

Minerals and Waste Joint Plan

Sustainability Appraisal Scoping Report Baseline

February 2014



VOLUME II: Contents

1	Introduction	2
2	Context.....	8
3	SEA Topic/SA Category – Biodiversity, Flora and Fauna	9
4	SEA Topic/SA Category – Water and Soil	41
5	SEA Topic/SA Category – Air	55
6	SEA Topic/SA Category – Climatic Factors	64
7	SA/SEA Category – Cultural Heritage and Historic Environment.....	71
8	SEA/SA Category – Additional Environmental Issues	75
9	SEA Topic/SA Category – Economy, Employment, Education and Deprivation	79
10	EA Topic/SA Category – Population and Human Health.....	93
11	SEA Topic/SA Category - Recreation and Leisure.....	104
12	SEA Topic/SA Category - Communities	108
13	SEA Topic/SA Category – Material Assets and Resources	112
14	SEA Topic/SA Category – Transport	128

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1 Introduction

An important part of the scoping stage for Sustainability Appraisal (SA) is establishing the baseline. The baseline is a set of data, both quantitative and qualitative, which establishes the current state of the area, and trends over time, in terms of sustainability themes. Whilst highlighting themes or pieces of information that may be particularly relevant to the Minerals and Waste Joint Plan (MWJP), or the 'Joint Plan', it does not aim to consider possible ways of addressing any issues. It is purely a factual account.

This baseline information represents the baseline for the purposes of SA for the North Yorkshire Minerals and Waste Joint Plan. Environmental and Economic & Demographic Evidence Papers have been produced as part of the evidence base for the Joint Plan. The baseline has drawn upon this evidence but it is important to retain the SA baseline as separate in order to clearly set out the relationship between this and the sustainability issues which will directly inform the sustainability objectives.

Separate baselines have been compiled for the City of York and for the North York Moors National Park. Where relevant, these have been referred to ensure that issues specific to these areas are not 'lost' within the overall baseline. These separate baselines are available to view at www.york.gov.uk/NewLocalPlanforYork and www.northyorkmoors.org.uk/living-in/planning/advice/background-documents respectively. The baselines for the North York Moors and the City of York have been developed for a wider range of plans and so not all of the information contained within them will be relevant to the Joint Plan.

Figure 1.1 overleaf shows how this document fits in with the baselines already produced for the North York Moors National Park and the City of York and the Environmental and Economic & Demographic Evidence Papers produced as part of the evidence base for the Plan itself. Some information contained in the latter is repeated within this document, and there is therefore some overlap between the two.

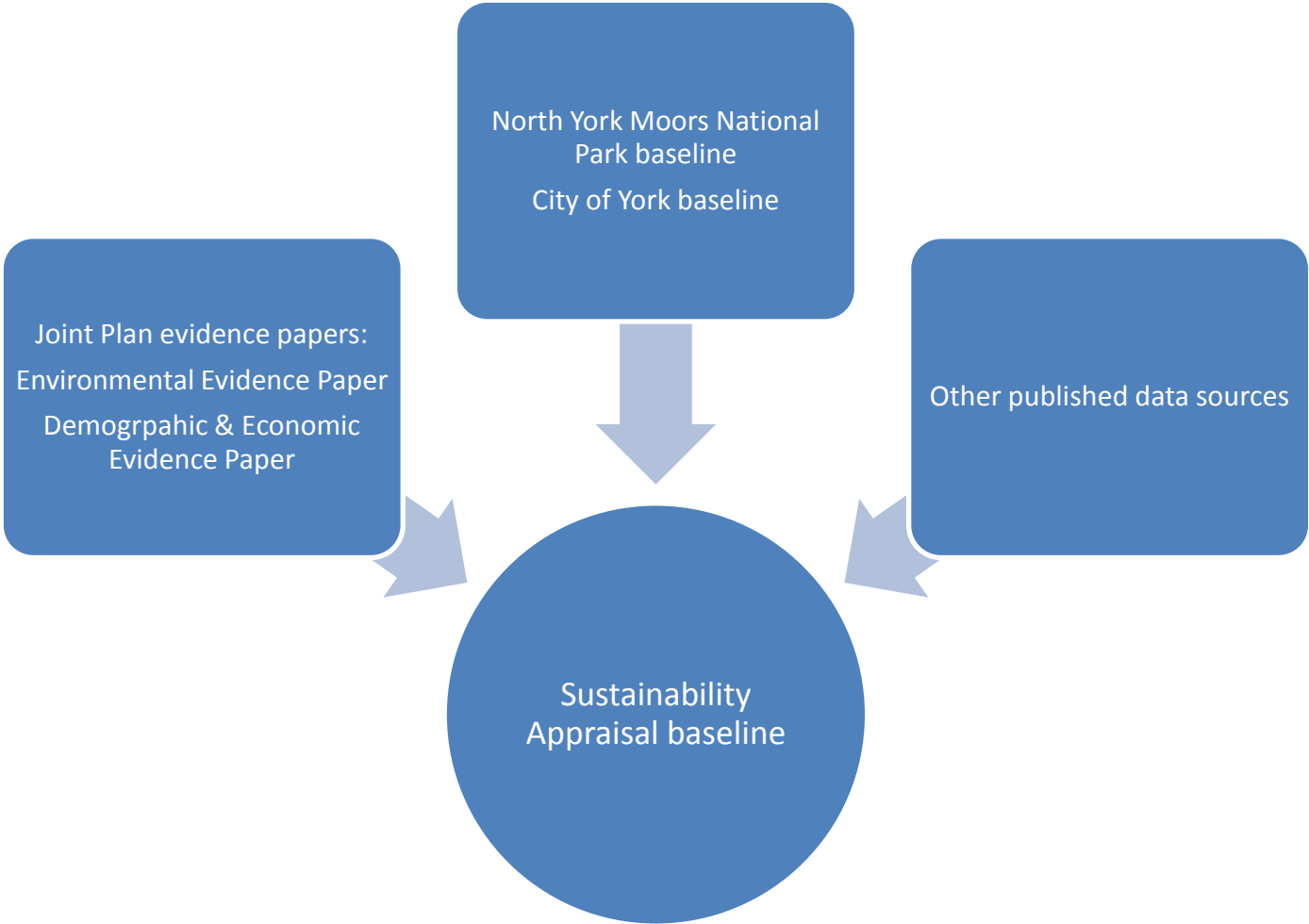


Figure 1.1: Sources of information for the baseline.

In some cases, it has not been possible to obtain or aggregate information precisely to the Joint Plan Area¹ and therefore the data relates to either:

- ◆ North Yorkshire county (including those parts of the North York Moors and Yorkshire Dales National Parks which are within North Yorkshire but excluding those parts which are outwith North Yorkshire);
- r North Yorkshire and York sub-region (including the administrative areas of North Yorkshire County Council and the City of York Council, but excluding the parts of the North York Moors and Yorkshire Dales National Parks which are outside North Yorkshire);
- North Yorkshire and York planning sub-region (including the entire administrative areas of North Yorkshire County Council, the City of York Council, the North York Moors National Park and the Yorkshire Dales National Park);
- S The Plan Area (the whole of the administrative areas of the North York Moors National Park and the City of York, and the whole of the North Yorkshire County Council area except for the part of the county within the Yorkshire Dales National Park);
- I North Yorkshire Minerals and Waste Planning Authority area (the North Yorkshire County Council administrative area excluding the area within the North York Moors and Yorkshire Dales National Parks).

Whilst a small part of the North York Moors National Park lies within Redcar and Cleveland borough, for some datasets where data is not available at National Park level, it is considered that reference to data for North Yorkshire will provide a fairly accurate overview as data for the urban area of Redcar may otherwise distort the overall picture. As the baseline is collating data relating to three planning authorities at this stage there are some gaps in the data available. Where this is the case this is highlighted as ‘to be collected (TBC)’ and efforts will be made to obtain the information throughout the course of the Sustainability Appraisal process.

The topics addressed in the baseline have been identified against the relevant Strategic Environmental Assessment (SEA) topic, as listed in the SEA Directive. Additional topics have been added which relate to the economic and social topic areas, along with cross-cutting areas, which are relevant to Sustainability Appraisal in addition to the environmental topics. The table below identifies the topic areas covered and how these relate to the SEA topics and/or SA categories.

Key messages arising from the baseline have been summarised at the end of each section and these have informed the development of Sustainability Objectives, as detailed in the Scoping Report.

¹This is largely due to the fact that most data is not available at National Park level. As well as the North York Moors National Park being one of the three minerals and waste planning areas involved in the MWJP, the eastern boundary of the plan area is defined by the western boundary of the Yorkshire Dales National Park.

Indicators have also been identified against each of the topic areas which have also been used in the development of the Sustainability Objectives as detailed in the Scoping Report. As the Sustainability Appraisal process progresses the indicators will be defined and a final list of indicators for monitoring the effects of the Joint Plan will be presented upon adoption of the Joint Plan.

SEA/SA Category	Topic	Page
Biodiversity, Flora and Fauna	Protected Sites	9
	Trees and Woodland	15
	Biodiversity Action Plans	17
	Agri-Environment Schemes	19
	Invasive Species	19
	Habitat Networks	21
	Green Infrastructure	25
	Ecosystem Services	26
Landscape	Landscapes across the Plan area	32
	Protected Landscapes	33
	Managing Landscape Change	34
	Green Belt	39
Water and Soil	Water Quality	41
	Flooding	43
	Flood Defence Network and Sustainable Drainage	45
	Water Availability	47
	Shoreline Erosion and Management	49
	Agricultural Land and Soil	50
Air	Air Quality	55
Climatic Factors	Climate Change Projections	64
	Emissions	65
	Climate Change vulnerability	68
Cultural Heritage and Historic Environment	Heritage Assets	71
	Heritage at Risk	72
Additional Environmental Issues	Minerals Restoration	75
	Tranquillity	75
	Geologically Important Sites	76
	Marine and Coastal Environment	77
Employment, Education and Deprivation	Economy and Employment	79
	Education	87
	Deprivation	89
Population and Health	Population	93
	Households and Housing	95
	Health and Wellbeing	98
Recreation and Leisure	Recreational Activities	104
Communities	Access to Services and Facilities	108
	Broadband and Communications	108
	Crime	108

Material Assets and Resources	Waste	112
	Minerals	116
	Energy	122
Transport	Transport Infrastructure	128
	Transport Usage	131

2 Context

The Minerals and Waste Joint Plan Area comprises the three Minerals and Waste Planning Authorities of North Yorkshire County Council (which is the area of the county outside of the North York Moors National Park), the North York Moors National Park Authority and the City of York Council. The total size of the area is 6,718 square kilometres. The Joint Plan Area is shown on Figure 2.1 below.

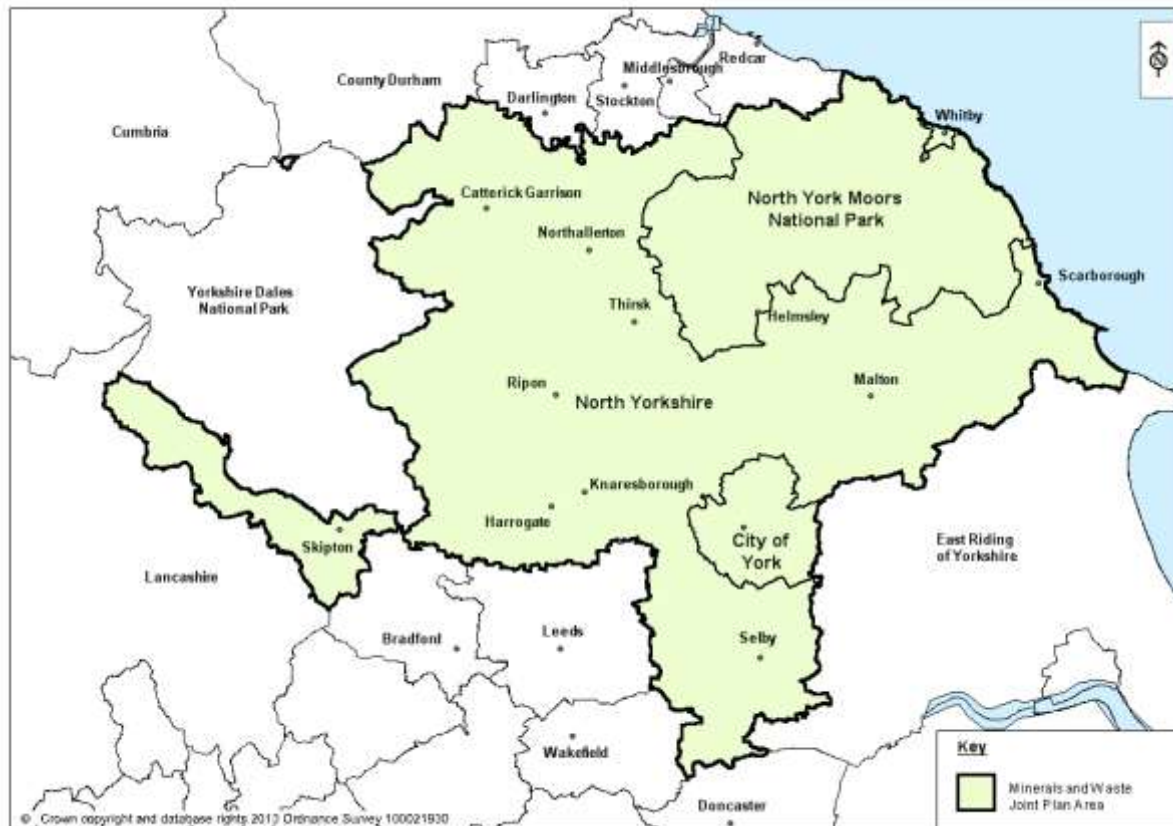


Figure 2.1: Minerals and Waste Joint Plan Area.

The three authorities cover distinctly different areas and therefore there is a diverse character to the Joint Plan Area. North Yorkshire (outside the National Parks) is a largely rural county containing a number of small market towns plus the larger towns of Harrogate and Scarborough, along with two Areas of Outstanding Natural Beauty. The A1 and A1(M) run north-south through the centre of the area. The City of York area is mostly urban, focused upon the historic city of York itself. The North York Moors National Park was designated due to its 'intrinsic merits as an area of beautiful and unspoilt country and magnificent coast with a wealth of architectural interest'. It is largely rural, and the settlements in the Park are comparatively small.

3 SEA Topic/SA Category – Biodiversity, Flora and Fauna

Protected Sites

A significant proportion of the land in the Joint Plan Area, particularly within the NYMNP and in the Nidderdale AONB, is protected at European level under the Habitats Directive² as Special Area of Conservation and/or under the Birds Directive³ as Special Protection Area, for its nature conservation importance. A total of 112,600.86 hectares of land are designated as Special Area of Conservation and a total of 105,329.31 hectares are Special Protection Area. These areas do overlap, for example most of the moorland in the North York Moors National Park is designated as both SAC and SPA. There is also one Ramsar site, Lower Derwent Valley, designated under the Convention of Wetlands of International Importance, in the eastern part of Selby District in the south of the Plan Area. Figure 3.1 and 3.2 below show the extent of European protected sites in the Plan Area.

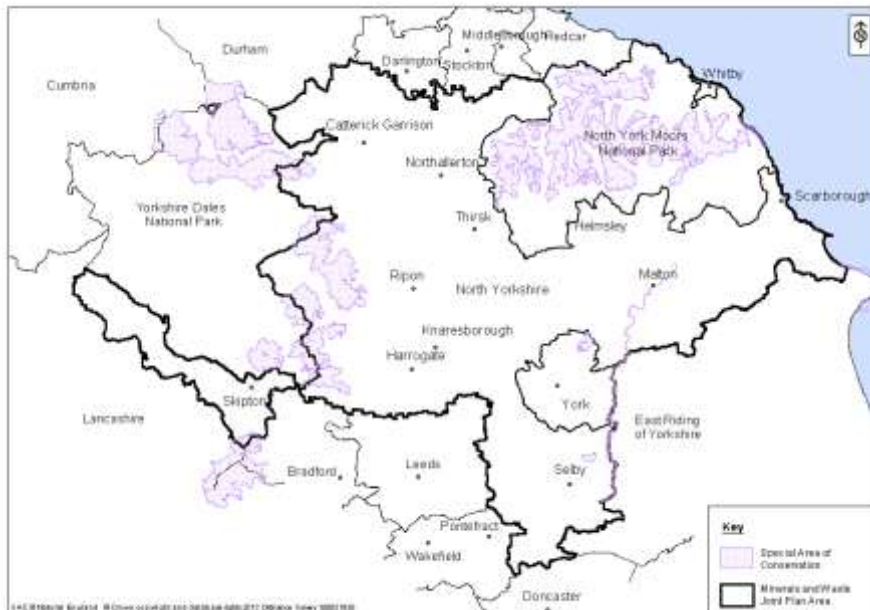


Figure 3.1: Special Areas of Conservation.

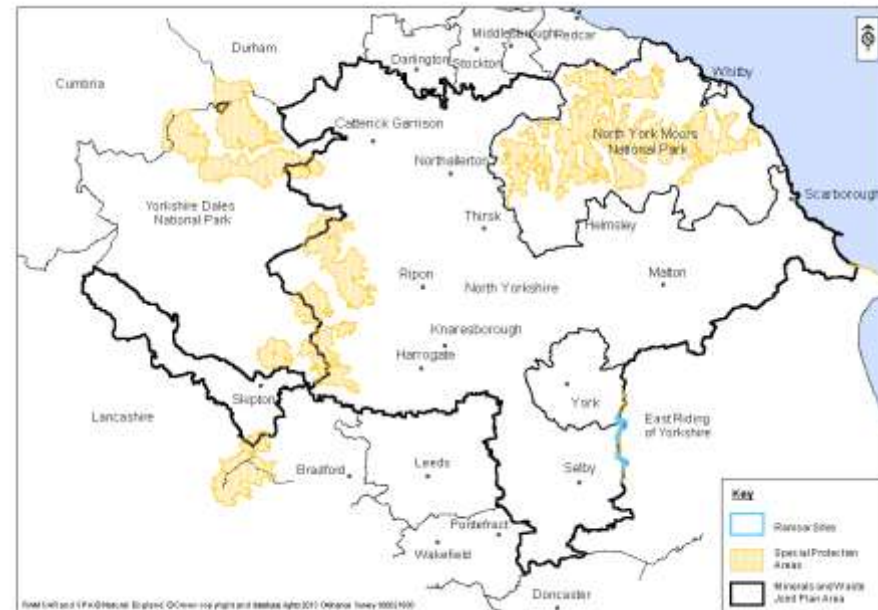


Figure 3.2: Special Protection Areas and Ramsar Sites.

² EC Habitats Directive (92/43/EEC).

³ EU Birds Directive (2009/147/EC).

Important Bird Areas are identified by the global BirdLife partnership of conservation organisations due to the presence of rare or vulnerable species or importance for bird congregations. Large parts of the Plan Area, particularly the North York Moors National Park, are identified as Important Bird Areas, as shown in Figure 3.3.

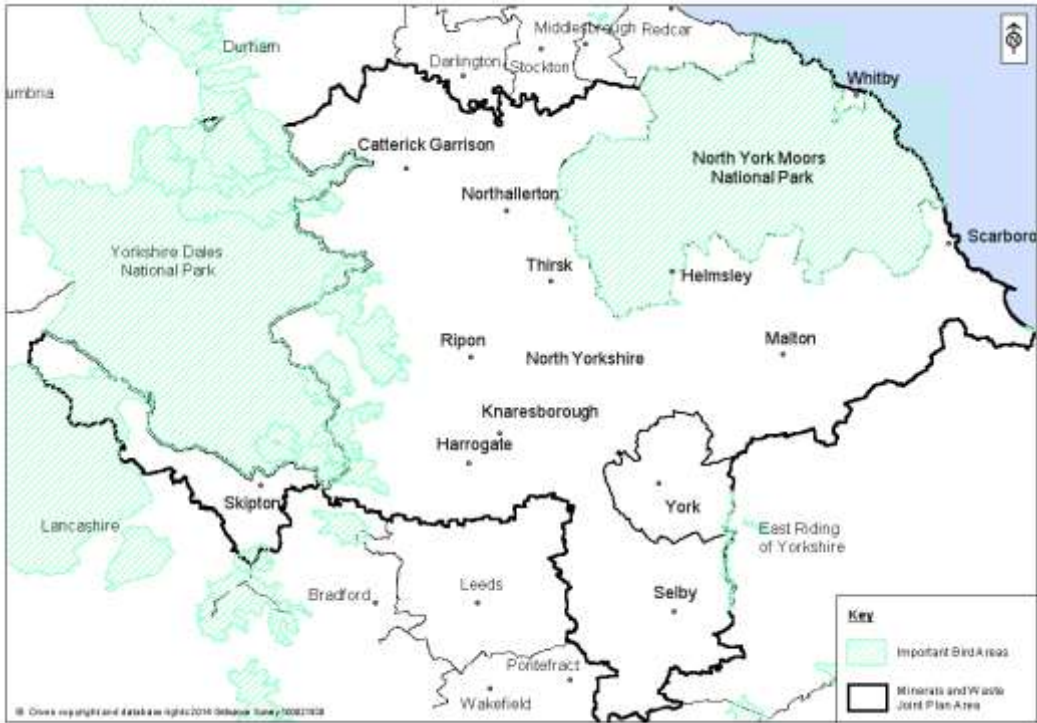


Figure 3.3: Important Bird Areas.

