economic implications are considered to be positive.
13.	+	+	+	✓	✓	✓		Similarly to objective 12, this policy is likely to have a benefit for the local community by identifying/ enabling a wider understanding of economic impacts resulting from waste and minerals development adding value to understanding the economic viability of any proposals individually. A balanced approach would be required for communities to understand the likely positive and negative impacts from waste and minerals development.

	?	?	?					Including this option allows for this analysis to be presented and for positive mitigation can be determined to ensure any adverse effects are minimised and benefits as a result of development are progressed. It could also identify where there are synergies with local businesses and the influence that any development may have on the area. Whilst the effects could be positive, they are also considered uncertain given that any harm would need to be identified and balanced against mitigation and potential opportunities.
14.	+	+	+	✓	✓	✓		The criteria in this policy would consider the impact on recreation and leisure across the plan area. This would be positive in allowing any adverse impacts to be mitigated and in the long-term may provide solutions or enhancements to the existing available recreational opportunities. This would be particularly important for areas known to have recreational value such as the National Park and AONB. Criteria for understanding impacts on tranquillity would also benefit these designated areas specifically.
15.	+ +	+ +	+ +	✓	✓	✓		The consideration of public safety within this option is important to ensure that adverse effects are identified and mitigated where necessary. Consideration of this in-combination with other policies in the plan such as air quality and transport is likely to ensure that health throughout the lifecycle of any proposals does not deteriorate as a result of development. In addition, it is known that visual amenity adds to people's health and well-being so including these criteria would be positive.
16.	0	0	0					There is no clear link between this policy and flood risk. These effects are covered under another policy.
17.	?	?	?	✓	✓	✓		This policy may contribute positively in the long-term subject to the identification and consideration of the local community within any proposals. The policy picks up social aspects of development such as impacts on recreation and leisure and would advocate, where practicable, enhancements which may benefit local communities in the long-term, potentially through restoration. Whilst the effects could be positive, they are considered uncertain given that any harm would need to be identified and balanced against mitigation and potential opportunities.

Option 2

Under this option the Plan would not contain any reference to the criteria set out under Option 1 and the NPPF would be relied on for guidance on these issues.[125]

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

[125] The assessment only considers the effects in relation to the criteria covered under Option 1 as other topics are covered elsewhere in the Issues and Options document.

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	-	-	?	✓	✓	✓		The effects that are likely to be realised under Option 1 are unlikely to be realised under this option as the NPPF does not contain reference to protecting tranquillity and dark skies, only to identifying areas of tranquillity. There may therefore be effects on biodiversity form loss of tranquillity, particularly considering the noise elements of tranquillity and the effects of light pollution in intrinsically dark areas. In the longer term effects would be uncertain depending upon whether the NPPF is amended or replaced.
2.	0	0	0					There is no clear link between this policy and water quality / supply. These effects are covered under another policy.
3.	0	0	0					There is no clear link between this policy and transport. These effects are covered under another policy.
4.	0	0	0					There is no clear link between this policy and air quality. These effects are covered under another policy.
5.	+ +	+ +	?	✓	✓	✓		The NPPF contains preference for developing lower quality agricultural land in preference to that a higher quality. In the longer term effects would be uncertain depending upon whether the NPPF is amended or replaced.
6.	0	0	0					There is no clear link between this policy and climate change. These effects are covered under another policy.
7.	0	0	0					There is no clear link between this policy and adaptation to climate change. These effects are covered under another policy.
8.	0	0	0					There is no clear link between this policy and minimising resource use. These effects are covered under another policy.
9.	0	0	0					There is no clear link between this policy and minimising waste. These effects are covered under another policy.
10.	+	+	?	✓	✓	✓		The NPPF contains policies requiring good design which includes consideration of impacts on the historic environment. In the longer term effects would be uncertain depending upon whether the NPPF is amended or replaced.
11.	+ / -	+ / -	?	✓	✓	✓		The NPPF contains policies requiring good design which includes consideration of effects on the landscape. However, it does not contain policies relating to tranquillity and dark skies, as discussed under objective 1, and may therefore lead to impacts on the landscape through loss of tranquillity (particularly considering the visual elements of tranquillity). These effects may be particularly significant in the National Park where tranquillity and dark skies is one of the special qualities. In the longer term effects would be uncertain depending upon whether the NPPF is amended or replaced.
12.	-	-	?	✓	✓	✓		Whilst the NPPF contains broad objectives in relation to supporting economic growth it does not require the