At the national level, many parts of the Plan Area are protected as Sites of Special Scientific Interest. These represent some of the country's best wildlife and geological sites. There are a total of 86,558 hectares of SSSIs in the Plan Area. These are shown in Figure 3.4. The largest proportion of SSSIs in the plan area is in the North York Moors National Park, with a significant area also in the Nidderdale AONB.

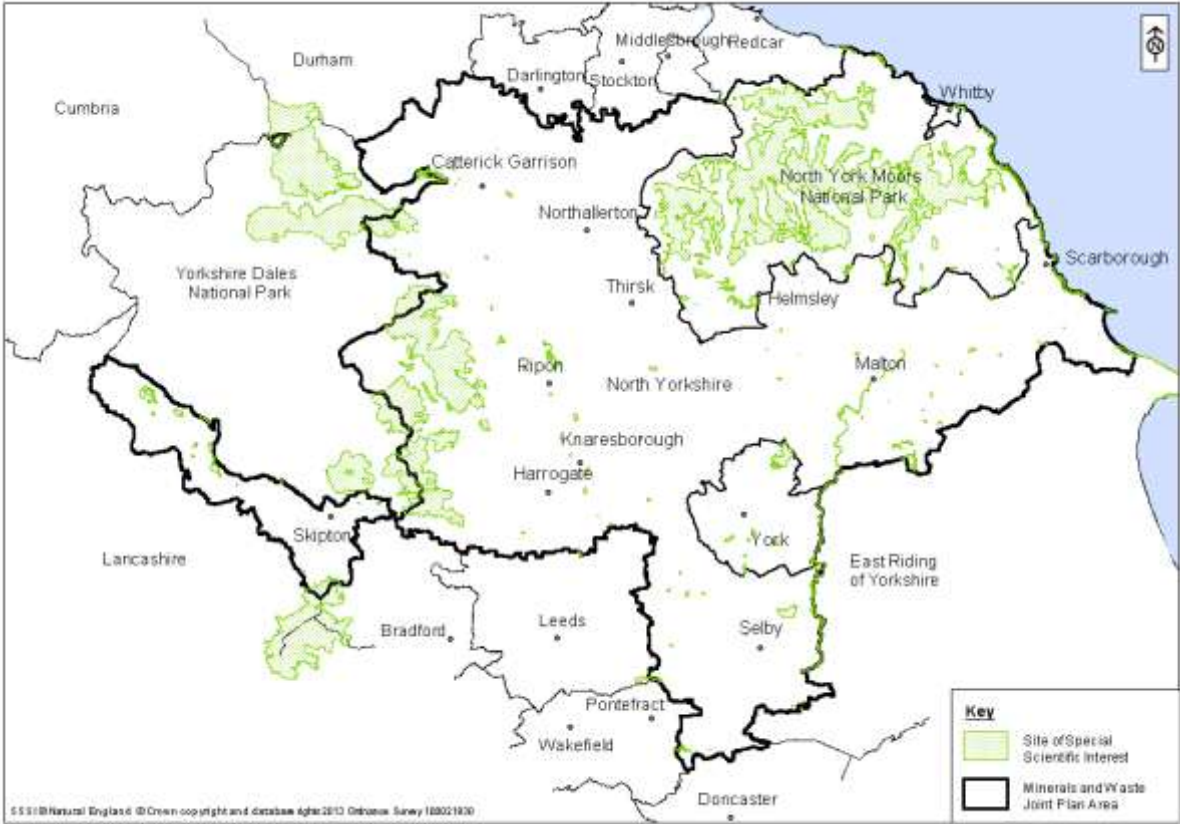


Figure 3.4: Sites of Special Scientific Interest.

Of the total area (excluding York) 28% is in favourable condition and 61% is in unfavourable recovering condition, split between each authority as shown in Table 3.5. This shows that only a small proportion of SSSI area is categorised as ‘unfavourable declining’ or ‘unfavourable no change’, showing that the trend is for improvement. Biodiversity 2020⁴ sets national targets for 50% of SSSI to be in favourable condition and 95% to be in unfavourable recovering condition by 2020.

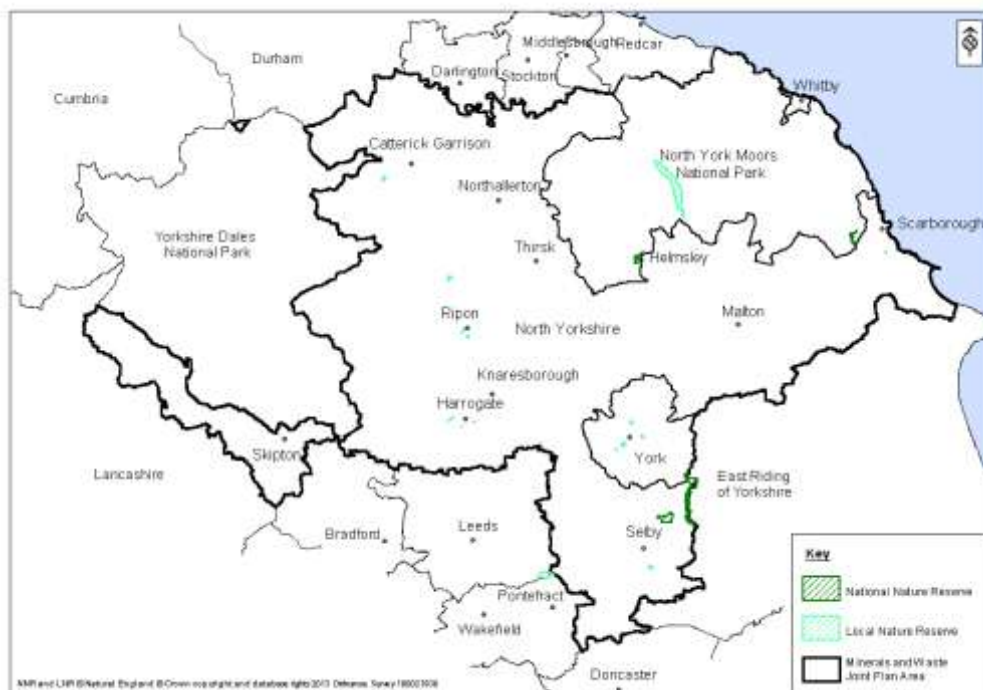


Table 3.5: SSSI condition

	Area of SSSI (ha)	Area in favourable condition (%)	Area in unfavourable recovering condition (%)
North Yorkshire	38,403	48.5	27.9
North York Moors National Park	47,260	11	88
City of York	895	TBC	TBC
Plan area	86,558	TBC	TBC

Part of the purpose of the designation of the North York Moors National Park as such is also to conserve and enhance the wildlife of the Park and therefore the whole of the National Park is protected nationally for its importance to wildlife.

The 5 National Nature Reserves in the Plan Area occupy 829ha of the Joint Plan Area. There are also 15 Local Nature Reserves covering 1,405ha. National and Local Nature Reserves are shown on Figure 3.6, left.

⁴ Biodiversity 2020 – A Strategy for England’s wildlife and ecosystem services (DEFRA, 2011).

Sites of Importance for Nature Conservation (SINCs) are designated by a local sites panel made up of local authorities and other interested parties. These have been designated in North Yorkshire and in the City of York, but have not been designated in the North York Moors National Park due to the national significance of and associated level of protection for the whole Park for wildlife. This is with the exception of the small part of the National Park which is in Redcar and Cleveland where Local Wildlife Sites⁵ have recently been identified. A total area of 11,685ha of land is designated as SINC and there are a few small areas of land designated as Local Wildlife Sites in the Redcar and Cleveland part of the National Park.

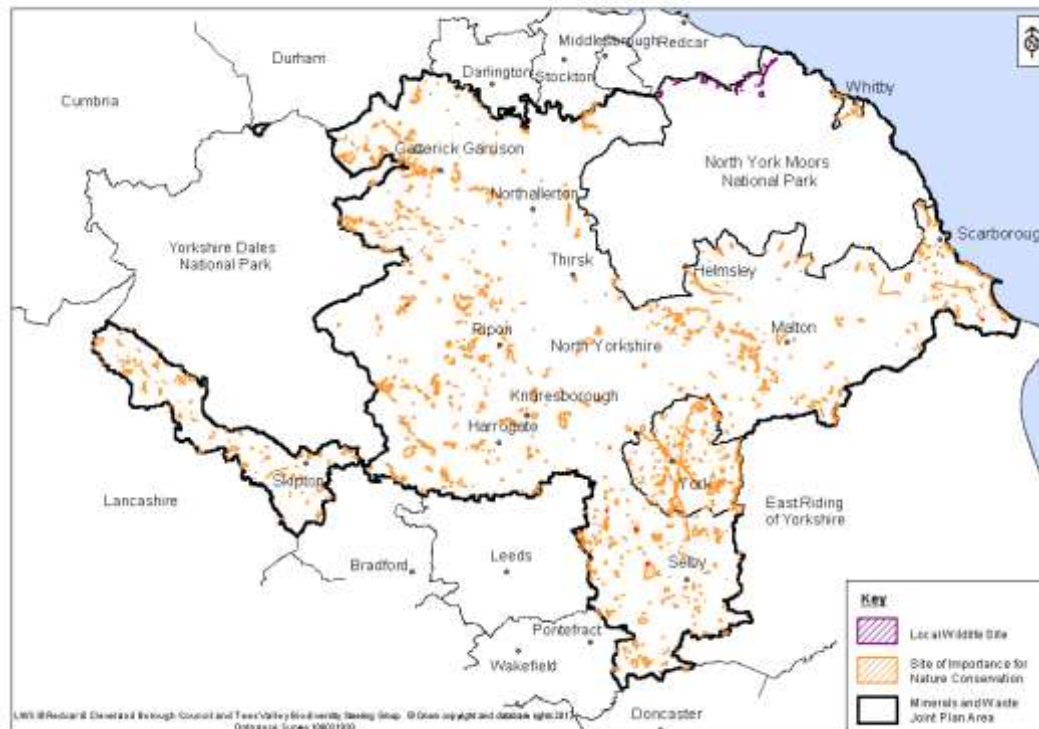


Figure 3.7: Sites of Importance for Nature Conservation and Local Wildlife Sites

⁵ Local Wildlife Sites are a more contemporary term for Sites of Importance for Nature Conservation – the two have the same status.

Table 3.8 summarises the extent of nature conservation designations within each MPA area. (Note that in some places the designations overlap so columns cannot be totalled.)

Site	NYCC (ha)	NYMNP (ha)	CYC (ha)	Joint Plan Area (ha)
SAC	TBC	44,440	715	TBC
SPA	TBC	44,088	136	TBC
Ramsar	0	0	1,201	1,201
SSSI	38,403	47,260	895	86,558
NNR	522	171	136	829
LNR	338	1,000	67	1,405
SINC	11,104	n/a	581	11,685

Table 3.8 – Extent of nature conservation designations in the Plan Area.

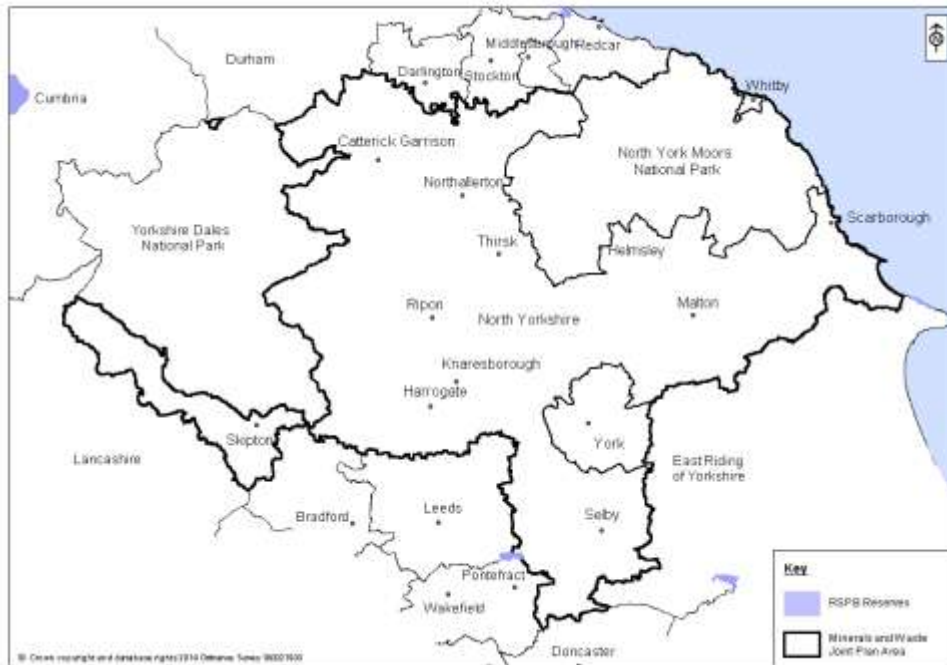


Figure 3.8: RSPB Reserves

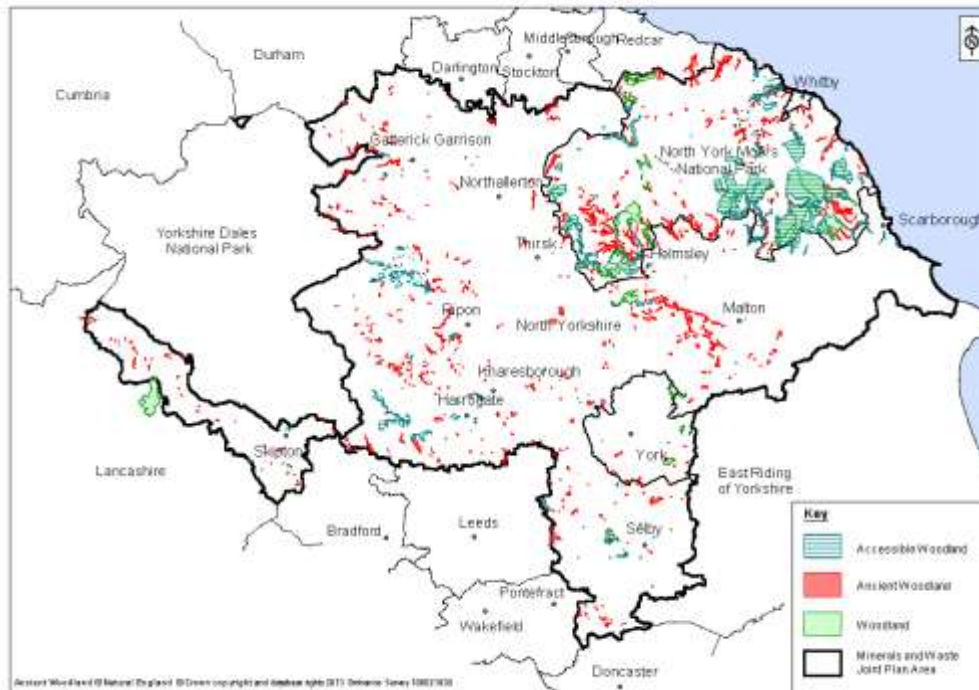
Some environmental charities also manage nature reserves, though often these co-incide with other formal designations such as SSSI. Within the Plan area Fairburn Ings is managed by the RSPB.

Trees and Woodland

Woodlands and trees provide a number of benefits including habitats for wildlife, timber production, recreation, carbon storage and flood alleviation, and different areas may be managed for different or a range of purposes. The total area of woodland in North Yorkshire ♦ is 60,843 and there is a further 998ha in the City of York area. Of this, around 41.2% is broadleaved, 32.3% is coniferous and 13.7% is mixed with the remaining 11.2% being open space within woodland. Around half of this woodland is in the North York Moors National Park.

In terms of their benefits for wildlife, 6,813 hectares are ancient woodlands (of which the majority is in the North York Moors National Park). A total of 8,708ha of woodland in the Plan Area is ancient replanted woodland (previously referred to as Plantation on Ancient Woodland Sites

(PAWS)). This is defined as ‘ancient woodland sites where the original native tree cover has been felled and replaced by planting, usually with conifers and usually this century’⁶. 58% of the ancient woodland in NYMNP is ancient replanted woodland, the largest concentration in Northern England and work is underway to restore this to ancient woodland – 141ha of restoration has been initiated since the start of 2011. Figure 3.9 shows the extent of woodland within the Plan Area and also identifies ancient woodland (this includes ancient woodland, ancient semi-natural woodland⁷ and ancient replanted woodland) and accessible woodland. There is a target to plant 300 hectares of woodland in NYMNP by 2017 and an aim to plant 50,000 new trees in York.



Veteran trees are important habitats for a range of wildlife. It is not known how many veteran trees there are in the Plan Area but there are around 350 in the North York Moors National Park. Data on veteran trees in the plan area can be found using the Woodland Trust’s interactive map: <http://www.ancient-tree-hunt.org.uk/discoveries/interactivemap>. Veteran trees in the plan area are concentrated in the Harrogate Borough (in particular the Nidderdale AONB), the North East corner of the Richmondshire District, the South East corner of the North York Moors, the Howardian Hills AONB and surrounding York city centre.

⁶ Natural England, undated. Ancient Woodland Inventory (Provisional) for England – Digital Boundaries [URL: http://www.gis.naturalengland.org.uk/pubs/gis/tech_aw.htm]

⁷ Ancient semi-natural woodland is defined as ‘ancient woodland sites that have retained the native tree and shrub cover that has not been planted. Although it may have been managed by coppicing or felling and allowed to regenerate naturally’ Natural England, *ibid*.

Biodiversity Action Plans

The Post 2010 Biodiversity Framework, which succeeded the UK Biodiversity Action Plan, sets out priorities for biodiversity at a UK level, with county level strategies setting targets in each of the UK's counties 4 countries. In England, the England Biodiversity Strategy sets a target to achieve no net loss of priority habitat and increase their overall extent by at least 200,000 hectares by 2020⁸. The distribution of UK BAP priority habitats in North Yorkshire can be seen on the Nature on the Map website at:

<http://www.natureonthemap.naturalengland.org.uk/map.aspx?map=bap>. The total areas of different UK priority habitat found within the Plan Area are listed within Table 3.10. The National Planning Policy Framework advises that impact on biodiversity from planning should be minimised and that priority habitats should be preserved, restored and re-created and that suitable indicators should be used to monitor this.

Priority Habitat	Area (hectares)
Lowland Dry Acid Grassland	15,157.98
Blanket Bog	18,245.63
Coastal Vegetated Shingle	0
Lowland Meadows	736.28
Lowland Calcareous Grassland	730.481
Lowland Heathland	829.005
Lowland Raised Bogs	94.941
Maritime Cliff and Slopes	Area not supplied in source data
Mudflats	28.508
Limestone Pavement	0
Purple Moor Grass and Rush Pastures	535.01
Reedbeds	2,421.16
Saline Lagoons	Area not supplied in source data
Sand Dunes	0
Upland Calcareous Grassland	351.62
Upland Hay Meadows	Area not supplied in source data
Upland Heathland	Area not supplied in source data

⁸ Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services (Defra, undated).

Table 3.10: List and corresponding area of priority habitats within the Plan Area.

Source – Natural England.

There are also a number of Local Biodiversity Action Plan Partnerships in the Plan Area which set out local action plans for UK BAP priority habitats and species, alongside actions for locally significant species. These plans include:

- Bedale and Upper Swale Internal Drainage Board BAP;
- Craven BAP;
- Hambleton BAP;
- Harrogate BAP;
- North York Moors National Park BAP;
- Richmondshire BAP;
- Ryedale BAP
- Scarborough BAP;
- Selby Area Internal Drainage Board BAP; and
- Selby BAP.

In total, there are 93 habitats with actions in the Plan area and 27 species with actions, details of which can be found on Defra's BARS website: <http://ukbars.defra.gov.uk/plans/nonj.asp>. The National Biodiversity Network Gateway gives broad details of the distribution of species: <http://data.nbn.org.uk/>.

Agri-Environment Schemes

Under agri-environment schemes, land managers (including farmers) select options to address environmental objectives, such as restoring biodiversity or managing soil erosion. In 2009, 66% of the agricultural land in England was covered by some form of agri-environment scheme. There are a number of agri-environment schemes in operation, including:

- Environmental Stewardship;
- Countryside Stewardship;
- Environmentally Sensitive Areas; and
- Woodland Grant Schemes.

All current agri-environment schemes are mapped on Natural England's 'Nature on the Map' website. In addition, target areas for Higher Level Stewardship (a more comprehensive approach to land management in priority areas) are shown:

<http://natureonthemap.naturalengland.org.uk/map.aspx?map=aes>

Figure 3.11 shows that there is a large proportion of land within the Plan Area that is under an Environmental Stewardship scheme (74% within the NYCC part of the Plan area and 60% of the North York Moors National Park). Within the Plan Area (excluding York) there are 3,383 schemes in place.

Invasive Species

Invasive species are non-native species which may cause harm to ecosystems. There are currently 31 species listed as high impact on the UKTAG list (compiled in January, 2013), of which 16 are listed as present in the 10km grid squares that correspond to the Plan Area by the National Biodiversity Network (including squares which overlap with other local authorities). These are shown in Table 3.12 below.

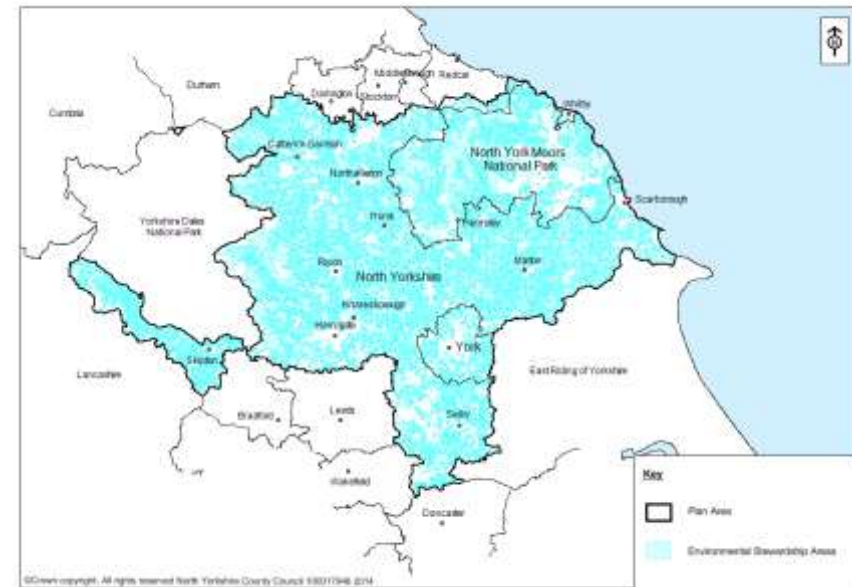


Figure 3.11: Environmental Stewardship Areas.

Common name	Scientific name
Australian swamp stonecrop	<i>Crassula helmsii</i>
Floating pennywort	<i>Hydrocotyle ranunculoides</i>
Water fern	<i>Azolla filiculoides</i>
Water fern	<i>Azolla caroliniana</i>
Canadian pondweed	<i>Elodea canadensis</i>
Nuttall's pondweed	<i>Elodea nuttallii</i>
Japanese knotweed	<i>Fallopia japonica</i>
Himalayan balsam	<i>Impatiens glandulifera</i>
Giant hogweed	<i>Heracleum mantegazzianum</i>
Rhododendron	<i>Rhododendron ponticum</i>
North American signal crayfish	<i>Pacifastacus leniusculus</i>
Chinese mitten crab	<i>Eriocheir sinensis</i>
Slipper limpet	<i>Crepidula fornicata</i>
Zebra mussel	<i>Dreissena polymorpha</i>
Colonial tunicate	Non-native <i>Didemnum</i> spp.
Common carp	<i>Cyprinus carpio</i>

Table 3.12: Aquatic Invasive Species classified as high impact recorded in North Yorkshire and overlapping 10km squares in March, 2013.
Sources - UK TAG list and <http://data.nbn.org.uk/imt/> - National Biodiversity Network.

Defra provides alerts in relation to a number of invasive species as shown in Table 3.13 below. As at May 2013, none of these species are present in the Plan Area.

Species Name	Status in plan area	Date of check made on website
Quagga Mussel	Not yet found in GB according to Defra website	02/05/2013
Asian hornet	Not yet found in GB according to Defra website	02/05/2013
Killer Shrimp	Thus far confined to East Anglia according to Defra website	02/05/2013
Water Primrose	Although noted as present in some parts of England, there are no records in the Plan Area according to the National Biodiversity Network Gateway	02/05/2013
Carpet sea squirt	Marine species n/a to terrestrial planning	02/05/2013

Table 3.13: Number of alerts for invasive species.
Sources – Defra.

Habitat Networks

Habitat networks are becoming increasingly important, particularly as the predicted effects of climate change may have a detrimental effect on these habitats through fragmentation. The England Habitat Network attempts to identify areas of functional connectivity of ecosystems across landscapes. The network is built up from patches of defined habitat that are known to exist, plus areas of permeable landscape (dispersal intervals) that are connected to the patches. Dispersal intervals are based on information on the capacity of groups of species to move outside their core habitat. Movement of plant and animal species across the landscape allows populations to adapt to the changing environment and for plant and animal communities to adapt to these changes over shorter time periods as they can find optimal locations for growth and reproduction.

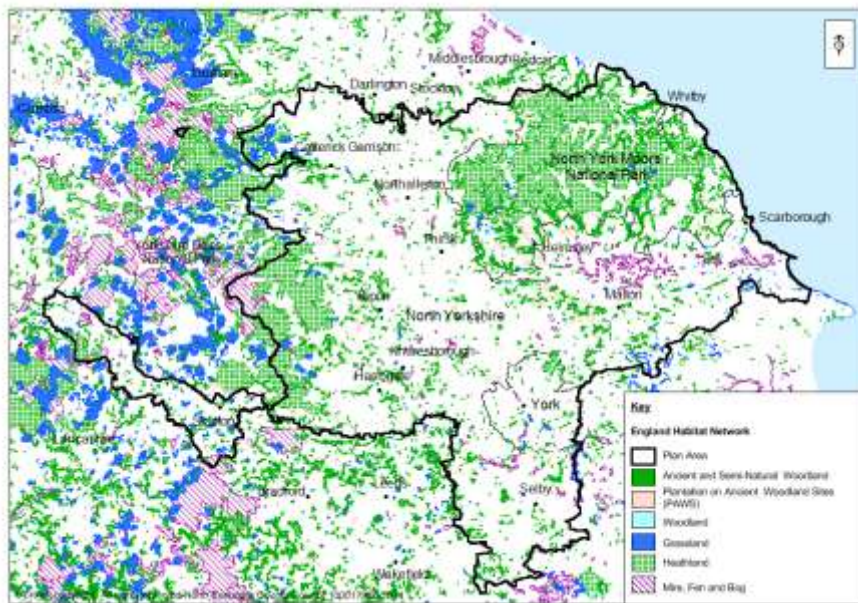


Figure 3.14: England Habitat Network. Source – Natural England.

Figure 3.14 shows where patches and dispersal intervals coalesce to give a broad indication of the networks that exist in the county, based on the types of land cover likely to have the greatest permeability to flora and fauna. The true extent of networks must distinguish between habitat types due to the impact that these different types of land cover have on the movement of species (displayed by in the map, left).

In addition to the England Habitat Network, mapping of ecological networks at a local scale within the Plan Area has also been carried out by the Yorkshire Wildlife Trust, the North Yorkshire and York Local Nature Partnership and the North York Moors National Park Authority.

Local Nature Partnerships (LNPs) also carry out important work on Nature Improvement Areas at a local level around England. Nature Improvement Areas (NIAs) are defined as places where opportunities to deliver ecological networks exist and significant enhancement of the network can be achieved over a large area. They focus on improving habitat connectivity within 12 defined NIS in England.

At present, no NIAs exist within the Plan Area. However, the Joint Plan should take into account the effect of the plan on NIAs bordering the Plan Area, such as the Humberhead Levels.

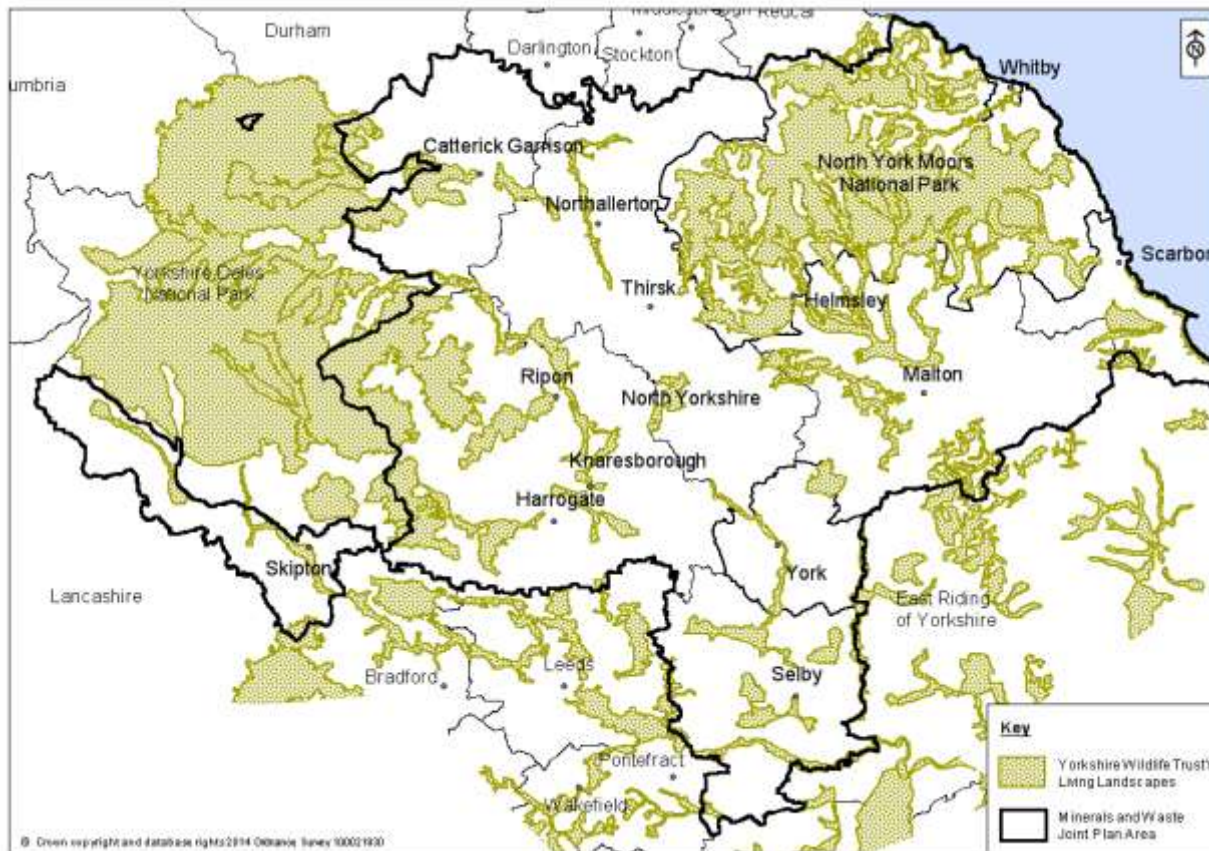


Figure 3.15: The Yorkshire Wildlife Trust's areas of Living Landscape across Yorkshire and the Humber.

Source – Yorkshire Wildlife Trust.

The Yorkshire Wildlife Trust's (YWT) 'Living Landscapes' work has focused on the restoration, recreation and reconnection of nature reserves and areas of ecological importance within nature corridors such as rivers, verges and hedgerows. A map of the YWT's broad areas of nature conservation can be found on the YWT website⁹. In addition, a more detailed map of the YWT's Living Landscapes is displayed in Figure 3.15. The work being carried out to join up Yorkshire's nature reserves and ecologically important areas is being carried out through partnerships between local communities, landowners, schools and businesses. At present, the YWT has identified 33 Living Landscape areas within the North Yorkshire Ecological Network. Identification of clusters of habitats and core biodiversity areas will then allow the YWT to create functional ecological networks and integrated habitats.

⁹ <http://www.ywt.org.uk/what-we-do/living-landscapes>.

The North York Moors National Park Authority (NYMNP) has similarly identified broad strategic habitat networks and sites of importance for habitat connectivity (see Figures 3.16 and 3.17). The National Park Authority has recently begun work to improve these networks through targeting habitat restoration and creation at specific sites as shown in Figure 3.17. Work in the National Park has already been carried out which focuses on restoration of PAWS (plantation on ancient woodland sites), improvement of riparian habitats and conservation of species-rich grasslands. These areas together with SSSIs (Sites of Special Scientific Interest) make the basis of a habitat network. However, work on further enhancement and restoration is needed due to the isolation of some of these areas from the rest of the network – meaning that they may not function as effective ecosystems. The habitat mapping exercise, which has identified well-connected habitat networks and sites of importance for habitat connectivity has been carried out in order to establish where the ‘building blocks’ of well-connected habitat exist within the Park’s boundary and where these connections may link to the wider regionally and nationally identified habitat networks. Work now will focus on enhancement of the networks in order to improve habitats and ultimately create strong and diverse ecosystems to support wildlife.

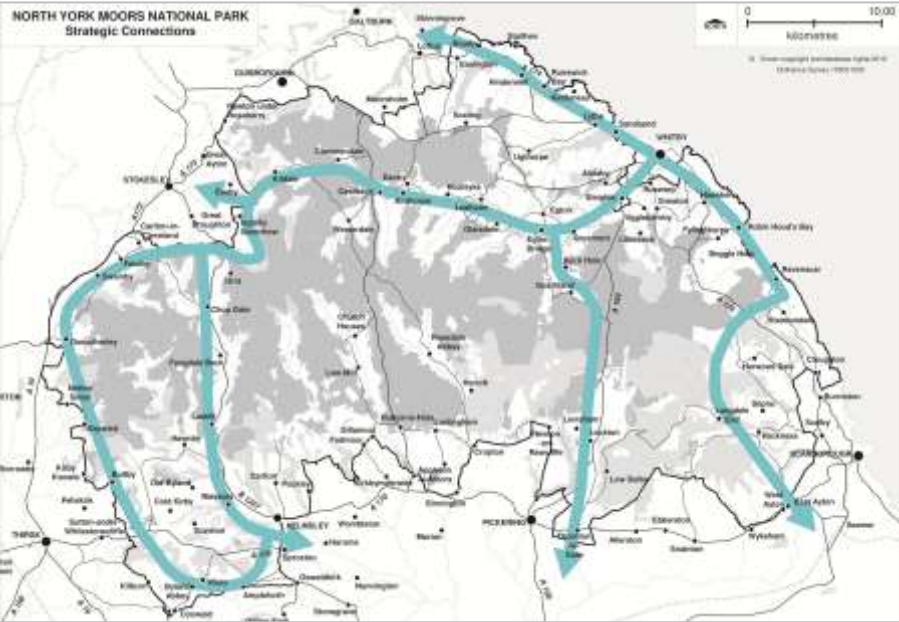


Figure 3.16: Strategic Habitat Connections in the North York Moors National Park.

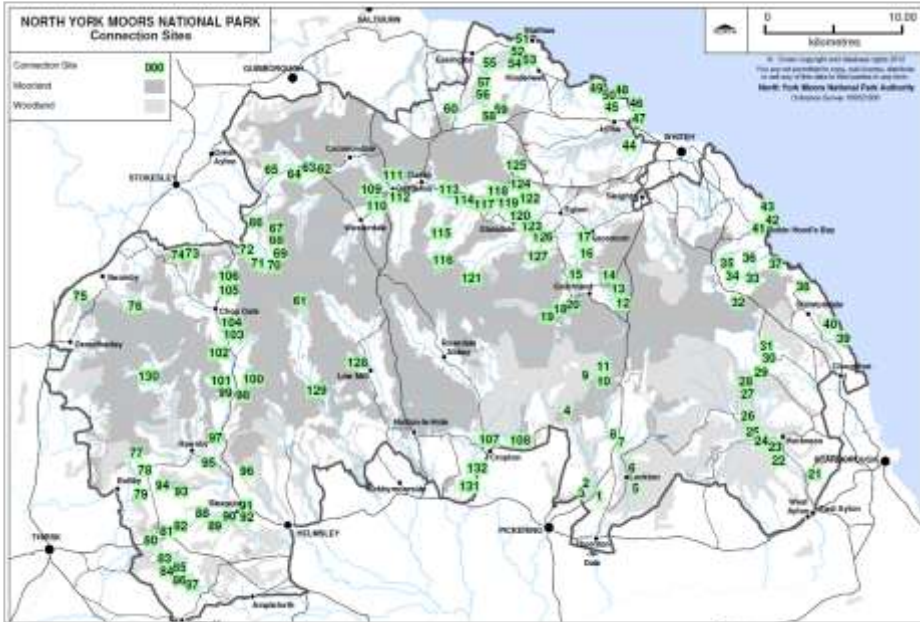


Figure 3.17: Habitat Connection sites in the North York Moors National Park.

The Government is currently promoting the use of Nature Improvement Areas where more and better connected habitats are developed at a landscape scale. There are currently no NIAs in the Plan area, though the south-east fringe of the Plan area lies around 600 metres from the nearby Humberhead Levels NIA.



Figure 3. 18 Nature Improvent Areas

Green Infrastructure

Green Infrastructure is the network of corridors and spaces that each provides a variety of functions such as nature conservation, opportunities for recreation, flood risk management or education. The whole of the part of NYMNP in Redcar and Cleveland is identified as Green Infrastructure in the Tees Valley Green Infrastructure Strategy¹⁰. Green Infrastructure corridors for the rest of the Plan Area are defined in the green infrastructure corridors map produced by Natural England. This shows corridors of regional, sub-regional and district significance within the Plan Area. This is based upon the provision of a range of functions including provision of rights of way, green linkages and flood control, as well as their importance for biodiversity. Figure 3.18 shows the green infrastructure corridors identified in the Yorkshire and Humber region.

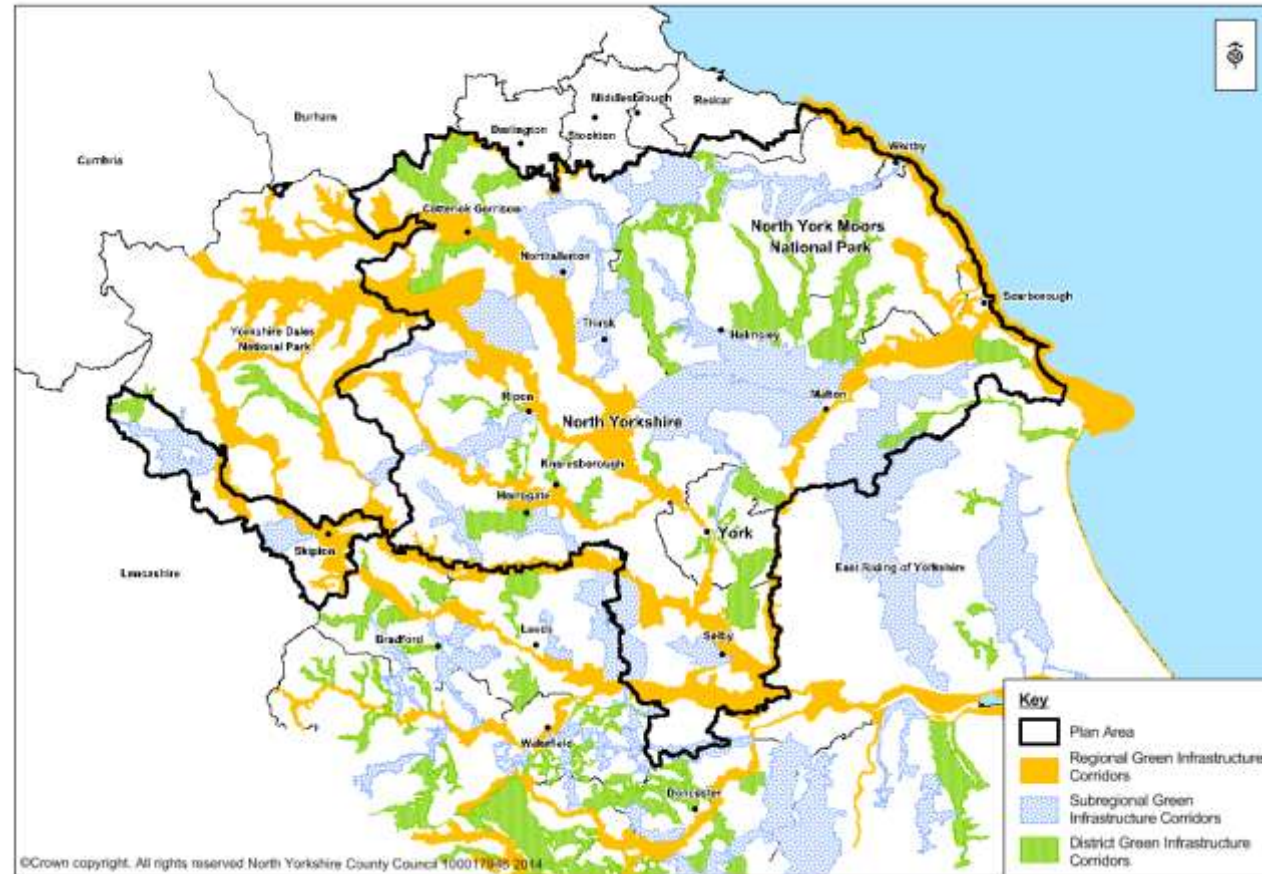


Figure 3.18: Green Infrastructure corridors in the Yorkshire and Humber region.
Source – Natural England.