								impacts of individual proposals to be considered in terms of their positive any negative effects on the economy, although does state that great weight should be attached to the economic benefits of minerals extraction. Effects could therefore potentially be negative should minerals or waste developments have a negative effects on local economies. This may be particularly an issue in areas where tourism is a significant part of the local economy. In the longer term effects would be uncertain depending upon whether the NPPF is amended or replaced.
13.	-	-	?	✓	✓	✓		For similar reasons to objective 12, this option may have negative effects on the vitality of communities where these are heavily dependent on tourism. In the longer term effects would be uncertain depending upon whether the NPPF is amended or replaced.
14.	+	+	?	✓	✓	✓		Whilst the NPPF include considerations relating to loss of specific recreation assets such as open space and public rights of way, it does not contain any reference to the need to consider impacts on opportunities for understanding and enjoying National Parks, which is the 2nd statutory purpose for these areas, and may therefore lead to negative effects in these areas. In the longer term effects would be uncertain depending upon whether the NPPF is amended or replaced.
	-	-						
15.	-	-	?	✓	✓	✓		The NPPF contains considerations related to land stability but not does include a requirement to consider effects on public safety more generally and under this option there may therefore be negative on the safety of communities. In the longer term effects would be uncertain depending upon whether the NPPF is amended or replaced.
16.	0	0	0					There is no clear link between this policy and flood risk. These effects are covered under another policy.
17.	0	0	0					No clear link. Whilst the policy may have some implications relating to minerals supply this is considered to be particularly indirect in this case.

Summary of assessment

Option 1 is likely to have positive effects as it covers a range of additional criteria that would provide a more in-depth consideration of the wider implications of minerals and waste development on social, environmental and economic objectives. The option would have particularly strong positive effects in relation to the local economy, tranquillity, recreation, safety of communities, landscape and protecting high quality agricultural land with less significant positive effects for biodiversity. Option 2 provides the same positives in relation to heritage and tranquillity but would potentially result in negative effects for local economies, landscape (specifically the contribution that tranquillity and dark skies makes to landscape) and protecting the safety of communities. In terms of recreation whilst Option 2 would have positive effects in relation to protecting specific assets, it would have negative effects in terms of providing opportunities to understand and enjoy the National Park (which is part of the statutory National

Park purposes). Option 2 also presents an element of uncertainty in the long term should the NPPF be replaced or amended.

Recommendations
It is considered that option 1 should be taken forward.

Developments Proposed within Mineral Safeguarding Areas (id70)

Option 1

This option would indicate that within Minerals Safeguarding Areas non-minerals development will only be permitted in certain circumstances. This could include where:

- It would not sterilise or prejudice future extraction, or
- The mineral will be extracted prior to development (without unacceptable adverse impact on the environment or the amenity of local communities), or
- The need for the non-mineral development can be demonstrated to outweigh the need for the mineral, or
- It can be demonstrated that the mineral in the location concerned is no longer of any potential value as it does not represent an economically viable and therefore exploitable resource, or
- The non-mineral development is of a temporary nature that does not inhibit extraction within the timescale that the mineral is likely to be needed, or
- It constitutes 'exempt development' (as defined below).

It could also include a requirement that such planning applications should be accompanied by an assessment of the effect of the proposed development on the safeguarded mineral resource(s) beneath or adjacent to it.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓		✓	✓	There could be benefits for biodiversity if there are circumstances in which the safeguarding policy precludes development from going ahead. This would depend on the stringency of the policy.
2.	+	+	+	✓		✓	✓	There could be benefits for water quality if there are circumstances in which the safeguarding policy precludes development from going ahead. This would depend on the stringency of the policy.
3.	0	0	0					No clear link
4.	+	+	+	✓		✓	✓	There could be benefits for air quality if there are circumstances in which the safeguarding policy precludes development from going ahead. This would depend on the stringency of the policy.
5.	+	+	+	✓		✓	✓	There could be benefits for agricultural land if there are circumstances in which the safeguarding policy precludes development from going ahead. This would depend on the stringency of the policy.