¹⁰ Tees Valley Green Infrastructure Strategy (Tees Valley Joint Strategy Unit, 2008).

Ecosystem Services

The natural environment provides many useful functions that help human communities survive and prosper. For example, the organisms that pollinate crops and cycle nutrients in soils provide a critical role in helping us to farm and produce food, while natural processes play a crucial role in removing carbon dioxide and other greenhouse gases that contribute to global warming from the air. Often we take these ‘free’ services for granted, but the UK’s recent National Ecosystems Assessment showed that many services provided by nature are under pressure and could be enhanced by appropriate management. Table 3.19 summarises the four categories identified by the UK’s National Ecosystem Assessment as being delivered in the UK.

Supporting services	These provide the basic infrastructure of life and all other ecosystem services depend on them. They include primary production where sunlight is converted in to the organic compounds that ultimately provide the food for almost all life. They also include services such as soil formation and the cycling of water and nutrients in the environment.
Regulating services	These services include pollination, pest and disease regulation, and climate and hazard regulation, for instance protection from flooding.
Provisioning services	These are the goods that people obtain from ecosystems, such as food and fibre, fuel from materials such as wood, and water from rivers, lakes and aquifers. Goods may be provided from heavily managed ecosystems, as with agriculture, or by natural and semi-natural habitats, such as through fishing. These services are often heavily dependent on supporting services and regulating services.
Cultural services	Cultural goods and benefits are derived from the interaction of humans and nature. Environments such as gardens, parks, lakes and rivers, the seashore and the wider countryside provide opportunities for outdoor learning, recreation, improvement to health and fitness and aesthetic satisfaction.

Figure 3.19: Four categories of ecosystem service.

Source – National Ecosystem Assessment.

The services provided by ecosystems can be expressed in terms of the financial value of those services, for instance by taking account of the market value of particular services or other indirect measures of value, such as the cost of providing equivalent replacement services (e.g. replacing a natural flood storage area with a flood defence that provides equivalent protection) or evaluating people’s willingness to pay. While, according to the NEA, it is not practical to estimate the total value of ecosystem services as ‘many of these services are essential to continued human existence and total values are therefore underestimates of infinity’, it is possible to attribute values to changes in individual service provision. For example, pollination services arising from biodiversity are estimated to be £430 million per year, while willingness to pay estimates for terrestrial biodiversity range from £540 million to £1,262 million per year. This has led the authors of the NEA to report that “The contribution that ecosystem services make to the national economy in terms of a sustained flow of income is very substantial” and ‘the continued maintenance of this natural capital stock is critically important for the future prospects of a thriving ‘green’ economy’.

In North Yorkshire there is a growing body of evidence that a wide range of ecosystem services across all four of the NEAs categories of services are present. Natural England have recently identified key provisioning, regulating and cultural ecosystems service being delivered in National Character Areas in their NCA updates. Table 3.20 summarises this.

NCA ¹¹	Predominant provisioning services identified by NCA Profile	Predominant regulating services identified by NCA Profile	Predominant cultural services identified by NCA Profile
North York Moors and Cleveland Hills*	Food provision, timber provision, biomass energy, water availability, genetic diversity	Regulating climate, regulating water quality, regulating water flow, regulating soil quality, regulating soil erosion, pollination, regulating coastal processes	Sense of place/inspiration, tranquillity, sense of history, recreational opportunity, biodiversity, geodiversity
Vale of Pickering NCA	Food provision, water availability	Climate regulation, regulating water quality, regulating water flow (flooding), regulating soil erosion, regulating soil quality, regulating coastal flooding and erosion	Sense of place/inspiration, sense of history, biodiversity, geodiversity
Yorkshire Wolds*	Food provision, water availability	Regulating soil erosion, regulating soil quality, regulating water quality	Sense of place/inspiration, sense of history.
Vale of York*	Food provision, water availability	Regulating climate change, regulating soil erosion, regulating soil quality, regulating water quality, regulating water flow (flooding)	Sense of place/inspiration, sense of history, recreation, biodiversity
Bowland Fringe and Pendle Hill*	Food supply, water availability	Regulating climate change, regulating soil erosion, regulating water quality, regulating water flow (flooding)	Sense of place/inspiration, sense of history, recreation, biodiversity
Bowland Fells NCA*	Food provision, timber provision, water availability	Climate regulation, regulating soil erosion, regulating soil quality, regulating water quality, regulating water flow	Sense of place/inspiration, sense of history, tranquillity, recreation, biodiversity, geodiversity
Southern Pennines*	Food supply, water availability	Regulating climate change. Regulating soil erosion, regulating water quality, regulating water flow (flooding)	Sense of place/inspiration, sense of history, recreation, biodiversity
Humberhead Levels NCA*	Food supply, water availability, biomass	Regulating soil erosion, regulating climate change, regulating river and coastal flooding	Sense of place/inspiration, sense of history, recreation, biodiversity, tranquillity
Howardian Hills	Food provision, timber provision, biomass energy, water availability	Climate regulation, regulating soil erosion, regulating soil quality, regulating water quality, regulating water flow, pollination	Sense of place/inspiration, sense of history, tranquillity, recreation, biodiversity, geodiversity

¹¹ Some NCAs overlap other local authority areas so some of the listed services may be partly attributed to areas outside the Plan Area. These are labelled with a star '*'.

North Pennines NCA *	Food provision, timber provision, water availability	Climate regulation, regulating soil erosion, regulating water quality, regulating water flow,	Sense of place/inspiration, sense of history, tranquillity, recreation, biodiversity, geodiversity
Yorkshire Dales NCA *	Food provision, water availability	Climate regulation, regulating soil erosion, regulating soil quality, regulating water quality, regulating water flow,	Sense of place/inspiration, sense of history, tranquillity, recreation, biodiversity, geodiversity
Pennine Dales Fringe NCA *	Food provision, timber provision, biomass energy, water availability	Climate regulation, regulating water quality, regulating water flow,	Sense of place/inspiration, sense of history, recreation, biodiversity,
Tees Lowlands *	Food provision	Climate regulation, regulating water quality, regulating water flow, regulating coastal flooding and erosion	Sense of place/inspiration, sense of history, tranquillity, recreation, biodiversity, geodiversity
Vale of Mowbray	Food provision, water availability	Climate regulation, regulating soil erosion, regulating soil quality, regulating water quality, regulating water flow, pollination	Sense of place/inspiration, sense of history, tranquillity, biodiversity,
Southern Magnesian limestone *	Food provision, water availability	Regulating water quality	Sense of place/inspiration, sense of history, biodiversity, geodiversity
Lancashire Valleys *	Food provision, timber provision, water availability	Climate regulation, regulating soil quality, regulating water quality, regulating water flow,	Sense of place/inspiration, sense of history, recreation, biodiversity, geodiversity

Figure 3.20: Ecosystem services in the Joint Plan Area.

Source –Natural England’s NCA profiles <http://publications.naturalengland.org.uk/category/587130>.

Changes in ecosystems can lead to changes in the level of ecosystem services that they deliver. For instance, the replacement of lowland heath with farmland can lead to a flux of carbon dioxide to the atmosphere and the reduction of further capacity to absorb carbon from the atmosphere. The National Ecosystem Assessment provided a snapshot of changes in broad habitat types and summarised their contribution to ecosystem services in a technical report on ‘Status and Changes in the UK Ecosystems and their Services to Society: England’¹². Table 3.21 shows the broad habitats studied in the NEA that are also present at significant levels in the Joint Plan Area, the direction of change in England (more local data is not yet available) and the importance of that habitat type for delivering ecosystem services¹³.

¹² Defra et al, 2011. UK National Ecosystem Assessment Technical Report: <http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx>.

¹³ The table should be taken as indicative as importance may vary locally. It should also be noted that the importance of habitats for delivering ecosystem services is partly due to the extent of the habitat and partly due to their structure and functioning. So enclosed farmland, which is very extensive in distribution is amongst the most important habitats for regulating climate change across England, but at a local scale, when equal areas of habitat are compared, enclosed farmland may be of lesser importance (e.g. conversion of semi natural grasslands to arable systems show that 14.29 Mt of carbon was

Service group	Final Ecosystem Service	Moorland, Mountain and Heaths	Semi natural Grasslands	Enclosed Farmland	Woodlands	Freshwaters, Openwaters, Wetlands and Floodplains	Urban	Coastal Margins
Provisioning	Crops		→	↑			↗	↘
	Livestock	→	→	→	→			↘
	Fish			→		↓		↘
	Trees, standing vegetation	↘	↗	↗	↑		↗	
	Water supply	→	↘	→	→	↘	→	→
	Wild species diversity	↗	→	↓	↗	↓	↗	→
	Cultural	Recreation	↑	↑	↗	↑	↑	↑
Tourism		↑	↑	↗	↑	↑	→	↑

lost to the atmosphere between 1990 and 2006 – see Alonso, I et al, 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 (publications.naturalengland.org.uk/file/1438141).

	Landscapes / seascapes	↑	↑	↑	↑	↗	→	↑
Regulating	Climate	↘	↗	↘	↑	→	↘	↘
	Hazard	→	↘	↘	↗	→	↘	↘
	Disease and pests		↗	↘	→	↘	↘	
	Water quality	↘	→	→	↗	↘	→	
	Soil quality	→	↘	↘	↗	→	↘	→
	Air quality	→	↘	↘	↗		→	→

Importance of broad habitat for delivering the ecosystem service				Direction of change in the flow of the service since 1990
High	Medium High	Medium Low	Low	↑ Improving, ↗ Some improvement, → Improvement and/or deterioration in different locations, ↘ Some deterioration, ↓ deterioration

Table 3.21: Direction of change for England’s ecosystem services in the Joint Plan Area.

Sources - Adapted from Berry P and Hopkins, J. Status and Changes in the UK Ecosystems and their Services to Society: England in Defra et al, 2011. UK National Ecosystem Assessment Technical Report <http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx>.

Key messages from the baseline

- Large number of nationally designated wildlife sites and significant areas of internationally designated wildlife sites.
- Outside of these areas there are large numbers and a wide distribution of locally important Sites of Importance for Nature Conservation and UK BAP priority habitats.
- Much of the farmland is covered by some form of agri-environment scheme.
- Despite this many habitats in this area are fragmented and isolated.

- Outside of the National Park, woodland is generally found in small fragments.
- Invasive species are an increasing threat to native wildlife.
- Key ecosystem services include regulating water flow, food provision and cultural services such as the provision of a sense of history.

Predicted Future Trends

- The overall condition of the protected site network is predicted to improve in the short and medium term as targets for SSSI condition are met. Similarly, the target of no net loss of priority habitat by 2020 is likely to mean that declines for priority habitats will halt over the short and medium term (assuming the target is successfully met). However, there is uncertainty over the short and medium term contribution of agri-environment schemes due to uncertainty over the outcome of Common Agricultural Policy reform, which may impact on populations of farmland species in particular. In addition, some habitats are continuing to show near term declines in the ecosystem services they deliver, such as freshwater habitats role in supplying wild species diversity, and uplands' role in climate and hazard regulation.
- Biodiversity faces some key threats which will become more significant in the longer term, including continued urbanising and development of land (including the extraction of minerals that will take place without a plan in place). The effects of climate change and invasive species / plant diseases will also become increasingly evident in the longer term¹⁴. For instance, because of changes in species ranges and the fragmented nature of the current protected sites network, smaller protected sites may no longer be fit for purpose, while coastal squeeze from sea level rise may affect protected coastal areas. This would have a negative effect on biodiversity. However, other species may spread northwards meaning that some previously uncommon species may become more widespread¹⁵. The cumulative effect of future forces for change is predicted to be negative however.

Indicators

Indicator	Baseline Data (and year)	Source
Area of SSSI in 'favourable' condition and area of SSSI in 'unfavourable recovering' condition	See Table 3.5	Natural England
Number of agri-environment schemes in place	3,383 (2013)	Natural England
Number of alerts for invasive species	See Table 3.13	Defra
Total area of UK Priority Habitat	See Table 3.10	Natural England

¹⁴ For a comprehensive discussion paper on drivers of ecosystem change in England see Berry, P and Hopkins, J, 2011. UK National Ecosystem Assessment Technical report: Status and Changes in the UK Ecosystems and their Services to Society: England

¹⁵ Defra, 2012. The UK Climate Change Risk Assessment 2012 Evidence Report. [URL: <https://www.gov.uk/government/publications/uk-climate-change-risk-assessment-government-report>]

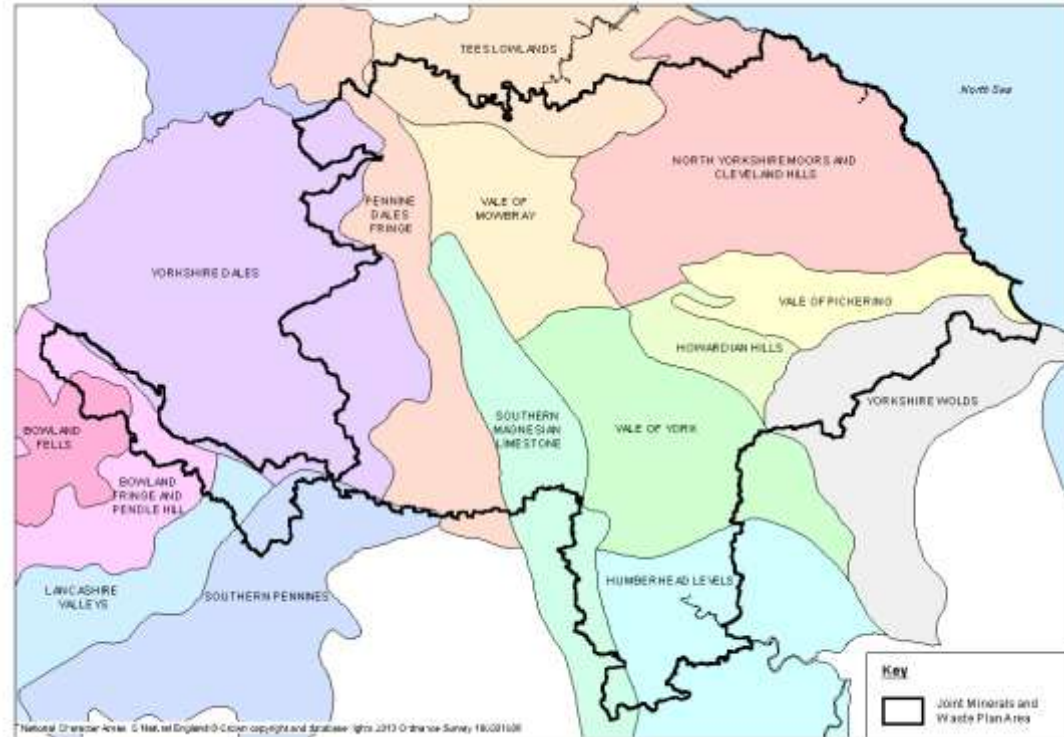
SEA Topic/SA Category - Landscape

Landscapes across the Plan Area

The Joint Plan Area has a rich and varied landscape, which falls within a number of National Character Areas (see Figure 4.1). A large part of the area is designated nationally for the importance of its landscapes, as shown in Figure 4.2. National Parks and AONBs are statutorily protected which is important in the context of the Joint Plan as such developments can be particularly intrusive.

Whilst designated landscapes enjoy the highest level of protection, the European Landscape Convention¹⁶ acknowledges that all landscapes are important and describes landscape as ‘An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors’.

Each of the National Character Areas has been defined in terms of their current condition. This shows that the North York Moors and Cleveland Hills, the Yorkshire Wolds and the Bowland Fells are enhancing, whilst the Tees Lowlands, Vale of Mowbray and Vale of York are classed as neglected. The rest of the plan area is either maintained or diverging¹⁷.



¹⁶ Council of Europe, 2000.

¹⁷ State of the Natural Environment in Yorkshire and the Humber (Natural England, 2008).

Landscapes across the county include upland areas as can be found in the North York Moors, rolling chalk lands such as the Wolds and flatter lowland landscapes such as the Vale of York and Humberhead Levels. North Yorkshire's Landscape Characterisation Project¹⁸ identifies the following Primary Landscape Units within North Yorkshire and York, within which further categories of landscape have been identified:

- Urban landscapes.
- Urban fringe and valley landscapes.
- Sandstone landscapes.
- Limestone landscapes.
- Upland fringe and valley landscapes.
- Farmed lowland and valley landscapes.
- Gritstone landscapes.
- Upland fringe and valley landscapes.
- Coastal landscapes.
- Farmed upland and valley landscapes.
- Chalk landscapes.

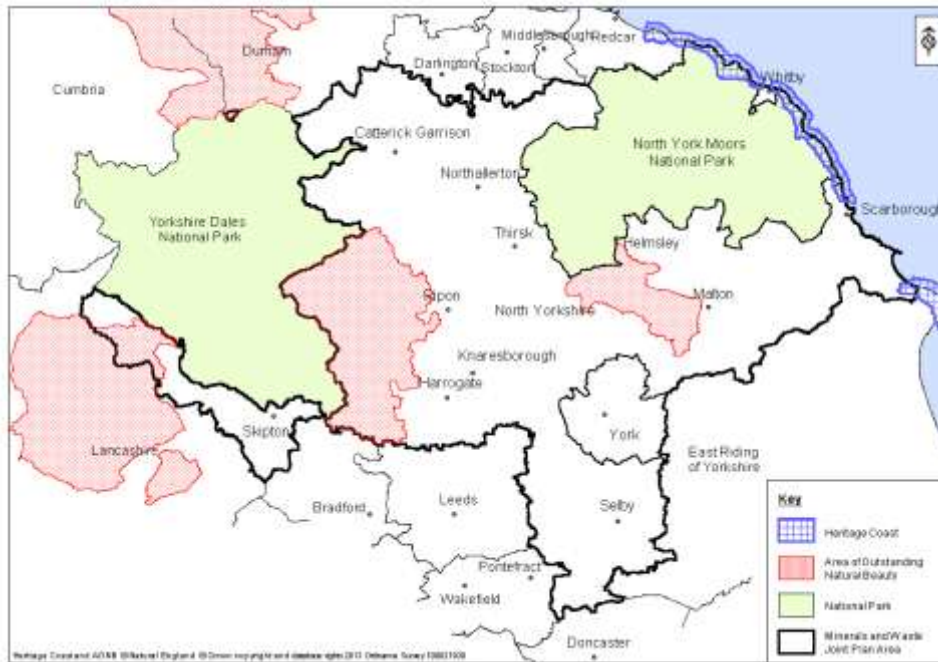
The Landscape Characterisation Project includes overarching guiding principles for managing agricultural and land management change, managing projected impacts of climate change and managing minerals extraction. An interactive website showing landscape character types across North Yorkshire and York has recently been launched at <http://www.northyorks.gov.uk/index.aspx?articleid=3087>.

Protected Landscapes

National Parks and Areas of Outstanding Natural Beauty are part of a global network of protected landscapes. The North York Moors National Park, designated primarily for its landscape quality, extends to 1436km² and was described in the 1947 Hobhouse Report as 'within a relatively small compass an amazing wealth of variety and beauty'. The landscape of the National Park includes open heather moorland, intimate dales, the coast, the open landscapes of the Hambleton and Tabular Hills, extensive wooded areas and dramatic geological features such as Sutton Bank and Roseberry Topping. The latest Natural England report describes the North York Moors as 'Enhancing (changing)' which means that the landscape is improving¹⁹. The Yorkshire Dales National Park adjoins the boundary of the western part of the Plan Area and the impact of any development on its setting is therefore relevant to the Joint Plan.

¹⁸ North Yorkshire and York Landscape Characterisation Project (North Yorkshire County Council, May 2011).

¹⁹ State of the Natural Environment in Yorkshire and the Humber (Natural England, 2008).