6.	0	0	0					No clear link
7.	0	0	0					No clear link
8.	+	+	+	✓		✓		The option contains criteria to ensure that consideration is given to safeguarding the mineral although it does not prioritise safeguarding above all other considerations and there may be instances where the mineral is sterilised.
9.	0	0	0					No clear link
10.	+	+	+	✓		✓	✓	There could be benefits for the historic environment if there are circumstances in which the safeguarding policy precludes development from going ahead. This would depend on the stringency of the policy.
11.	+	+	+	✓		✓	✓	There could be benefits for landscape if there are circumstances in which the safeguarding policy precludes development from going ahead. This would depend on the stringency of the policy.
12.	-	-	-		✓		✓	The option may prevent some developments from going ahead which may have a negative effect on the economy.
13.	-	-	-		✓		✓	The option may prevent some developments from going ahead which may have a negative effect on the economy and therefore job creation. It may also have negative effects in terms of precluding developments which help to support the vitality and viability of a community such as housing.
14.	+	+	+	✓		✓	✓	There could be benefits for recreation assets if there are circumstances in which the safeguarding policy precludes development from going ahead. This would depend on the stringency of the policy.
15.	+	+	+	✓		✓	✓	There could be benefits for community health if there are circumstances in which the safeguarding policy precludes development from going ahead. This would depend on the stringency of the policy.
16.	0	0	0					No clear link
17.	- +	- +	- +	✓		✓	✓	The option may have negative effects by precluding development to help support the population, such as housing. However it may have positive effects by ensuring that there is an available supply of minerals for development.

Option 2

This option would adopt a list of application types that would be exempt from consideration under the Minerals Safeguarding Area policy. Possible exemptions could include:

- Infilling in towns and villages[126].
- Householder applications within the curtilage of a property.
- Advertisement applications.
- Reserved matters applications.
- Applications for new or improved accesses.
- 'Minor' extensions/alterations to existing uses/buildings which do not fundamentally change the scale and character of the use/building.
- 'Temporary' development (for up to five years).
- Agricultural buildings adjacent to existing farmsteads.
- 'Minor' works such as fences, bus shelters, gates, walls, accesses.
- Amendments to current permissions (with no additional land take involved).
- Changes of use.
- Applications for development on land which is already allocated in adopted local plans where the plan took account of the prevention of unnecessary mineral sterilisation and determined that prior extraction should not be considered when development applications in a Mineral Safeguarding Area came forward.
- Listed Building Consent and Applications for planning permission for relevant demolition in a Conservation Area
- Applications for work to trees or removal of hedgerows (unless specifically requested)
- Prior notifications for telecommunications, forestry, agriculture & demolition
- Certificates of Lawfulness of Existing Use of Development and
- Certificates of Lawfulness of Proposed Use or Development.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

[126] Infilling development is defined here as development which fills a restricted gap in the continuity of existing buildings where the site has existing buildings adjoining on at least two sides.

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					No clear link
2.	0	0	0					No clear link
3.	0	0	0					No clear link
4.	0	0	0					No clear link
5.	0	0	0					No clear link
6.	0	0	0					No clear link
7.	0	0	0					No clear link
8.	+	+	+	✓		✓		It is unlikely that the small scale developments, due to their nature and/or location, would lead to the sterilisation of minerals and therefore providing these exemptions still enable minerals to be safeguarded.
9.	0	0	0					No clear link
10.	0	0	0					No clear link
11.	0	0	0					No clear link
12.	+	+	+		✓		✓	The option would have a positive effect on the economy by exempting a number of developments thus enabling them to come forward (subject to other policies).
13.	0	0	0					No clear link
14.	0	0	0					No clear link
15.	0	0	0					No clear link
16.	0	0	0					No clear link
17.	+	+	+	✓			✓	The option would have a positive effect on householder and minor applications, enabling these to come forward (where they comply with other policies).

Option 3

In areas identified as underground coal or potash Minerals Safeguarding Areas, applicants proposing the following types of development would be required to consider the potential impacts on the proposed development arising from extraction of the safeguarded resources, as well as the potential for the surface development to sterilise the underlying resource:

- large institutional and public buildings,
- major industrial buildings including those with sensitive processes and precision equipment vulnerable to ground movement,
- major retail complexes,
- non-residential high rise buildings (3 storeys plus),
- strategic gas, oil, naphtha and petrol pipelines,
- vulnerable parts of main highways and motorway networks (e.g. viaducts, large bridges, service stations and interchanges),
- security sensitive structures,
- strategic water pumping stations, waterworks, reservoirs, sewage works and pumping stations,
- ecclesiastical property,
- power stations and
- wind turbines.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					No clear link
2.	0	0	0					No clear link
3.	0	0	0					No clear link
4.	0	0	0					No clear link
5.	0	0	0					No clear link
6.	-	-	-					Alongside other options this approach may result in wind turbines in some locations not able to come forward, thus not able to contribute to reducing CO_2 emissions.
7.	0	0	0					No clear link