The Joint Plan Area also includes two Areas of Outstanding Natural Beauty (Nidderdale and the Howardian Hills) and small parts of the Forest of Bowland AONB and North Pennines AONB. The primary aim of the designation being to conserve and enhance the natural beauty of the landscape. Nidderdale AONB is recognised for its heather moorland to the west, where it abuts the Yorkshire Dales National Park, and its rolling farmland landscapes to the east. The Howardian Hills AONB is recognised for its woodland, rolling agricultural landscapes and parkland. The Forest of Bowland is characterised by upland fells and vast tracts of heather moorland and the North Pennines AONB is characterised predominantly by open heather moorlands. The landscape of the National Character Areas covering all four AONBs has been identified as ‘maintained (stable)’.

Most of the North Yorkshire and Cleveland Heritage Coast and part of the Flamborough Head Heritage Coast are also in the Plan Area. Heritage Coasts are designated to conserve their natural beauty and improve accessibility.

Managing Landscape Change

North Yorkshire County Council planning authority area

In January 2011 North Yorkshire County Council commissioned a project, with funding provided by English Heritage to develop an ‘environmental evidence base and assess sensitivities and capacity in North Yorkshire to inform a spatial planning strategy for the extraction of minerals’²⁰. This project analysed the best available knowledge about areas of minerals resource potential (ASMRPs) and went on to describe the sensitivity of these areas in terms of the historic environment, biodiversity and landscapes. This allowed an assessment of the capacity for

²⁰ Thompson, A. et al. 2011. Managing Landscape Change: A multi-disciplinary approach to future mineral extraction in North Yorkshire; Stage 5 Final Report. English Heritage and North Yorkshire County Council. [URL: <http://www.northyorks.gov.uk/index.aspx?articleid=20126>].

change of each ASMRP and provided ‘a strategic assessment of the degree of impact that minerals extraction would have on each’. It should be noted that this study only relates to the North Yorkshire County Council planning authority area (i.e. it does not include the North York Moors National Park or the City of York areas).

The report recognised that ASMRPs vary in their degree of homogeneity. To acknowledge this fifteen land categories were defined, in terms of their similarities relating to topography, environmental characteristics and sensitivities. One ASMRP may contain several land categories. The mixture of these categories was used as a basis for assessment of capacity for further minerals extraction. However, the capacity assessments were broad generalisations relating to the whole area of each land category that should not be applied to any specific location, which may have a higher sensitivity and lower capacity than the broader indicative assessment.

Table 4.3 summarises the key environmental characteristics associated with each ASMRP. Assessment of sensitivity and capacity associated with ASMRPs, along with maps, is available in the final report of the study at <http://www.northyorks.gov.uk/index.aspx?articleid=20126>.

ASMRP	Summary of key environmental characteristics	Additional observations	Capacity ratings for land categories contained within ASMRP
ASMRP1: Sub alluvial sand and gravel	<ul style="list-style-type: none"> -Watercourses are the most distinctive feature of the landscape and most surviving built structures relate to water use; -Predominantly modern improved fields, generally flat landform, traditional nucleated villages; -Great potential deeply buried prehistoric deposits from earlier human activity concealed beneath more recent fluvial deposits; -Patch work of fen, flood meadows, floodplain mires, marsh and swamp, as well as the river channels and riparian vegetation which form vital wildlife corridors 	Representative of the majority, but not all of ASMRP1. Sensitivity and capacity discussed in report.	Contains land categories ranging from a medium to low capacity for change.
ASMRP2: River terrace sand and gravel	<ul style="list-style-type: none"> -Older flood plains forming river terraces that developed in the post glacial period in parallel with human activity; -Well drained and with reduced tendency to flooding presents a more mature landscape and intensive agricultural use; -Range of more recent land uses include historic houses and parks and gardens; -Remnants of the former rich biodiversity which once characterized the river terraces 	Representative of the majority of the ASMRP except for small areas. Sensitivity and capacity discussed in report.	Contains land categories ranging from a medium to low capacity for change.
ASMRP3: Glacio fluvial sand and gravel	<ul style="list-style-type: none"> -Gently undulating or flat topography, some evidence of former rich biodiversity; -This minerals resource was laid down prior to human activity so is unlikely to contain evidence of the earliest human activity; however it is well drained and likely to have been attractive for early post glacial settlement with significant evidence from the Mesolithic onwards, including the Neolithic Thornborough 	Representative of the majority of the ASMRP where they lie over the Magnesian limestone. Sensitivity and capacity	Contains land categories including a high, medium and low capacity for change.

ASMRP	Summary of key environmental characteristics	Additional observations	Capacity ratings for land categories contained within ASMRP
	Henges.	discussed in report.	
ASMRP 4: Glacial sand and gravel	<ul style="list-style-type: none"> -Similar characteristics to ASMRP3. Limited biodiversity interest largely confined to mature hedgerows and small areas of woodland; -Archaeological site visibility is poor largely due to the increase of clay sediment and the action on ploughing on surface features; -Remnant ridge and furrow and HLC / field evidence of early post medieval enclosure 	Representative of the majority of the ASMRP. Sensitivity and capacity discussed in report.	Medium to high capacity for change.
ASMRP 5: Undifferentiated sand and gravel	<ul style="list-style-type: none"> -Low-lying open landscape with extensive views over the Vale of Pickering -Early post glacial human activity on the margins of the ice damned Lake Pickering -Enormous archaeological potential related to a continuum of activity since the Mesolithic, although site visibility is variable. Deep ploughing and dewatering have affected areas of sub surface waterlogged remains; -Fragmented habitats survive, and small areas of plantation woodland and watercourses that are the result of more recent land management provide opportunity for other species. 	Representative of the majority of the ASMRP. Sensitivity and capacity discussed in report.	Contains land categories with a high, medium and low capacity for change
ASMRP 6: Quaternary brick clay	<ul style="list-style-type: none"> -Clay laid down within Quaternary glacial deposits in low lying areas of the Vales of Mowbray and York, and the Humberhead Levels; -Wetland marsh and mire characterized this landscape in the post glacial period and would not have been attractive for human occupation. The modern agricultural landscape was the result of post medieval drainage and intensive cultivation. The landscape is characterized by medium sized hedged fields, but in the Humberhead Levels drainage ditches bound larger and more recent fields; -Poor site visibility as a result of the heavy clay soils, and therefore potential for well-preserved archaeological deposits. 	Representative of the majority of the ASMRP. Sensitivity and capacity discussed in report.	High capacity for change
ASMRP7: Cretaceous chalk	<ul style="list-style-type: none"> -70% of this area is made up of rolling chalk wolds, an open tranquil landscape in a relatively elevated position; -The area was ice free during the last glaciations and there is evidence of human activity from the Neolithic period onwards; -The area has been continually but not intensively settled, with agricultural uses predominating. Deserted medieval villages are a feature of this area; -Earlier natural habitats dominated by species rich calcareous grassland have given way to large scale intensive arable cultivation apart from the steeper slopes. 	The northern edge is visible at a distance from within parts of the North York Moors National Park. Sensitivity and capacity discussed in report.	Contains land categories with a low capacity for change
ASMRP8: Jurassic	-A slightly undulating, well drained landscape on the dip slope of the North York	Representative of the	Low capacity for change

ASMRP	Summary of key environmental characteristics	Additional observations	Capacity ratings for land categories contained within ASMRP
limestone	<p>Moors, facing south over the Vale of Pickering;</p> <ul style="list-style-type: none"> -The landscape is predominantly arable but there are important survivals of ancient woodlands, particularly on steeper slopes; -Scattered Bronze Age cairns and potential for sub surface remains associated with Roman activity and settlement, the character of the landscape is largely post medieval with regularly spaced settlements and field enclosure; -The stone was widely used for housing and dry stone walling in the past and there are numerous remains of small stone working sites 	majority of the ASMRP. Sensitivity and capacity discussed in report.	
ASMRP9: Magnesian limestone	<ul style="list-style-type: none"> -Extensive north-south oriented outcrop elevated above land to the east; -In many areas the limestone is overlain with glacial till; -High archaeological potential because of the long association with a major communications route (now the A1) and settlement; -The rock weathers to form a light and friable soil and extensive arable cultivation has to some extent degraded this archaeological resource; -Steeper valley sides in particular allow areas of semi natural broad-leaved woodland and calcareous grassland to survive. 	Representative of the majority of the ASMRP. Sensitivity and capacity discussed in report.	Contains land categories with a medium to high capacity for change
ASMRP10: Shallow coal	<ul style="list-style-type: none"> -Characteristic 'drumlin' topography in the Forest of Bowland AONB to south of Clapham, other deposits occur within the overlying Magnesian limestone ridge; -High ecological sensitivity 	Not assessed in further detail in report.	Low to medium capacity for change
ASMRP11: Carboniferous brick clay	<ul style="list-style-type: none"> -Occurs within the overlying Magnesian limestone ridge 	Not assessed in further detail in report.	-
ASMRP12: Carboniferous limestone	<ul style="list-style-type: none"> -The sandstone is primarily found exposed in moorland areas where the glacial overburden is thinner or absent -Natural and man-made (former quarries) outcrops of stone are a strong influence on the modern landscape -Summit areas are largely unimproved acid grassland, with semi-improved acid grassland and improved pasture on the sloping valley sides. There is little or no arable grazing. -Early human activity is evidenced by ring cairns and rock art which are highly visible to those who look for them. 	Representative of the majority of the ASMRP. Sensitivity and capacity discussed in report.	Contains land categories ranging from a medium to low capacity for change.
ASMRP13: Silica sand	<ul style="list-style-type: none"> -Occurs as small outcrop in two locations within the project area at Blubberhouses in Nidderdale and Burythorpe in the Chalk Foothills of the Yorkshire Wolds; -Both have been exploited in the past. 	Not assessed in further detail in report.	Contains land categories with a low capacity for change

ASMRP	Summary of key environmental characteristics	Additional observations	Capacity ratings for land categories contained within ASMRP
ASMRP14: Carboniferous limestone	<ul style="list-style-type: none"> -Limestone outcrops occur in the west of the study area and are linked to more extensive outcrops in the Yorkshire Dales National Park. The limestone underlies extensive upland plateau and also occurs as scars on the dale sides; -Shake holes created by natural dissolution occur on upland surfaces; -Extensive upland forests were succeeded by blanked bog. Drainage of these upland areas for sheep grazing has led to a mosaic of avid grassland and dry heath, with isolated woodlands confined to the valley sides; -Strong historic land use pattern with dry stone walls and hedgerows; -There are extensive remains of former lead mining activity, past and current stone extraction and evidence of early human activity; -There is potential for subsurface remains beneath peat deposits; -This landscape is of generally high ecological value for bogs, mires and moors, and species rich meadows and pastures 	In ASMRP 14 the underlying limestone forms part of a succession of underlying rock types including sandstone and chert.	Contains land categories with a low to medium capacity for change

Table 4.3: Environmental Characteristics in each ASMRP.

North York Moors Landscape Character Assessment

Although not undertaken specifically for the purpose of minerals and waste planning, the North York Moors Landscape Character Assessment also contains considerations relevant to minerals and waste planning and managing change in the landscape. The LCA identifies 9 Landscape Character Areas and within these 31 landscape character types. Whilst not identifying specifically the capacity for change, it identifies the significance of pressure to the landscape character from development more generally for each Landscape Character Area.

Green Belt

Green Belt is designated to maintain the open spaces around towns and cities, providing spaces for agriculture and leisure opportunities as well as maintaining open landscapes. The southern part of the Joint Plan Area falls within the greenbelt designated around Leeds and an area of Green Belt is in the process of being designated around York. In relation to the latter, the outer boundary is designated in the adopted plans of York's adjoining districts and boroughs, and an inner boundary has been approved by the City of York Council for development management purposes. Figure 4.4 shows the extent of Green Belt in the Plan Area.

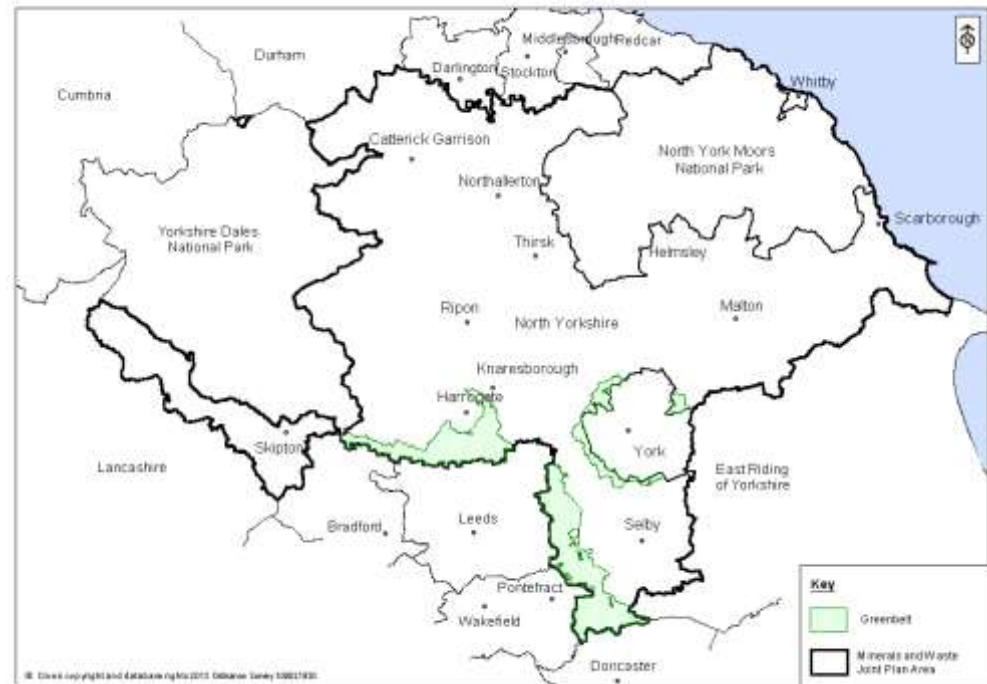


Figure 4.4: Green Belt.

Key messages from the baseline

- Although large parts of this area are relatively low lying, variation in geology, soils, topography and historical factors have helped create a range of distinctive and valued landscapes.
- The North York Moors National Park makes up a large part of the Plan Area and a significant portion of the Plan Area lies within Areas of Outstanding Natural Beauty or Heritage Coasts.
- Green belts limit development in parts of the south of this area.
- While the county of North Yorkshire as a whole is one of the most tranquil in England, outside of the national parks and AONBs tranquillity levels often fall due to transport corridors or when near to settlements.

Predicted Future Trends

- Changes in the landscape appear varied in nature across the Plan area with some areas enhancing and some not, and it is likely that this would continue to be the case depending upon levels of intervention across different areas. Effects could take place in the short, medium or long term, but major changes to the landscape are likely to only be evident in the longer term.
- In the absence of a Plan for minerals and waste development it is possible that the quality of the landscape would decline due to the nature of these types of development.

Indicators

Indicator	Baseline Data (and year)	Source
Condition of the National Character Areas	3 enhancing (2008) 3 neglected (2008)	Natural England

4 SEA Topic/SA Category – Water and Soil

Water Quality

Minerals development and open air waste management sites have the potential to result in groundwater pollution. However, environmental regulations should ensure that adverse impacts are avoided. Nitrate vulnerable zones areas where fresh water (in rivers, streams and lakes) may be adversely affected by nitrates (most of which come from agricultural sources). Groundwater Source Protection Zones are defined around large and potable groundwater abstraction sites and are designated in order to protect drinking water quality from nearby activities which have the potential to impact upon these sources. Figures 5.1 and 5.2 show the Nitrate Vulnerable Zones and Source Protection Zones in the Joint Plan Area.

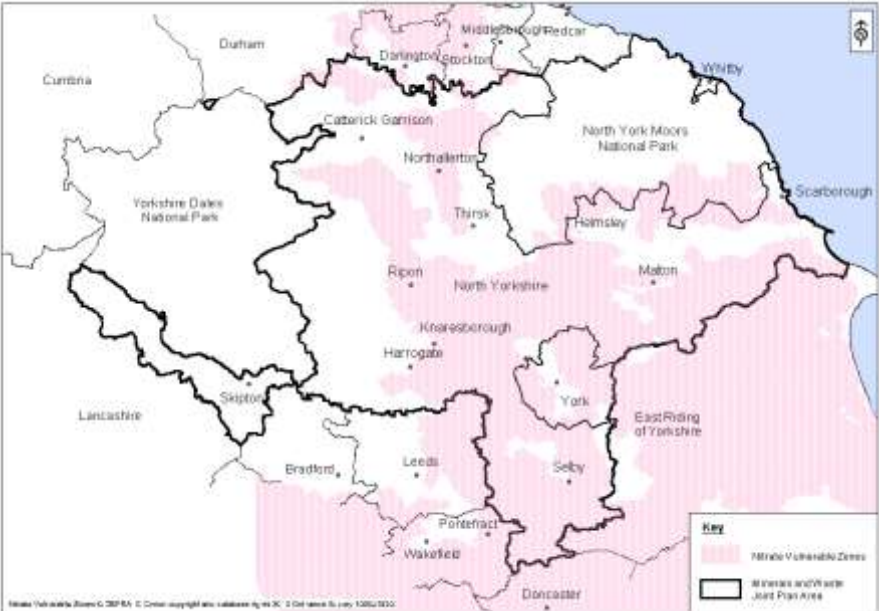


Figure 5.1: Nitrate Vulnerable Zones.
Source – Environment Agency.

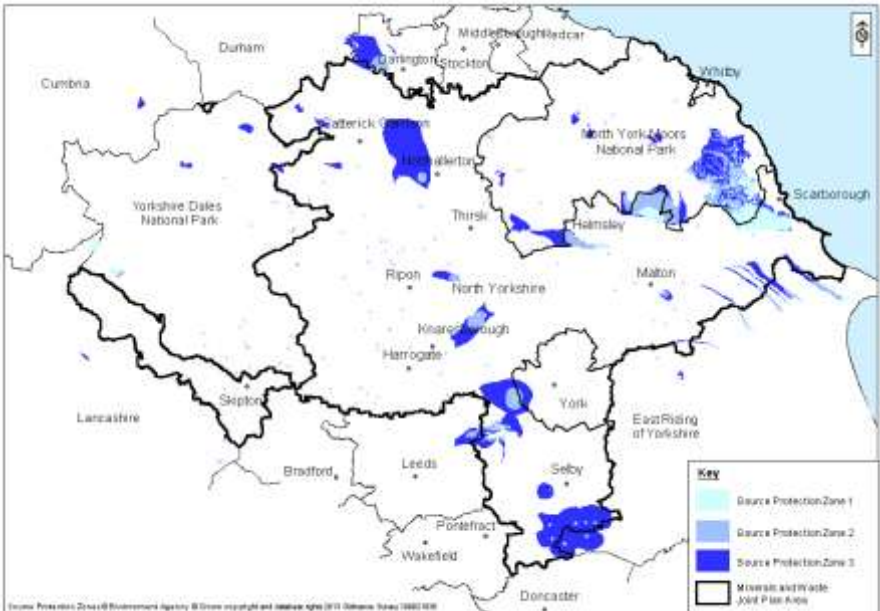


Figure 5.2: Source Protection Zones.
Source – Environment Agency.

It can be seen that the county is especially affected by nitrate vulnerability, although groundwater protection is also a significant issue. A central corridor of water protection zones can be found in Selby, Hambleton, Ryedale and Harrogate from observation of the above map. This should be taken into account when developing new planning policies.

The quality and quantity of ground water resources is an important issue. Minerals extraction can affect water resources through dewatering and physical removal of material which is essential to the protection of aquifers. In addition, minerals-related development can cause physical disturbances which can artificially alter groundwater levels. Open air waste management facilities, such as landfill and composting sites, have the potential to produce leachate (a polluting liquid) which unless managed safely may cause harmful effects on the surrounding groundwater. Across the Joint Plan Area the quantitative quality, degree to which groundwater is affected by abstractions, is generally good whereas chemical quality is generally poor/deteriorating. There are variances within the Plan Area, in the National Park both quantitative and chemical quality are generally good.

Under the Water Framework Directive good chemical and ecological status in inland and coastal waters must be achieved by 2015. The Joint Plan Area falls within 10 catchments. Table 5.3 below shows the current overall (ecological and chemical) performance of water bodies in each of these catchments. The catchments within the Plan Area do not necessarily match the boundary of the area, but in the case of water it is relevant to look at the condition of the whole catchment not just the part within the Plan Area.

Catchment	% of waterbodies with 'good status	% of waterbodies with 'moderate' status	% of waterbodies with 'poor status
Aire and Calder	10.85	78.29	10.85
Derwent (Humber)	8.05	64.37	22.99
Esk and Coast	35.48	41.94	16013
Hull and East Riding	14.49	71.01	5.80
Swale, Ure, Nidd and Upper Ouse	21.86	51.56	16.41
Tees	36.84	41.29	18.42
Wharfe and Lower Ouse	22	66	10
Don	9.38	62.50	26.04
Lune	61.82	30.90	5.45
Ribble	28.43	62.74	6.86

Table 5.3: Status of waterbodies in catchments falling within or partly within the Joint Plan Area (2012).

Source: Environment Agency / HM Government²¹.

²¹ Water Framework Directive – Surface Water Classification Status and Objectives (www.data.gov.uk/dataset/wfd-surface-water-classification-status-and-objectives).

Across the Plan Area there are a variety of reasons why waterbodies are failing to achieve good status. For the main catchments of the Plan Area these include diffuse pollution from agriculture (e.g. the Esk and Coast, Swale, Ure, Nidd and Upper Ouse, Wharfe and Lower Ouse and Tees), point source discharges from industry or sewage (e.g. Esk and Coast, Swale, Ure, Nidd and Upper Ouse, Aire and Calder and Tees), water industry storm discharges (e.g. Aire and Calder, Swale, Ure, Nidd and Upper Ouse) and physical modification to watercourses for reasons such as flood protection (e.g. Tees and Derwent).

Flooding

Surface Water Flooding

Surface water flood events are usually associated with high-intensity rainfall (typically >30mm/hr) and occur when the local drainage system cannot cope with the rainfall. Figure 5.4 displays those areas which are the most susceptible to surface water flooding across the Plan Area. The data used to generate the map have been simplified and only give an indication of areas that may be more likely to suffer from surface water flooding.

Figures 5.5 and 5.6 display the Environment Agency's flood maps for the 1 in 30 and 1 in 200 rainfall events. These maps give a broad indication of areas likely to be at risk from surface water flooding from two different rainfall events (i.e. areas where surface water would be expected to flow or pond). Each map displays where this flooding is likely to be deeper than 0.1 metres and deeper than 0.3 metres.

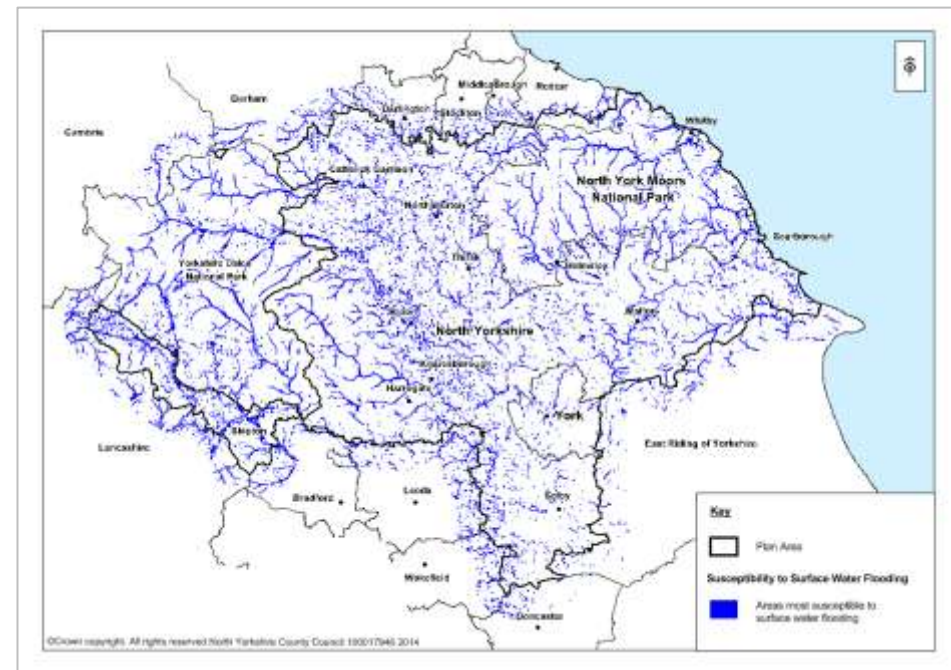


Figure 5.4: Areas most susceptible to surface water flooding across North Yorkshire.

Source – Environment Agency, 2010.

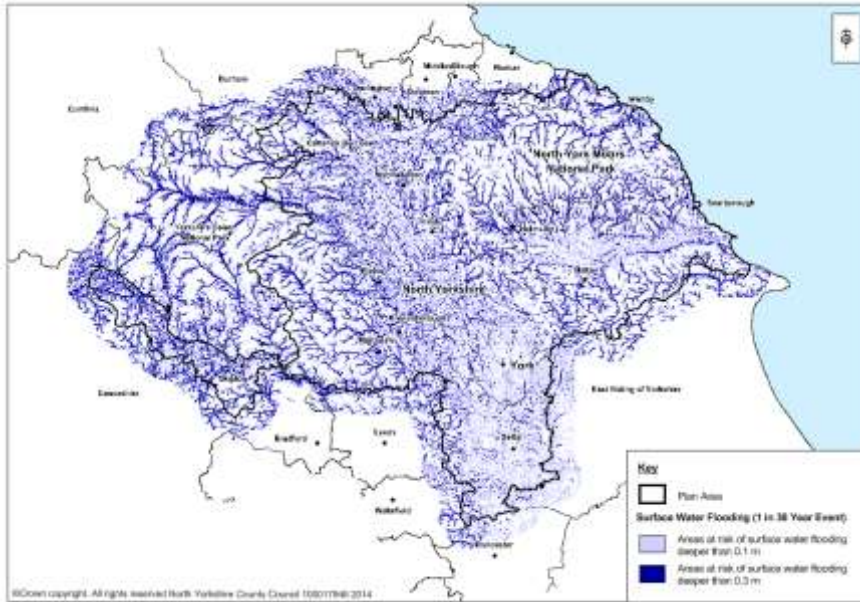


Figure 5.5: Flood map for surface water for North Yorkshire, displaying the 1 in 30 rainfall event for areas at risk of surface water flooding at depths of 0.1 and 0.3 metres.
 Source – Environment Agency, 2010.

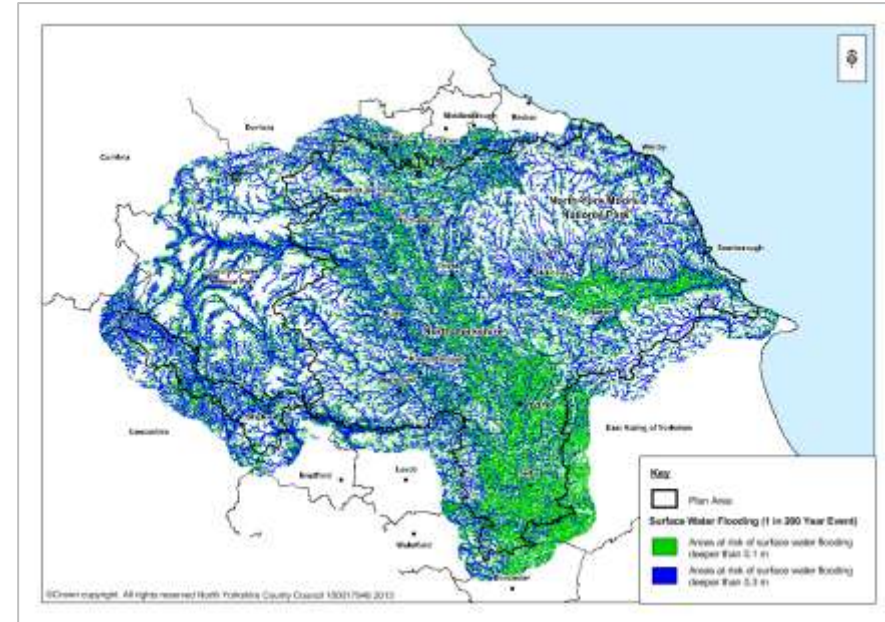


Figure 5.6: Flood map for surface water for North Yorkshire, displaying the 1 in 200 rainfall event for areas at risk of surface water flooding at depths of 0.1 and 0.3 metres.
 Source – Environment Agency, 2010.

Groundwater Flooding

Figure 5.7 displays a 1 km² grid across North Yorkshire of the areas susceptible to groundwater flooding and the level of their susceptibility. Each grid is classified as a proportion of that 1 km² that is susceptible to groundwater emergence. These classifications are: <25% of area; >25% to <50% of area; >50% to <75% of area; and >75% of area.

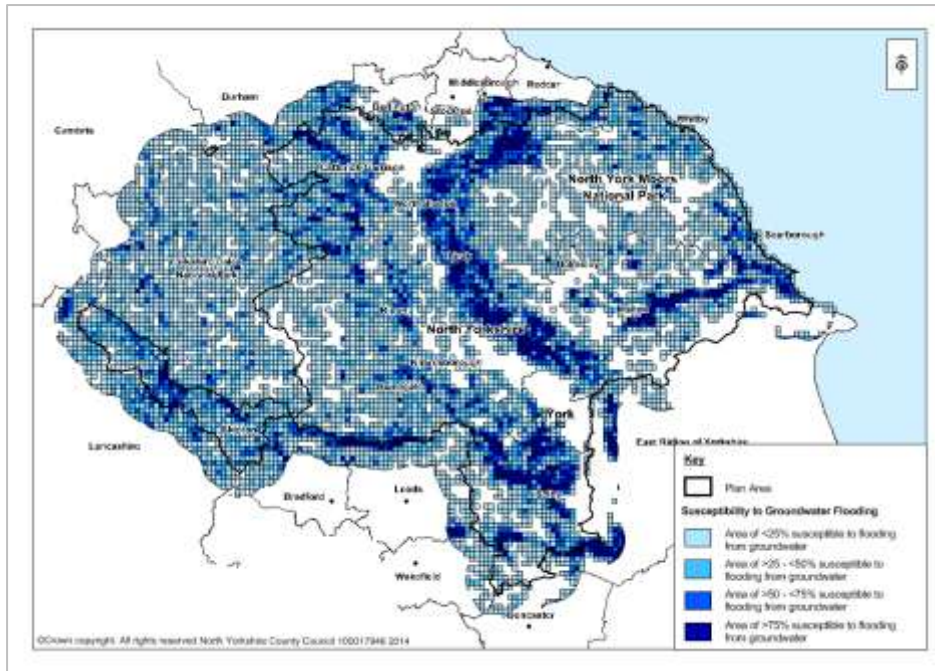


Figure 5.7 shows that much of the Plan Area is susceptible to groundwater flooding displays relatively low susceptibility, with a lower proportion of land that is >75% and >50% to <75% susceptible to groundwater flooding compared to the area that is <50% susceptible. It should be noted, however, that areas of higher susceptibility exist in localised bands bordering higher land in the eastern portion of the plan area, as well as along the River Wharfe and in the lower Ouse catchment in the district of Selby.

Figure 5.7: Areas susceptible to groundwater flooding across North Yorkshire.

Source – Environment Agency, 2010.

The Flood Defence Network and Sustainable Drainage

Flood Defences

The flood defence network map, shown on Figure 5.8, displays linearly-raised flood defences (such as embankments and walls) that have been constructed within the last five years across North Yorkshire and York, where the standard of protection from flooding is equal to, or better than 1% (1 in 100) for rivers and 0.5% (1 in 200) from the sea.

The map that displays the floodplain across the county (comprising flood zones 2 and 3 – see Figure 5.9 below) does not take into account the presence of flood defences. Therefore, it is possible that development that takes place within flood zones 2 and/or 3 could have a reduced chance of flooding or a reduction in the impact of a flood event due to the presence of the flood defences outlined below. However, it should be noted that flood defences will not always provide sufficient protection from flood events.

Extent of Floodplains

Development planning (as set out in the Technical Guidance to the National Planning Policy Framework) needs to take into account flood risk and to consider how this is best approached with different development applications. The vulnerabilities of minerals- and waste-related development are set out below:

Essential Infrastructure:

- Water treatment works that need to remain operational in times of flood.

More Vulnerable:

- Landfill and sites used for waste management facilities for hazardous waste.

Less Vulnerable:

- Waste treatment (except landfill and hazardous waste facilities).
- Water treatment works which do *not* need to remain operational during times of flood.
- Sewage treatment works (if adequate measures to control pollution and manage sewage during flooding events are in place).
- Minerals working and processing (except for sand and gravel working).

Water-Compatible Development:

- Sewage transmission infrastructure and pumping stations.

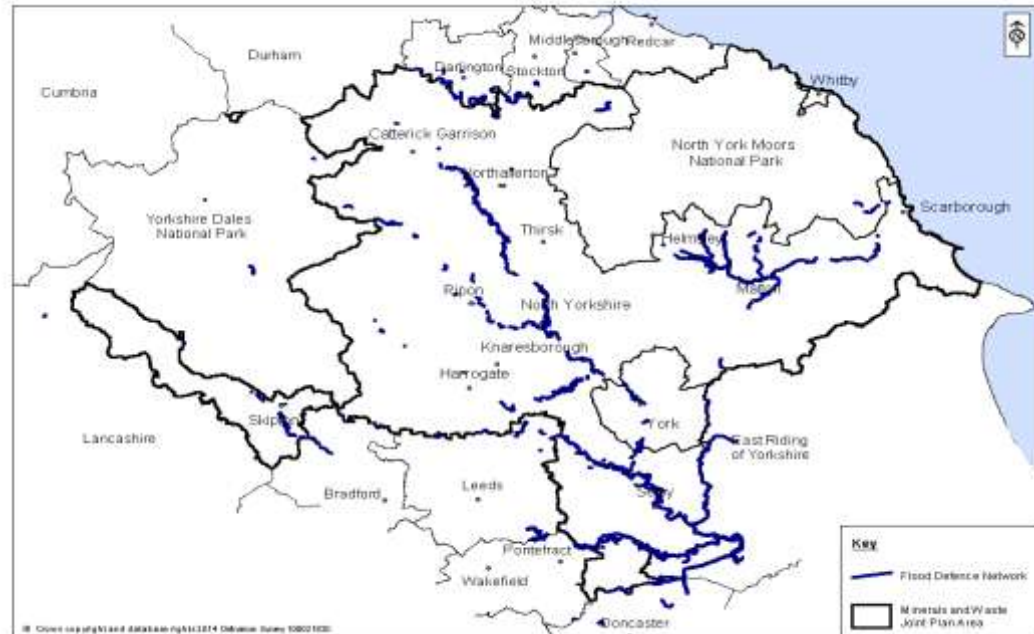


Figure 5.8: The flood defence network for North Yorkshire.

Source – Environment Agency, 2011. (figure shows defences noted in the National Flood and Coastal Defence Database – other defences, e.g, some privately owned defences may be unmapped)

- Sand and gravel working.

The classifications detailed above inform planning proposals when cross-referenced with the flood zone of a given site. The Environment Agency has mapped areas of land across England and Wales that could be affected by flooding from rivers and/or the sea. These areas have been split into flood zones 2 and 3, which are displayed in Map 4.8, below. Flood zone 3 is an estimate of areas of land with a 1% (1 in 100) or greater chance of flooding each year from rivers, or with a 0.5% (1 in 200) chance or greater of flooding each year from the sea. Flood zone 2 is an estimate of areas of land between zone 3 and the extent of flooding from rivers and/or the sea with a 0.1% (1 in 1000) chance of flooding in a given year.

As detailed in Figure 5.9, the Plan Area has an extensive network of rivers and many areas are susceptible to flooding from rivers. Therefore, minerals and waste sites should be allocated on areas of land where the risk from flooding is compatible with the type of site being developed. In addition, the Joint Plan should also seek to reduce the risk and impact of flooding from minerals and waste related development.

A Strategic Flood Risk Assessment (SFRA) is a key tool to help inform flooding issues in a Sustainability Appraisal. Within the Plan Area there are two completed SFRAs that apply to York and the North York Moors. A minerals and waste specific SFRA is also being prepared to accompany the sustainability appraisal to ensure that all sites can be screened for flood risk.

Water Availability

The Environment Agency issues licenses for water abstraction depending upon the current availability of water. Table 5.10 below shows that at present there are 14 locations in the Plan Area where surface water is not available for licensing and 6 locations where groundwater is not available for licensing.

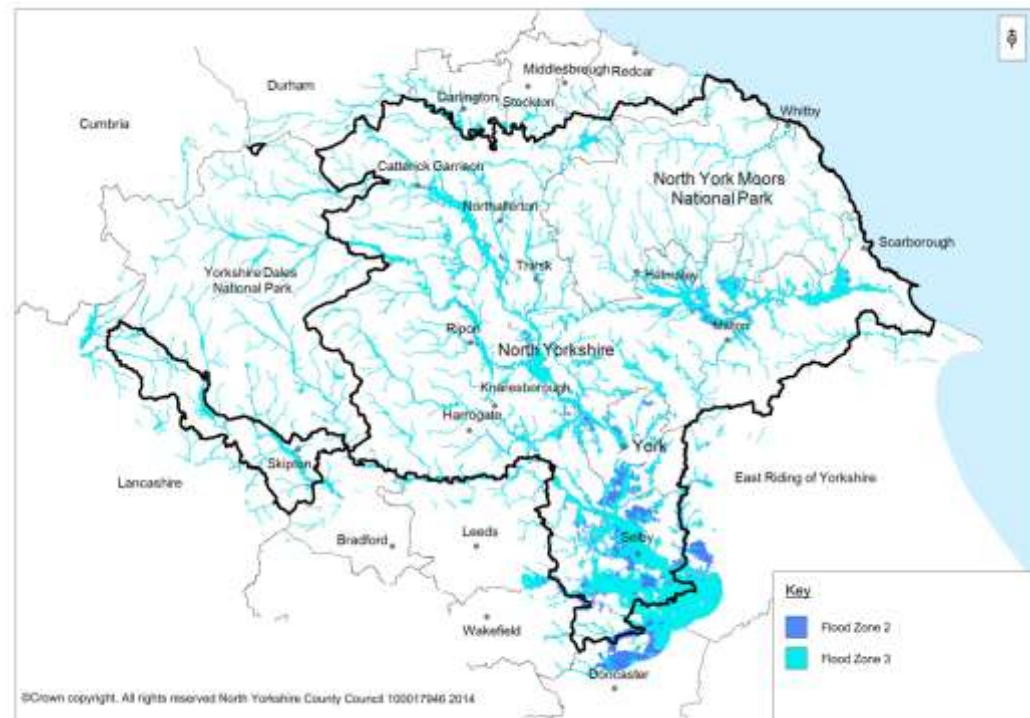


Figure 5.9: Extent of floodplains indicated by zones 2 and 3.
Source – Environment Agency, 2011.

Catchment	Assessment Points (point on main rivers) with surface water not available for licensing ²²	Areas where no groundwater available (restrictions may still be in place)	Date of CAMS
Aire and Calder	0/10	1/2 (Sherwood Sandstone)	February 2013
Derwent	3/10	0/2	February 2013
Don and Rother (note very little of this catchment is in the Plan Area)	0/9	1/4 (Sherwood Sandstone)	February 2013
Esk and Coast	1/4	No principal aquifers in this area	February 2013
Hull and East Riding (note only a small part of this catchment is in the plan area)	2/9	1 / 2 (Sherwood Sandstone)	February 2013
Swale, Ure, Nidd and Upper Ouse	3/18	0/4	February 2013
Tees	0/4	0/2	February 2013
Wharfe and Lower Ouse	1/6	0/3 (note 1 groundwater management unit (Magnesian Limestone (Tidal) has not been assessed and around Selby groundwater is not available).	February 2013
Lune and Wyre (note only a small part of this catchment is in the Plan Area)	For Lune CAMS 0/13	2/4 (none are in Plan Area)	February 2013
Ribble, Douglas and Crossens ((note only a small part of this catchment is in the Plan Area)	For Ribble CAMS 4/16	1/5 (none in the Plan Area)	February 2013

Table 5.10: Surface Water Resource availability at low flows as reported in Catchment Abstraction Management Strategies/Groundwater resource availability as reported in CAMS.

Source – Environment Agency CAMS.

²² Restrictions may still be in place and locally, particularly in tributaries to main rivers, water may not be available.

Shoreline Erosion and Management

Shoreline Management Plans provide a policy framework for coastal defence management for selected time periods: now until 2025 (short-term), 2025 to 2055 (medium-term), and 2055 to 2105 (long-term). The range of policies includes:

- No Active Intervention (NAI): here a decision has been made not to invest in providing or maintaining defences.
- Hold the Line (HTL): this policy shows that the level of protection provided by defences will be maintained or changed, and includes operations to carry out work in front of or behind the current defence while still maintaining the current defence line.
- Advance the Line (ATL): this involves building new defences on the seaward side of the existing defence and is limited to policy units where significant land reclamation is considered.
- Managed re-alignment (R): this allows realignment of the shoreline with management to control movement.