8.	+ +	+ +	+ +					This option would have positive effects by considering the safeguarding of coal and potash against sterilisation from these developments.
9.	0	0	0					No clear link
10.	0	0	0					No clear link
11.	0	0	0					No clear link
12.	-	-	-					This approach may result in fewer of the developments listed being able to come forward which could have negative effects on the economy.
13.	-	-	-					This approach may result in fewer of the developments listed being able to come forward which could have negative effects on the economy and therefore on job creation.
14.	0	0	0					No clear link
15.	0	0	0					No clear link
16.	0	0	0					No clear link
17.	-	-	-					This approach may result in fewer of the developments listed being able to come forward which could have negative effects in terms of ensuring developments come forward to meet the needs of the population.

Option 4

As an alternative to Option 3 in respect of underground coal safeguarding areas this option would not set out a specific approach to consultation for non-mineral development which is sensitive to mining subsidence, relying instead on the advice of the Coal Authority as a statutory consultee.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	**Impact / timescale**			**Type of effect**				**Analysis**
	S	**M**	**L**	**P**	**T**	**D**	**I**	
1.	0	0	0					No clear link
2.	0	0	0					No clear link

3.	0	0	0					No clear link
4.	0	0	0					No clear link
5.	0	0	0					No clear link
6.	-	-	-					Alongside other options, this approach may result in wind turbines in some locations not able to come forward, thus not able to contribute to reducing CO_2 emissions. Magnitude of effects may be less than under option 3 as the approach would not apply to potash. In relation to coal it is assumed the outcome of relying on the advice of UK coal would provide the same outcome as having a policy which lists potentially sensitive development, but would be less helpful to the applicant by not setting the approach out in the Plan.
7.	0	0	0					No clear link
8.	+	+	+					This option would have positive effects by considering the safeguarding of coal against sterilisation from these developments but would not safeguard the potash resource.
9.	0	0	0					No clear link
10.	0	0	0					No clear link
11.	0	0	0					No clear link
12.	-	-	-					This approach may result in fewer of the developments listed being able to come forward which could have negative effects on the economy. The magnitude of effects may be less than under option 3 as the approach would not apply to potash. In relation to coal it is assumed the outcome of relying on the advice of UK coal would provide the same outcome as having a policy which lists potentially sensitive development, but would be less helpful to the applicant by not setting the approach out in the Plan.
13.	-	-	-					This approach may result in fewer of the developments listed being able to come forward which could have negative effects on the economy and therefore on job creation. The magnitude of effects may be less than under option 3 as the approach would not apply to potash. In relation to coal it is assumed the outcome of relying on the advice of UK coal would provide the same outcome as having a policy which lists potentially sensitive development, but would be less helpful to the applicant by not setting the approach out in the Plan.
14.	0	0	0					No clear link
15.	0	0	0					No clear link
16.	0	0	0					No clear link
17.	-	-	-					This approach may result in fewer of the developments listed being able to come forward which could have negative effects in terms of ensuring developments come forward to meet the needs of the population. Effects may be less than under option 3 as the approach would not apply to potash. In relation to coal it is assumed the outcome of relying on the advice of UK coal would provide the same outcome as having a policy which lists potentially sensitive development, but would be less helpful to the applicant by not setting the approach out in the Plan.

Proposed alternative option 5: (Or)

This option would indicate that within Minerals Safeguarding Areas non-minerals development will only be permitted in certain circumstances. This could include where:

- It would not sterilise or prejudice future extraction, or
- The mineral will be extracted prior to development (without unacceptable adverse impact on the environment or the amenity of local communities), or
- The need for the non-mineral development can be demonstrated to outweigh the need for the mineral, or
- It can be demonstrated that the mineral in the location concerned is no longer of any potential value as it does not represent an economically viable and therefore exploitable resource, or
- The non-mineral development is of a temporary nature that does not inhibit extraction within the timescale that the mineral is likely to be needed, or
- It constitutes 'exempt development' (as defined below), or
- The mineral is not needed in the foreseeable future.