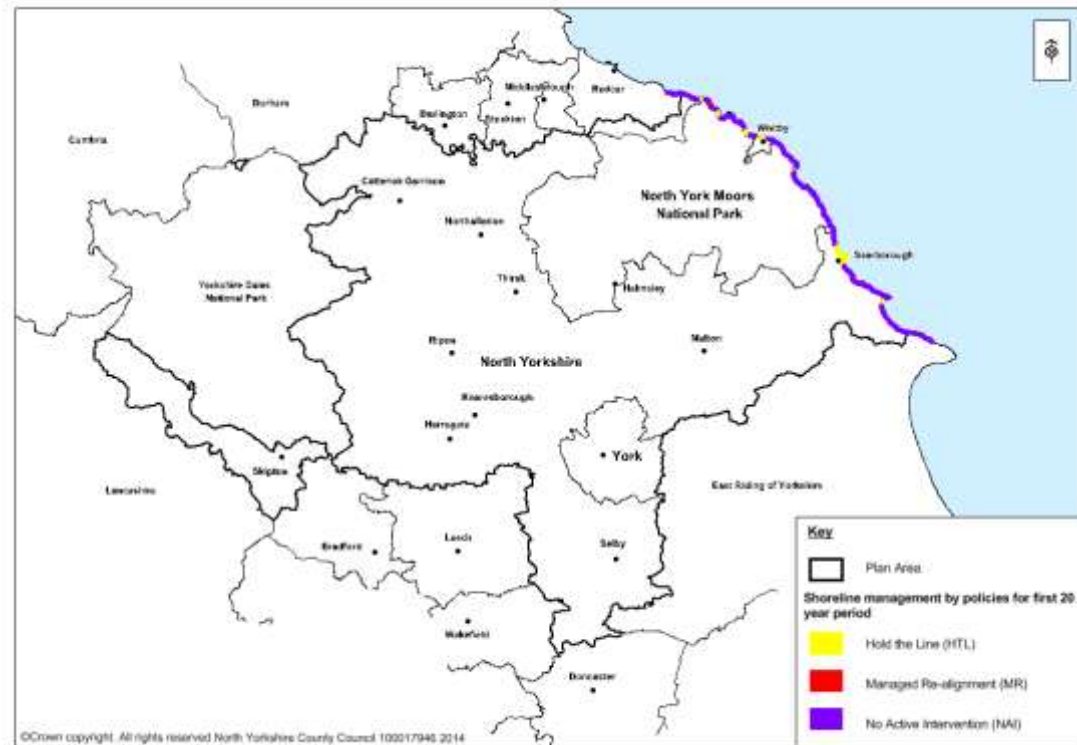


Figure 5.11 displays the Shoreline Management Plan policies for the Plan Area coastline under the North East Coastal Authorities Group Shoreline Management Plan 2 (SMP2). Mineral and Waste Development in coastal areas will need to assess the risks of flooding from the sea via a sequential approach, and where flood risk remains an issue, will need to ensure the Exception Test takes full account of, and is consistent with, the policy prescriptions advocated in the SMP2.

Agricultural Land and Soil

Soil is an irreplaceable and fundamental natural resource which provides many essential services on which we rely including food production, water management and support for valuable biodiversity and ecosystems. It also plays a vital role in the fight against climate change as a major reservoir of carbon. Safeguarding our Soils: A Strategy for England', reported that the carbon stored in UK soils is in the order of some 10 billion tonnes.

The National Soil Resource Institute provides a map of soilscapes across England and Wales. This is based on a National Soil Map called NATMAPvector) and allows users to examine the variations that occur between soil types and how soils affect the environment. The maps are available through Defra's Magic website <http://magic.defra.gov.uk/>.

The soilscapes maps show that there is a wide variety of soilscapes in the Plan Area. For instance, the Vales of York and Mowbray contain large areas of *'slowly permeable, seasonally wet slightly acid but base rich loamey and clayey soils'*. These soils support grassland and arable farming, are of moderate fertility, and can support habitats such as seasonally wet pastures. There is also a large area of *'naturally wet very acid sandy and loamy soil'*, which supports arable and horticulture, and can support heathland habitats, that runs through the Vale of York, including the eastern part of the City of York, and into Selby District.

Elsewhere, there are significant areas of *'freely draining, slightly acid loamy soils'* which support arable and grassland farming at various locations throughout the northern part of the plan area, and *'shallow lime rich soils over chalk or limestone'* in the eastern part of the Plan Area (e.g. in the Vale of Pickering and Yorkshire Wolds). The more upland parts of the Plan Area in the North York Moors and in Craven District support soilscapes types such as the very low fertility *'blanket bog peat soils'*, and *'slowly permeable, wet, very acid upland soils'*, supporting rough grazing and forestry. Towards the south of the plan area *'naturally wet, loamey and clayey floodplain soils'* are often found.

The European Soil Atlas cites the Communication to European Commission to the Council and the European Parliament, entitled 'Towards a Thematic Strategy for Soil Protection', when identifying the eight main threats to soils. Table 5.12 summarises the eight main threats and their potential relationship to minerals and waste planning.

Threat	Description	Relevance to Minerals and Waste Development
Soil sealing	Occurs through the development of technical, social and economic infrastructure which 'seals in' the soil blocking its functions.	Aside from the removal of soils when creating voids in the ground, this will be a key threat where soil is left in place and built upon by supporting infrastructure such as buildings, car parking and access roads.
Erosion	Although a natural process, accelerated erosion is a concern. Generally the action of rain and wind can remove soils at an accelerated rate particularly when vegetation is removed, changes occur to land cover or management or the landform is altered. This becomes a problem when soil particles are removed faster than natural processes can replace them.	Minerals and waste development may involve the reprofiling of sites during landscaping works leading to soil erosion. Uncontrolled runoff from hard surfaces may also exacerbate erosion.
Loss of organic matter	Occurs when organic residues are not sufficiently produced or recycled to soil. This can change the structure of the soil and lead to declines in fertility.	Not directly relevant to minerals and waste development, though may be an issue in site restoration.
Decline in soil biodiversity	This is strongly linked to loss of organic matter. Loss of soil biota may lead to loss of key ecosystem services delivered by the soil including nutrient cycling, regulation of water flow. Regulation of soil and sediment movement, regulation of pests and diseases and regulation of atmospheric composition.	Soil biodiversity may be reduced by forms of development that damage soils (such as through increasing erosion and loss of organic matter) and may take place throughout the lifecycle of minerals and waste development.
Contamination	Can be widespread or localised and occurs due to human activities ranging from traffic generation to industrial processes. As well as physically damaging soils and soil biota, contamination of soils may also percolate through to groundwater. Contaminated soils may cause health risks to humans or can affect the functioning of ecosystems.	Runoff from onsite roads, potential ingress of toxins from poorly managed waste management sites, or potentially toxic disposal of tailings or acid mine drainage from certain minerals development (e.g. from extracting energy minerals) can cause contamination of soils. Diffuse eutrophication or acidification of soils may also occur where significant sulphur or nitrogen input to the atmosphere occurs.
Compaction	Caused through the application of high pressure, often from vehicles, on soils.	Can be a significant source of soil damage during the construction and restoration phases of minerals and waste development.
Hydro-geological risk	Soils play a key role in regulation flooding and drought by slowing down the rate of runoff during rainfall events and	Ill-considered reprofiling or compacting of land during minerals development in particular can

	retaining moisture after those events. However, compacted or poorly managed soils may increase runoff rates, or may remove the water storage capacity of soils. Slope failure may also occur in some circumstances.	increase hydro-geological risk.
Salinization	Mainly a problem elsewhere in Europe. It is the accumulation of soluble salts of sodium, magnesium and calcium in the soil, thereby reducing fertility.	May be a local problem where de-icing of roads occurs.

Table 5.12: Main threats to soils and their relevance to minerals and waste planning.

Source - Adapted from information provided in European Commission, 2008. Soil Atlas of Europe http://eusoils.jrc.ec.europa.eu/projects/soil_atlas/.

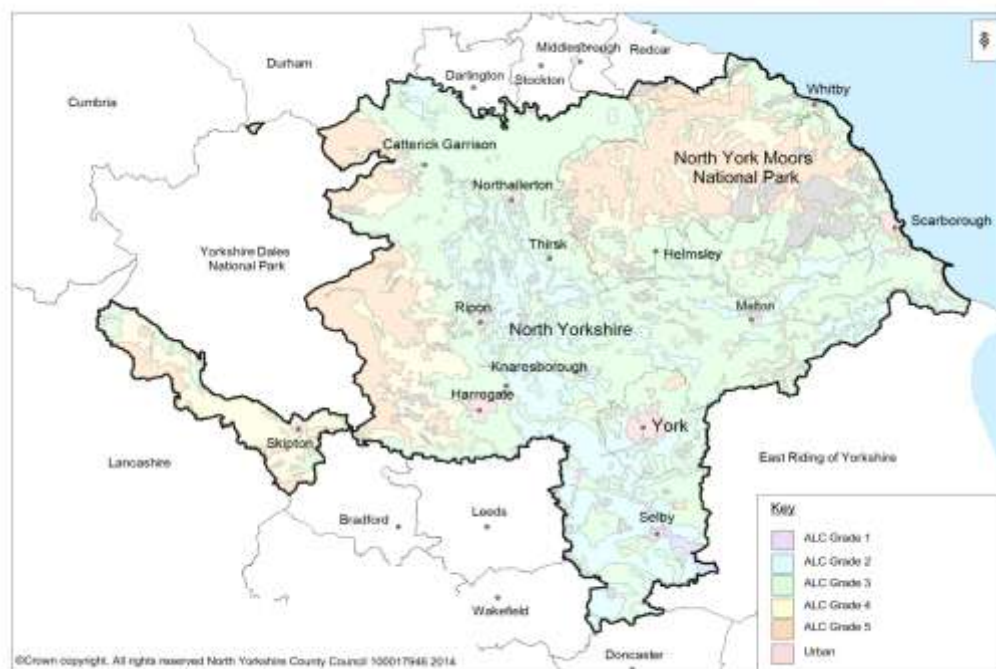


Figure 5.13: Extent of best and most versatile agricultural land (map does not distinguish between Grade 3a and Grade 3b).

Source – Defra.

The European Soils Data Centre map shows that some parts of the Plan Area (e.g. parts of the Vales of York and Mowbray) suffer from higher soils erosion rates (2 to 5 tonnes per hectare) than other areas. Similarly, there is variation in susceptibility to soil compaction, with parts of the Plan Area ranging from low susceptibility to very high susceptibility. The soils map also shows the highest soil carbon in the North York Moors. The European Soil Data Centre MapViewer can be viewed at <http://eusoils.jrc.ec.europa.eu/wrb/>.

Agricultural land is categorised into 5 classifications, with the Best and Most Versatile falling into grades 1, 2 or 3a of the Agricultural Land Classification (ALC).

There is considerable overlap between areas of minerals resource and areas of higher quality agricultural land. The agricultural sector is an important element of the North Yorkshire economy and whilst it may sometimes be possible for former mineral sites in these areas to be restored to agricultural land this is not always practicable, for example when extraction takes place below the water table.

Table 5.14 shows that in the Yorkshire and Humber region a total of 300 hectares of agricultural land was lost to development between 2006 and 2009.

	Yorkshire and Humber	England
Agriculture	300	2610
All not previously developed	320	3330
All previously developed	450	3760
All uses	860	7100

Table 5.14: Land Use Change - Previous Use of Land Changing to Developed Use, hectares (2006 – 2009).

Source: DCLG, 2012. Live Tables on Land Use Change Statistics (Table P261 to P265; Land use change: changes to developed uses) [URL: <https://www.gov.uk/government/statistical-data-sets/live-tables-on-land-use-change-statistics>].

Waste management facilities are likely to have less of an impact upon soil quality and agricultural land within the Plan Area than minerals related development, however, any potential impacts need to be taken into account in the production of the Joint Plan.

Key messages from the baseline

- Long stretches of river catchments can be found in this area, all of which ultimately drain to the Humber Estuary, with the exception of the Esk and Tees.
- Significant floodplains form around large parts of these rivers, becoming more significant as they travel east.
- River basin management plans set demanding targets for water quality across many water bodies; there are still significant numbers of water bodies at poor or bad status.
- Important groundwater resources are protected by Groundwater Source Protection Zones.
- Flooding is already a problem in lower lying areas. However, climate change is likely to increase the risk of surface water and river flooding.
- Much of the Plan Area is made up of high quality farmland, though there are significant areas of poorer soils particularly in uplands.
- Parts of the Plan Area are subject to issues such as soil erosion and compaction.
- Areas of high soil carbon exist in the North York Moors.

Predicted Future Trends

- Flooding is already a significant issue within North Yorkshire. However, because of climate change, flooding from rivers, the sea, and surface water is predicted to become a significantly greater risk²³ in the medium and long term. However, policy interventions such as Catchment Flood Management Plans may moderate this to a degree.
- Climate change, together with other factors such as population growth and development and farming demands, is expected to have negative effects on water availability: a situation which is expected to get worse over time, most significantly in the longer term.
- Soils are also vulnerable resources, and erosion, loss of soil carbon, and reduction in soil biodiversity are all issues that may become worse in the long term as development and increasingly climate change (e.g. drought and flooding) increasingly impact upon soils²⁴

Indicators

Indicator	Baseline Data (and year)	Source
Percentage of water bodies achieving overall good status in River Basin Management Plans	See Table 5.3	Environment Agency
Water resource availability at low flows as reported in Catchment Abstraction Management Strategies	See Table 5.10	Environment Agency
Groundwater resource availability as reported in Catchment Abstraction Management Strategies	See Table 5.10	Environment Agency
Allocations requiring exception testing in North Yorkshire SFRA	Data not yet available	NYCC
Number of planning conditions relating to SUDS	Data not yet available	NYCC, CYC, NYMNPA
Number of minerals and waste applications which are located within areas of Best and Most Versatile Agricultural Land	Data not yet available	NYCC, CYC, NYMNPA
Land use change: previous use of land changing to developed use annual average by region	See Table 5.14	DCLG

²³ See CLG, 2012. Technical Guidance to the National Planning Policy Framework [URL: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6000/2115548.pdf] which sets out precautionary sensitivity ranges for different types of flooding.

²⁴ See for example, Defra, 2005. Impacts of climate change on soil functions [URL: http://randd.defra.gov.uk/Document.aspx?Document=SP0538_3603_FRP.doc]

5 SEA Topic/SA Category – Air

Air Quality

Each local authority must monitor air quality in their areas to ensure that national air quality objectives are being met. If the authority finds that the objectives are unlikely to be achieved they must declare an Air Quality Management Area. In the Plan Area there are four AQMAs as set out in Table 6.1 below. All four AQMAs are transport related. There are no AQMAs in the North York Moors National Park.

Local Authority area	Site	Name	Pollutant	Main source
Harrogate	A59 Bond End, Knaresborough	Knaresborough AQMA No1	Nitrogen Dioxide	Traffic
Harrogate	B6265 Skellgate, Ripon	Ripon AQMA No1	Nitrogen Dioxide	Traffic
Ryedale	B1248 Butcher Corner, Malton	Malton AQMA	Nitrogen Dioxide	Traffic
York	Around the Inner Ring Road	York City Centre	Nitrogen Dioxide	Traffic
York	Area around Fulford Road	Fulford (York No. 2)	Nitrogen Dioxide	Traffic
York	Area around Salisbury Terrace	Salisbury Terrace (York No. 3)	Nitrogen Dioxide	Traffic

Table 6.1: AQMAs in the Joint Plan Area.

A further site in Harrogate Borough, A661 Woodlands Junction, is close to being designated as an AQMA due to Nitrogen Dioxide (NO₂) emissions from traffic. Monitoring of Woodland junction is on-going and a request to defer declaration has been made due to the potential for NO₂ levels to be reduced by a planned upgrade to the junction and signals.

Defra publish a map of Air Quality Management Areas which shows which local authorities have declared AQMAs, their location and the pollutant for which the AQMA is declared. This is available at <http://aqma.defra.gov.uk/aqma/maps.php>.

Air pollutants can have various effects on both humans and habitats, and the current situation in the Joint Plan Area in relation to key pollutants is outlined below.

PM10 (particulate matter)

Particulate matter can have effects on lungs in humans and effects of smothering, eutrophication and acidification on habitats. PM10 can occur naturally in the environment through natural phenomena such as volcanoes or fires, but man-made emissions typically arise from traffic, power plants (particularly coal fired power stations) and industrial processes, including quarrying. PM10 concentrations tend to be highest in urban

areas and lower in rural areas²⁵. In the Joint Plan Area concentrations are lowest in the upland areas of the North York Moors National Park at 0.003 – 0.03t/km² and are highest in the more urban parts of the area, particularly York and Harrogate where concentrations reach 1-4t/km². As would be suggested by the sources of PM10, the road network of the Plan Area also features higher concentrations, typically 0.2-1t/km².

Sulphur Dioxide

Like PM10, Sulphur Dioxide can have effects on lungs in humans and effects of eutrophication and acidification on habitats. Sulphur dioxide is emitted naturally from volcanoes but the main human source of emissions is from industrial processes such as burning fossil fuels and traffic. The national mapping shows the highest concentrations occur around towns and the major road networks with concentrations also occurring offshore around parts of the coastline²⁶. This pattern is broadly reflected in the Joint Plan Area. Most of the Plan Area is within the ranges of 0.03-0.1, 0.1-0.5, 0.5-0.8 and 0.8-10t/km² and whilst higher concentrations broadly follow the roads and built up areas a fairly mosaic pattern is evident. Lower concentrations are evident in the upland parts of the North York Moors National Park which largely has emissions of 0-0.01t/km².

Benzene

The main source of benzene emissions is vehicles. In humans this can have effects on lungs although effects on habitats are unknown. Following the national trend, the highest concentration in the Joint Plan Area are found along the main roads and in the built up areas, with concentrations also occurring offshore around parts of the coastline²⁷. Most parts of the area fall within the categories of 0.003-0.01, 0.01-0.03 and 0.03-0.3t/km². The upland parts of the North York Moors National Park however have lower concentrations in the categories of 0-0.0003t/km² and 0.001-0.003t/km².

Nitrous Oxides

As with the chemicals above, Nitrous Oxides can have effects on lungs in humans and effects of eutrophication and acidification on habitats. Although it occurs naturally in the atmosphere, the main human source is through emissions from agriculture, but also through industrial processes. National mapping shows the highest concentrations along the main roads²⁸. In the Joint Plan Area most of the A and B roads are categorised within the 0.3-1t/ km² emissions range, with dual carriage roads and motorways in the area falling within the national categories of

²⁵ http://naei.defra.gov.uk/images/mapping_2009/24_large.png.

²⁶ http://naei.defra.gov.uk/images/mapping_2009/8_large.png.

²⁷ http://naei.defra.gov.uk/images/mapping_2009/22_large.png.

²⁸ http://naei.defra.gov.uk/images/mapping_2009/6_large.png.

1-25 and 25-38,443t/km² respectively. The more rural parts of the plan area have lower Nitrous Oxides emissions rates, with the upland areas of the North York Moors National Park falling within the 0.01-0.03t/km² category.

Ozone

Ground level ozone, which is formed by sunlight reacting with other pollutants such as nitrogen oxides, can have various effects on plants, animals and humans but is the result of emissions often a long way from the sources of pollution. This is only monitored in one location in the Joint Plan Area - High Muffles (near to Cropton Forest, north of Pickering). Monitoring of exceedences shows that levels have fluctuated over the past decade, as shown in Figure 6.2.