It could also include a requirement that such planning applications should be accompanied by an assessment of the effect of the proposed development on the safeguarded mineral resource(s) beneath or adjacent to it.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	+	+	+	✓		✓	✓	There could be benefits for biodiversity if there are circumstances in which the safeguarding policy precludes development from going ahead. This would depend on the stringency of the policy.
2.	+	+	+	✓		✓	✓	There could be benefits for water quality if there are circumstances in which the safeguarding policy precludes development from going ahead. This would depend on the stringency of the policy.
3.	0	0	0					No clear link

4.	+	+	+	✓		✓	✓	There could be benefits for air quality if there are circumstances in which the safeguarding policy precludes development from going ahead. This would depend on the stringency of the policy.
5.	+	+	+	✓		✓	✓	There could be benefits for agricultural land if there are circumstances in which the safeguarding policy precludes development from going ahead. This would depend on the stringency of the policy.
6.	0	0	0					No clear link
7.	0	0	0					No clear link
8.	+	+	+	✓		✓		The option contains criteria to ensure that consideration is given to safeguarding the mineral although it does not prioritise safeguarding above all other considerations and there may be instances where the mineral is sterilised.
9.	0	0	0					No clear link
10.	+	+	+	✓		✓	✓	There could be benefits for the historic environment if there are circumstances in which the safeguarding policy precludes development from going ahead. This would depend on the stringency of the policy.
11.	+	+	+	✓		✓	✓	There could be benefits for landscape if there are circumstances in which the safeguarding policy precludes development from going ahead. This would depend on the stringency of the policy.
12.	-	-	-		✓		✓	The option may prevent some developments from going ahead which may have a negative effect on the economy, although these effects may be less significant than under Option 1 as consideration would also be given to whether there was a need for the mineral.
13.	-	-	-		✓		✓	The option may prevent some developments from going ahead which may have a negative effect on the economy and therefore job creation. It may also have negative effects in terms of precluding developments which help to support the vitality and viability of a community such as housing, although these effects may be less significant than under Option 1 as consideration would also be given to whether there was a need for the mineral.
14.	+	+	+	✓		✓	✓	There could be benefits for recreation assets if there are circumstances in which the safeguarding policy precludes development from going ahead. This would depend on the stringency of the policy.
15.	+	+	+	✓		✓	✓	There could be benefits for community health if there are circumstances in which the safeguarding policy precludes development from going ahead. This would depend on the stringency of the policy.
16.	0	0	0					No clear link
17.	+	+	+	✓		✓	✓	The option may have negative effects by precluding development to help support the population, such as housing, although these effects may be less significant than under Option 1 as consideration would also be given to whether there was a need for the mineral. However the option may have positive effects by ensuring that there is an available supply of minerals for development.
	-	-	-					

Summary of assessment
It is difficult to predict the effects with any certainty as this would depend on the particular circumstances of each case as to whether the development would or would not cause unacceptable sterilisation of the mineral. Potential negative effects from each of the options include effects on the economy of potentially precluding certain developments from taking place, although effects under Option 5 would be likely to be less significant than under Option 1. However the exemptions provided under Option 2 would help to ensure that certain developments could still take place.
Considered together with Option 1, Option 2 or Option 5, Option 3 is considered to be more beneficial in terms of the SA's resource safeguarding objective than Option 4, as it provides more certainty over the types of development where safeguarding deep mineral resources would be relevant and it also refers to safeguarding potash.

Recommendations
It is recommended that a combination of Options 5, 2 and 3 are pursued.

Consideration of Applications in Mineral Consultation Areas (id71)

Assumptions – It is assumed that the policy applied in the Minerals Safeguarding Areas would remain the same, but that this option would provide the process necessary for ensuring this works in practice in the two-tier NYCC area. It would not apply in the National Park or the City of York and therefore the assessment just relates to impacts of development in the NYCC area.

Option 1
Where safeguarding of a particular minerals resource is identified in the Plan, this option would define the whole of that area (to the extent that it falls within NYCC) as a Minerals Consultation Area, where District/Borough Councils would be required to consult the County Council in respect of any non-exempt proposals.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					No clear link
2.	0	0	0					No clear link
3.	0	0	0					No clear link
4.	0	0	0					No clear link
5.	0	0	0					No clear link
6.	0	0	0					No clear link
7.	0	0	0					No clear link
8.	+ +	+ +	+ +	✓		✓		This option would ensure that consideration is given to safeguarding minerals from any development taking place in the boroughs and districts of the NYCC area.
9.	0	0	0					No clear link
10.	+	+	+	✓		✓		This option would ensure that consideration is given to safeguarding building stone, which may be needed for the repair of historic assets or for ensuring new developments are appropriate in their setting, from any

								development taking place in the boroughs and districts of the NYCC area.
11.	0	0	0					No clear link
12.	0	0	0					No clear link
13.	0	0	0					No clear link
14.	0	0	0					No clear link
15.	0	0	0					No clear link
16.	0	0	0					No clear link
17.	+	+	+	✓		✓		This option would ensure that consideration is given to safeguarding minerals, which may be needed to support the population and any new developments, from any development taking place in the boroughs and districts of the NYCC area.

Proposed alternative option 2: (And)
Under this option minerals infrastructure and ancillary development would be included within Minerals Consultation Areas.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					No clear link
2.	0	0	0					No clear link
3.	0	0	0					No clear link
4.	0	0	0					No clear link
5.	0	0	0					No clear link
6.	0	0	0					No clear link
7.	0	0	0					No clear link
8.	+ +	+ +	+ +	✓		✓		The option would ensure that consultation would take place in relation to development which may affect minerals infrastructure and ancillary development, contributing to the safeguarding of infrastructure that supports sustainable minerals development.
9.	0	0	0					No clear link
10.	0	0	0					No clear link
11.	0	0	0					No clear link
12.	0	0	0					No clear link
13.	0	0	0					No clear link
14.	0	0	0					No clear link
15.	0	0	0					No clear link

16.	0	0	0					No clear link
17.	+ +	+ +	+ +	✓		✓		Ensuring consultation takes place in relation to development which may affect minerals infrastructure and ancillary development will contribute to ensuring a supply of minerals to support the population and new developments.

Summary of assessment
Both options score positively by adding additional certainty over the process of operating the Minerals Safeguarding Areas policy, thus ensuring minerals are not sterilised by development being given permission by district or borough councils.

Recommendations
It is recommended that the combination of both options be pursued to ensure that the Minerals Safeguarding Area policy and safeguarding of infrastructure and ancillary development is applied consistently across the Joint Plan area.

Coal Mining Legacy (id72)

Assumptions – Assumes local plans have considered Coal Authority advice.

Option 1
This option would seek to ensure that coal mining legacy issues are taken into account during assessment of development proposals which are proposed in development high risk areas identified by the Coal Authority, including those proposals falling within the responsibility of the District and Borough Councils within the Plan area. Applicants in such areas and for the relevant forms of development identified by the Coal Authority would be required to provide information on land stability issues and where necessary incorporate suitable mitigation measures to address them.

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					This option will have no effect on the biodiversity and geo-diversity objective.
2.	0	0	0					This option will have no effect on the water quality and supply objective
3.	0	0	0					This option will have no effect on the transport objective
4.	0	0	0					This option will have no effect on the air quality objective
5.	+	+	+ +	✓		✓		This option will help ensure that appropriate development will be undertaken on land where there may be uncertainty over land stability, which ultimately will prevent future impairment of land value.
6.	0	0	0					This option will have no effect on the causes of climate change objective
7.	+	+	+	✓			✓	Land instability may be affected by climate change, e.g. through weather related shrink-swell affecting clays[127], so there may (or may not) be a synergistic risk between coal mining related subsidence and climate change related subsidence. This option would reduce this synergistic effect if it occurs by minimising risks from coal mining.
8.	0	0	0					This option will have no effect on the resource use objective

[127] See British Geological Survey, 2013. Shrink-swell and climate change [URL: http://www.bgs.ac.uk/science/landUseAndDevelopment/shallow_geohazards/shrinkSwellClimateChange.html]

9.	0	0	0					This option will have no significant effect on the waste minimisation objective
10.	0	0	0					This option will have no significant effect on the historic environment objective
11.	0	0	0					This option will have no significant effect on the landscape objective
12.	0	0	0					This option will have no significant effect on the sustainable economic growth objective
13.	0	0	0					This option will have no significant effect on the local communities objective
14.	0	0	0					This option will have no significant effect on the recreation, leisure and learning objective
15.	+	+	+	✓		✓		This option is likely to have beneficial effects by ensuring that built development is less prone to land instability, which should reduce levels of stress, increase safety and ensure that properties maintain value.
16.	+	+	+	✓			✓	Subsidence can exacerbate the risk of flooding by forming hollows in the ground or lowering the level of a defence. Investigation of the risk of subsidence should allow more informed flood risk assessments.
17.	+	+	+	✓		✓		This option is likely to have small scale beneficial effects by ensuring that built development is less prone to land instability, thus ensuring that building / development life is maintained, and reducing the rate of turnover of development.

Option 2

This option would not set out a specific policy relating to coal mining legacy issues but would refer to, and rely on, national policy in the NPPF and the advice published by the Coal Authority. The NPPF does not set out any specific policy relating to development in areas of former coal mining but does require that development is not put at unacceptable risk from land instability (para 109).

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA obje	**Impact / timescale**	**Type of effect**	**Analysis**

	S	M	L	P	T	D	I	
1.	0	0	0					This option will have no effect on the biodiversity and geo-diversity objective.
2.	0	0	0					This option will have no effect on the water quality and supply objective
3.	0	0	0					This option will have no effect on the transport objective
4.	0	0	0					This option will have no effect on the air quality objective
5.	+	+	? +	✓		✓		This option will have a positive effect on the soil and land objective, becoming more uncertain in the longer term. This is because, while the NPPF would help prevent development with a level of unacceptable risk, and the Coal Authority advice would advise on requirements to survey, both sources of information are subject to change in the longer term.
6.	0	0	0					This option will have no effect on the causes of climate change objective.
7.	+	+	+ ?	✓		✓		Land instability may be affected by climate change, e.g. through weather related shrink-swell affecting clays, so there may (or may not) be a synergistic risk between coal mining related subsidence and climate change related subsidence. This option would reduce this synergistic effect if it occurs by minimising risks from coal mining and would require other sources of instability to be addressed. However, this becomes more uncertain in the long term as the approach would be vulnerable to future policy adjustments to the NPPF.
8.	0	0	0					This option will have no effect on the resource use objective
9.	0	0	0					This option will have no significant effect on the waste minimisation objective
10.	0	0	0					This option will have no significant effect on the historic environment objective
11.	0	0	0					This option will have no significant effect on the landscape objective
12.	0	0	0					This option will have no significant effect on the sustainable economic growth objective
13.	0	0	0					This option will have no significant effect on the local communities objective
14.	0	0	0					This option will have no significant effect on the recreation, leisure and learning objective
15.	+	+	+ ?	✓		✓		This option is likely to have beneficial effects by ensuring that built development is less prone to land instability, which should reduce levels of stress, increase safety and ensure that properties maintain value. The positive effect becomes more uncertain over time as national policy (and Coal Authority advice) is subject to change.
16.	+	+	+	✓			✓	Subsidence can exacerbate the risk of flooding by forming hollows in the ground or lowering the level of a defence. The NPPF should encourage investigation of the risk of subsidence, which should also allow more

			?					informed flood risk assessments. The positive effect becomes more uncertain over time as national policy is subject to change.
17.	+	+	+ ?	✓		✓		This option is likely to have small scale beneficial effects by ensuring that built development is less prone to land instability, thus ensuring that building / development life is maintained, and reducing the rate of turnover of development. The positive effect becomes more uncertain over time as national policy is subject to change.

Option 3
The consideration of the legacy of coal mining would be left to be included within the local plans of the relevant District Councils given that the relevant developments being proposed are most likely to be determined by those councils.[128]

SA Objective Key: 1. Biodiversity / Geo-diversity, 2. Water Quality / Quantity, 3. Transport, 4. Air Quality, 5. Soil / Land, 6. Reduce Climate Change, 7. Adapt to Climate Change, 8. Minimise Resource Use, 9. Minimise Waste, 10. Historic Environment, 11. Landscape, 12. Economic Growth, 13. Community Vitality, 14. Recreation, Leisure and Learning, 15. Wellbeing, Health and Safety, 16. Flooding, 17. Changing Population Needs

SA objective	Impact / timescale			Type of effect				Analysis
	S	M	L	P	T	D	I	
1.	0	0	0					This option will have no effect on the biodiversity and geo-diversity objective.
2.	0	0	0					This option will have no effect on the water quality and supply objective
3.	0	0	0					This option will have no effect on the transport objective
4.	0	0	0					This option will have no effect on the transport objective
5.	0	0	0	✓		✓		Reliance on policies in Local Plans would require that decisions on coal mining legacy issues would largely be left to Selby and York Councils. While York's Local Plan is not adopted yet it doesn't have a specific policy in relation to coal mining legacy in its present format, instead relying on a range of policies to consider development in former mining locations. In a similar way, Selby's Local Plan relies on a range of policies. This is likely to have a neutral effect on the soil and land SA objective as essentially issues such as subsidence and hazard are considered in line with other policies in those Local Plans which are not specific to the legacy

[128] Not relevant to the North York Moors National Park Authority

								of coal mining.
6.	0	0	0					This option will have no effect on the causes of climate change objective
7.	0	0	0	✓		✓		Reliance on policies in Local Plans would require that decisions on coal mining legacy issues would largely be left to Selby and York Councils. While York's Local Plan is not adopted yet it doesn't have a specific policy in relation to coal mining legacy in its present format, instead relying on a range of policies to consider development in former mining locations. In a similar way, Selby's Local Plan relies on a range of policies. This is likely to have a neutral effect on the climate change adaptation SA objective as essentially issues such as subsidence and hazard are considered in line with other policies in those Local Plans which are not specific to the legacy of coal mining.
8.	0	0	0					This option will have no effect on the resource use objective
9.	0	0	0					This option will have no significant effect on the waste minimisation objective
10.	0	0	0					This option will have no significant effect on the historic environment objective
11.	0	0	0					This option will have no significant effect on the landscape objective
12.	0	0	0					This option will have no significant effect on the sustainable economic growth objective
13.	0	0	0					This option will have no significant effect on the local communities objective
14.	0	0	0					This option will have no significant effect on the recreation, leisure and learning objective
15.	0	0	0	✓		✓		Reliance on policies in Local Plans would require that decisions on coal mining legacy issues would largely be left to Selby and York Councils. While York's Local Plan is not adopted yet it doesn't have a specific policy in relation to coal mining legacy in its present format, instead relying on a range of policies to consider development in former mining locations. In a similar way, Selby's Local Plan relies on a range of policies. This is likely to have a neutral effect on the health and wellbeing SA objective as essentially issues such as subsidence and hazard are considered in line with other policies in those Local Plans which are not specific to the legacy of coal mining.

16.	0	0	0	✓			✓	Reliance on policies in Local Plans would require that decisions on coal mining legacy issues would largely be left to Selby and York Councils. While York's Local Plan is not adopted yet it doesn't have a specific policy in relation to coal mining legacy in its present format, instead relying on a range of policies to consider development in former mining locations. In a similar way, Selby's Local Plan relies on a range of policies. This is likely to have a neutral effect on the flood risk SA objective as essentially issues such as subsidence and hazard are considered in line with other policies in those Local Plans which are not specific to the legacy of coal mining.
17.	0	0	0	✓		✓		Reliance on policies in Local Plans would require that decisions on coal mining legacy issues would largely be left to Selby and York Councils. While York's Local Plan is not adopted yet it doesn't have a specific policy in relation to coal mining legacy in its present format, instead relying on a range of policies to consider development in former mining locations. In a similar way, Selby's Local Plan relies on a range of policies. This is likely to have a neutral effect on the changing population SA objective as essentially issues such as subsidence and hazard are considered in line with other policies in those Local Plans which are not specific to the legacy of coal mining.

Summary of assessment

There are unlikely to be widespread effects as a result of either of these options. However, there are some small scale effects on soil / land, climate change adaptation, health and wellbeing, flood risk and meeting the needs of the population. These effects are generally positive, however, greater uncertainty is observed under Option 2 (which is subject to changes in national policy in the long term).

Option 3 is generally considered to have neutral effects on trends observed in the baseline to this assessment as the relevant Local Plans' policy approach and sites have been, and will continue to be, subject to their own sustainability appraisals.

Recommendations All options are broadly beneficial, but the most certain positive effects are associated with option 1. Should option 3 be followed, policy would need to be included in the Joint Plan in relation to the North York Moors National Park and the City of York area.

Contact us

Minerals and Waste Joint Plan Team Planning Services, North Yorkshire County Council, County Hall, Northallerton, North Yorkshire, DL7 8AH

Tel: **01609 780780** Email: **mwjointplan@northyorks.gov.uk**

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Tel: **01609 780780** Email: **mwjointplan@northyorks.gov.uk**