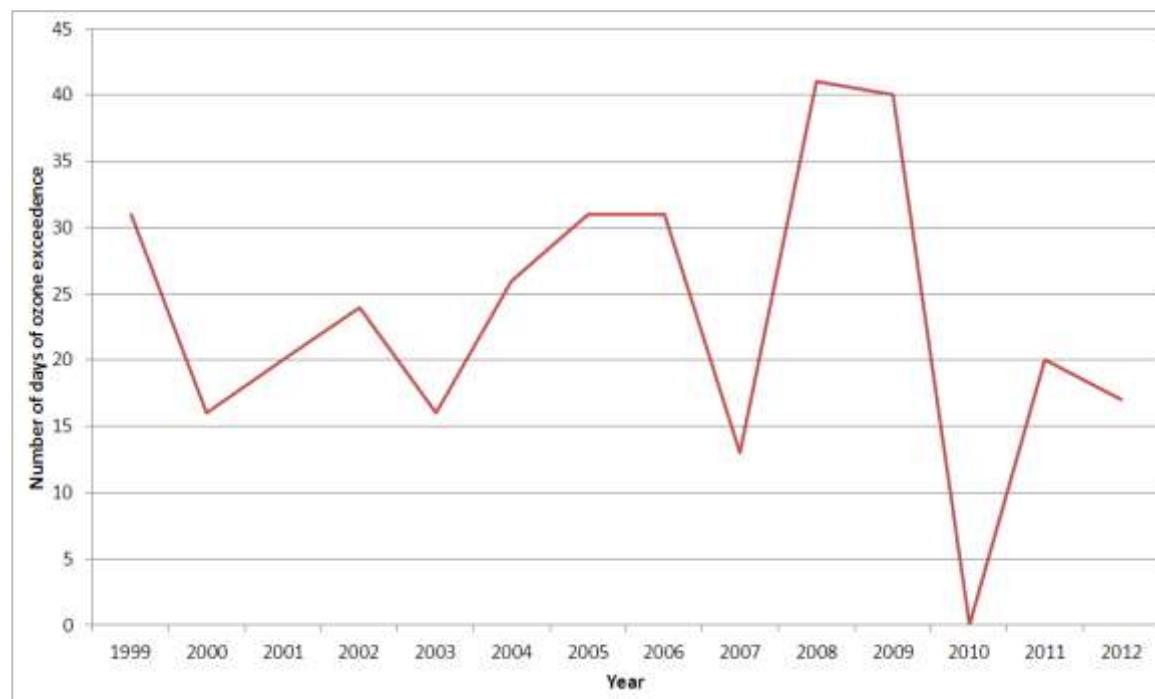


Figure 6.2: Ozone exceedences at High Muffles.

Source - www.uk-air.defra.gov.uk.

The Air Pollution Information System monitors the effects of nitrogen and sulphur emissions on Special Areas of Conservation and Special Protection Areas²⁹. Table 6.3 below summarises whether critical loads³⁰ are being exceeded in relation to the qualifying features of these sites

²⁹ <http://www.apis.ac.uk/src/>.

³⁰ Air Quality Strategy Standard for 2005 (O3) daily maximum 8-hour running mean >100 µg^m-³.

within and close to the plan area. It must be noted that, in terms of the qualifying features of the protected habitats, where critical loads are being exceeded this does not imply that this is having negative effects on the qualifying features. The main sources of nitrogen deposition are livestock production, followed by imported emissions, with road transport providing a less significant contribution. The main sources of sulphur emissions are industrial emissions from either nearby or further afield. The effects on the sites themselves vary and include changes to vegetation, toxicity, eutrophication and also potential positive effects on food supply for some important birds. These will be examined in more detail as part of the Habitats Regulations Assessment.

Protected site	Nitrogen emissions exceedence of critical load	Main sources (largest contributor first)	Sulphur emissions exceedence of critical loads	Main sources (largest contributor first)
Arnecliff and Park Hole Woods SAC	Y	Livestock production, imported emissions, road transport	Y	Imported emissions, international shipping, various nearby power stations and industrial premises.
Beast Cliff – Whitby SAC	n/a	Livestock production, imported emissions, international shipping	N	Imported emissions, international shipping, various nearby power stations and industrial premises.
Craven Limestone Complex SAC	Y for certain features (active raised bogs, limestone pavements, lady's slipper orchid, Tilio-Acerion forest) N for certain features (semi-natural dry grasslands and scrublands, molinia meadows, petrifying springs, calaminarian grasslands, alkaline fens) n/a (others)	Livestock production, imported emissions, road transport	Y (active raised bogs, limestone pavements) N (lady's slipper orchid, Tilio-Acerion forest, semi-natural dry grasslands, molinia meadows, calaminarian grasslands) n/a (others)	Imported emissions, international shipping, Fiddlers Ferry power station
Ellers Wood and Sand Dale SAC	N	Livestock production, ammonia emissions, imported emissions	N	Imported emissions, international shipping, various nearby power stations and industrial premises.
Fen Bog SAC	Y	Livestock production, imported emissions,	Y	Imported emissions, international shipping,

Protected site	Nitrogen emissions exceedence of critical load	Main sources (largest contributor first)	Sulphur emissions exceedence of critical loads	Main sources (largest contributor first)
		road transport, international shipping		various nearby power stations and industrial premises.
Flamborough Head SAC	n/a	Livestock production, imported emissions, ammonia emissions from non-agricultural sources	n/a	Imported emissions, international shipping, Eggborough power station, Drax power station
Flamborough Head and Bempton Cliffs SPA	n/a	Livestock production, imported emissions, ammonia emissions from non-agricultural sources	n/a	Imported emissions, international shipping, Drax power station
Ingleborough Complex SAC	Y (limestone pavements, calcareous rocky slopes, blanket bogs, Juniperus communis formations, Tilio-Acerion forests) N (semi-natural dry grasslands and scrubland, molinia meadows, petrifying springs, alkaline fens)	Livestock production, imported emissions, road transport, ammonia emissions from non-agricultural sources	Y (blanket bogs) N (limestone pavements, calcareous rocky slopes, Juniperus communis, Tilio-Acerion, semi-natural dry grasslands and scrubland, molinia meadows) n/a (others)	Imported emissions, international shipping, Fiddlers Ferry power station.
Kirk Deighton SAC	n/a	Livestock production, imported emissions, road transport, ammonia emissions from non-agricultural sources	n/a	Imported emissions, Ferrybridge C power station, international shipping, Drax power station
Lower Derwent Valley SAC	N	Livestock production, imported emissions, ammonia emissions from fertiliser use, ammonia emissions from non-agricultural sources	N	Imported emissions, Drax power station, Eggborough power station, international shipping, Ferrybridge C power station.
Lower Derwent Valley SPA	N (lowland hay meadows) n/a (others)	Livestock production, imported emissions, ammonia emissions	N (lowland hay meadows – neutral grassland calcareous-type)	Imported emissions, Drax power station, Eggborough power station, international

Protected site	Nitrogen emissions exceedence of critical load	Main sources (largest contributor first)	Sulphur emissions exceedence of critical loads	Main sources (largest contributor first)
		from fertiliser use, ammonia emissions from non-agricultural sources	n/a (others)	shipping, Ferrybridge C power station
North Pennine Dales Meadows SAC	Y (mountain hay meadows) N (molinia meadows)	Livestock production, imported emissions, road transport	N	Imported emissions, international shipping
North Pennine Moors SAC	Y (marsh saxifrage, blanket bogs, siliceous alpine and boreal grasslands, calcareous rocky slopes, siliceous scree, siliceous rocky slopes, old sessile oak woods, European dry heaths, Juniperus communis, Northern Atlantic wet heaths) N (semi-natural dry grasslands and scrubland, petrifying springs, calaminarian grasslands, alkaline fens)	Livestock production, imported emissions, road transport	Y (blanket bogs) N (marsh saxifrage, siliceous alpine and boreal grasslands, calcareous rocky slopes, siliceous scree, siliceous rocky slopes, old sessile oak woods, European dry heaths, Juniperus communis, Northern Atlantic wet heaths, semi-natural dry grasslands and scrubland, calaminarian grasslands) n/a (others)	Imported emissions, international shipping
North Pennine Moors SPA	Y (European golden plover, hen harrier, peregrine falcon – dwarf shrub heath, merlin) n/a (peregrine falcon – supralittoral rock)	Livestock production, imported emissions, road transport	Y (European golden plover - bogs) N (European golden plover – montane habitats and dwarf shrub heath, hen harrier, peregrine falcon, merlin) n/a (supralittoral rock)	Imported emissions, international shipping
North York Moors SAC	Y	Livestock production, imported emissions, road transport, international shipping	Y (blanket bogs) N (heaths)	Imported emissions, international shipping, various nearby power stations and industrial premises.
North York Moors SPA	Y	Livestock production, imported emissions, road transport, international shipping	Y (European golden plover – bogs) N (others)	Imported emissions, international shipping, various nearby power stations and industrial premises

Protected site	Nitrogen emissions exceedence of critical load	Main sources (largest contributor first)	Sulphur emissions exceedence of critical loads	Main sources (largest contributor first)
Ox Close SAC	Y	Livestock production, imported emissions	N	Imported emissions, international shipping
River Derwent SAC	n/a	Livestock production, imported emissions, road transport	n/a	Imported emissions, Drax power station, Eggborough power station
Skipwith Common SAC	N	Livestock production, imported emissions, road transport, ammonia emissions from non-agricultural sources	Y	Imported emissions, Eggborough power station, Drax power station, Ferrybridge C power station
South Pennine Moors SAC	Y	Livestock production, imported emissions, road transport, ammonia emissions from non-agricultural sources	Y (blanket bogs, transition mires) N (old sessile oak woods, Northern Atlantic wet heaths, European dry heaths)	Imported emissions, international shipping, Fiddlers Ferry power station
South Pennine Moors (Phase 2) SPA	Y (European golden plover, dunlin, common snipe – bogs & acid grassland, twite, Eurasian curlew, northern wheatear, ring ouzel, common sandpiper – standing open water and canals, short-eared owl, merlin, whinchat) N (common snipe – neutral grassland acid & calcareous type, common redshank, northern lapwing – neutral grassland acid & calcareous type) n/a (others)	Livestock production, imported emissions, ammonia emissions from non-agricultural sources, road transport	Y (European golden plover, dunlin, common snipe – bogs, acid grassland, neutral grassland acid-type, twite, Eurasian curlew, northern wheatear, ring ouzel, common redshank – neutral grassland acid-type & neutral grassland calcareous-type, northern lapwing – neutral grassland acid-type, short-eared owl, merlin, whinchat) N (common snipe – neutral grassland calcareous-type, common redshank – neutral grassland calcareous-type, northern lapwing – neutral grassland calcareous-type) n/a (others)	Imported emissions, international shipping, Fiddlers Ferry power station, industrial combustion
Teesmouth and Cleveland Coast SPA	Y (acidic supralittoral element) N (others) n/a (standing open waters)	For sediment – Livestock production, ammonia emissions,	Y (acidic and calcareous supralittoral sediment) n/a (others)	For sediment – Imported emissions, other transport – not roads, Teesside

Protected site	Nitrogen emissions exceedence of critical load	Main sources (largest contributor first)	Sulphur emissions exceedence of critical loads	Main sources (largest contributor first)
		imported emissions For standing open waters and canals – Other transport (aircraft take-off and landing, shipping, railways), livestock production, imported emissions, ammonia emissions from non-agri sources, road transport.		industrial uses For open waters and canals - Other transport (aircraft take-off and landing, shipping, railways), imported emissions, nearby power stations and industrial uses.

Table 6.3: Exceedence of critical loads of nitrogen and sulphur on protected habitats – 2005 data.

Source - www.apis.ac.uk.

It is noted that local climatic conditions may exacerbate air quality conditions, such as in sheltered areas that have limited air circulation.

Key messages from the baseline

- Air quality is mainly an issue for a few very local urban areas, however some important upland habitats are being affected by deposition of air pollutants

Predicted Future Trends

- It is possible that contributions would be made towards improving air quality over the medium to longer term through advances in technology and efforts focussed on improving air quality in particular areas, particularly when factoring in other likely trends such as reductions in greenhouse gas emissions.
- Conversely, increased activity associated with increases in population (through for example more development and transportation requirements) may have a detrimental effect on air quality in the longer term.
- Minerals and waste developments may have localised effects over which there would be less control without minerals and waste planning policies in place (although recognising the role of other organisations in controlling air quality).

Indicators

Indicator	Baseline Data (and year)	Source
Number of Air Quality Management Areas	4 (2013)	NYCC and CYC
Number of SACs and SPAs with >1 feature exceeding critical loads for deposition of either N or S	N = 11 S = 11	APIS
Mapped distribution of NOX, PM10 and PM2.5	For NOX see: http://naei.defra.gov.uk/data/map-uk-das?pollutant_id=6 For PM10 see: http://naei.defra.gov.uk/data/map-uk-das?pollutant_id=24 For PM2.5 see: http://naei.defra.gov.uk/images/mapping_2010/122_large.png	DEFRA LAQM

6 SEA Topic/SA Category – Climatic Factors

A large proportion of climate change and global warming is considered to have been brought about due to large scale anthropogenic emissions of carbon dioxide and other greenhouse gases (GHGs) since the industrial revolution, with much of the warming impact having occurred in the last 50 years. Hotter summers, wetter winters, more storms and sea level rise are some of the consequences of climate change that are predicted to take place over the coming decades. The degree of future changes depends upon the amount of future greenhouse gas emissions.

Climate Change Projections

The most up to date projection of future changes to the climate are contained in the UK Climate Projections 2009 (UKCP09). The projections are based upon a range of possibilities based on different scenarios, and are not predictions of precisely how it is expected the climate will change. The projections consider low, medium and high emissions scenarios to provide a range of projections for the 2020s, 2050s and 2080s in relation to summer temperature, summer rainfall, winter temperature and winter rainfall. For the Yorkshire and Humber region the projections are set out in Table 7.1

Timescale	Increase in average summer temperature is...			Change in average summer rainfall is...		
	very unlikely to be less than:	most likely to be:	very unlikely to be more than:	very unlikely to be less than:	most likely to be:	very unlikely to be more than:
2020s	0.5 C	1.3 C	2.3 C	-24%	-8%	+10%
2050s	1.1 C	2.3 C	3.9 C	-36%	-19%	+1%
2080s	1.7 C	3.3 C	5.4 C	-44%	-23%	0%

Timescale	Increase in average winter temperature is...			Change in average winter rainfall is...		
	very unlikely to be less than:	most likely to be:	very unlikely to be more than:	very unlikely to be less than:	most likely to be:	very unlikely to be more than:
2020s	0.6 C	1.3 C	2.1 C	-3%	+4%	+13%
2050s	1.1 C	2.2 C	3.4 C	+1%	+11%	+24%
2080s	1.6 C	3.0 C	4.6 C	+2%	+15%	+33%

Table 7.1: Climate change projections for the Yorkshire and Humber region.

Source – UKCP09.

Projections for sea level rise are made in relation to points around the UK’s coastline. It is considered that the coastline of the National Park would fall somewhere between the projections for London and Edinburgh:

Timescale	London (cm)			Edinburgh (cm)		
	High	Med	Low	High	Med	Low
2020s	11.5	9.7	8.2	7.5	5.7	4.3
2050s	25.8	21.8	18.4	18.0	13.9	10.5
2080s	43.3	36.3	30.5	31.4	24.4	18.6

Table 7.2: Sea level rise projections.

Source – UKCP09.

It is also considered that more extreme weather events, such as storms and flooding, will become more prevalent.

Emissions

Emissions of greenhouse gases are widely accepted as causing changes in the climate. The greenhouse gases emitted through human activities are carbon dioxide (CO₂), methane, nitrogen oxides and fluorinated gases. CO₂ emissions are the most commonly reported and are mainly the result of burning fossil fuels for transportation and energy production. In 2010, CO₂ emissions attributed to North Yorkshire were 5.7 million tonnes, a decline of 8.5% since 2006. The Climate Change Act 2008 sets a target for a reduction in the UK's greenhouse gas emissions by 80% (from 1990 levels) by 2050, and a reduction of 34% by 2020. The large level of emissions in Redcar and Cleveland are due to the borough's large industrial base which is outside of the National Park.

Local Authority	Emissions (kilotons)				
	2006	2007	2008	2009	2010
Craven	493.75	487.84	476.4	432.88	455.97
Hambleton	1,038.76	1,015.07	997.43	926.82	950.82
Harrogate	1,551.96	1,564.95	1,515.09	1,386.91	1,443.93
Richmondshire	535.49	529.11	532.55	506.16	514.98
Ryedale	610.62	598.61	576.78	543.66	568.44
Scarborough	825.47	795.20	786.49	716.19	750.34
Selby	1,213.77	1,213.62	1,083.62	994.32	1,053.50
North Yorkshire total	6,269.83	6,204.42	5,968.36	5,506.95	5,737.99
York	1,306.94	1,201.34	1,174.55	1,074.63	1,142.76
Redcar and Cleveland	8,843.78	8,884.91	8,737.08	6,977.87	2,992.46

Table 7.3: Total CO₂ emissions by Local Authority area.

Source – Defra/DECC.

Per capita CO₂ emissions vary across the Plan Area and tend to be higher in the more rural parts of North Yorkshire, as shown in Table 7.4. Redcar and Cleveland has particularly high per capita emissions although this is due to the large industrial base in the part of the borough which is outside of the National Park.

Local Authority	Per Capita Emissions (tonnes)				
	2006	2007	2008	2009	2010
Craven	9.0	8.8	8.6	7.8	8.2
Hambleton	12.1	11.7	11.5	10.6	10.9
Harrogate	10.1	10.1	9.7	8.8	9.1
Richmondshire	10.8	10.5	10.4	9.6	9.7
Ryedale	11.6	11.3	10.8	10.1	10.6
Scarborough	7.6	7.3	7.2	6.6	6.9
Selby	15.3	15.1	13.3	12.1	12.7
North Yorkshire total	10.7	10.5	10.1	9.2	9.6
York	6.8	6.2	6.0	5.4	5.6
Redcar and Cleveland	63.9	64.3	63.4	50.7	21.8
Yorkshire and Humber	10.2	9.9	9.5	8.2	8.7
England	8.7	8.5	8.2	7.4	7.6

Table 7.4: CO₂ emissions per capita by Local Authority area.

Source – Defra/DECC.

Emissions of methane and nitrous oxide are linked predominantly to agriculture. In rural areas these emissions can be as significant as CO₂ emissions – in 2006 emissions of methane and nitrous oxide in the North York Moors National Park accounted for the equivalent of 314kt of CO₂, compared to 396.7kt of CO₂ emissions³¹.

Table 7.5 below shows the CO₂ emissions per capita in relation to industrial and commercial and transport emissions. This shows that urban local authorities such as York generally have lower per capita emissions in these two sectors. Again Redcar and Cleveland's figure reflects the high level of industrial activity in the Borough as a whole.

³¹ Greenhouse Gas Emissions Estimates for England's National Parks (English National Park Authorities Association, 2010).

Local Authority	Industrial and Commercial			Road Transport		
	2008	2009	2010	2008	2009	2010
Craven	3	2.7	2.9	2.8	2.6	2.6
Hambleton	3.7	3.3	3.4	3.7	3.4	3.4
Harrogate	3.1	2.8	2.8	3.7	3.4	3.4
Richmondshire	2.8	2.6	2.6	5.1	4.7	4.7
Ryedale	4.3	3.9	4.1	3.4	3.3	3.2
Scarborough	2.9	2.6	2.7	7.2	6.6	6.9
Selby	6.9	6.2	6.7	3.8	3.5	3.5
North Yorkshire total	3.8	3.4	3.5	3.5	3.3	3.3
York	2.3	2.0	2.1	1.5	1.4	1.4
Redcar and Cleveland	59.4	47.1	18.0	1.7	1.6	1.6
Yorkshire and Humber total	5.0	4.1	4.5	2.1	2.0	2.0

Table 7.5: Per capita CO₂ emissions.

Source - Local and regional CO₂ emissions estimates for 2005-2010 (DECC, 2012). For full dataset see: <https://www.gov.uk/government/publications/local-authority-emissions-estimates>.

Different types of land management can have a significant impact on CO₂ emissions. LULUCF stands for Land Use, Land Use Change and Forestry (LULUCF). A negative figure shows that land management is acting as a carbon sink; otherwise LULUCF is a net source of emissions. At a UK level LULUCF represents a carbon sink rather than a source of emissions. Table 7.6 shows that on the whole LULUCF in North Yorkshire and York represents an emission of carbon rather than a sink.

Local Authority	LULUCF net emissions (kt CO ₂)		
	2008	2009	2010
Redcar and Cleveland	1.25	0.80	1.57
Craven	2.00	1.60	3.71
Hambleton	24.3	19.81	12.41
Harrogate	25.38	15.74	17.40
Richmondshire	-5.08	-5.09	-2.08
Ryedale	20.98	27.14	29.72
Scarborough	9.10	6.64	10.89
Selby	5.26	3.70	4.19
North Yorkshire total	81.93	69.53	85.25
York	2.04	0.98	1.32
Yorkshire and Humber total	238.04	152	169.83

Figure 7.6: Land Use, Land Use Change and Forestry Emissions.

Source - Local and regional CO₂ emissions estimates for 2005-2010 (DECC, 2012). For full dataset see: <https://www.gov.uk/government/publications/local-authority-emissions-estimates>.

Climate Change Vulnerability

The changes to the climate outlined above can have a range of effects. The degree and extent of these effects will depend upon the precise future changes to the climate and may vary across different parts of the Joint Plan Area. Generally, for the Plan Area the predicted effects are as outlined below³²:

- Flooding of infrastructure (buildings, roads, footpaths) and habitats, having relatively short term but potentially fairly significant consequences;
- Drought, affecting flora and fauna and also productivity;
- Changes to the coastline as a result of a combination of sea level rise, increased rainfall and increased storminess;
- Increased risk of fire on the moorland;

³² Climate Impact Profiles for North Yorkshire local authorities and Adapting to Climate Change in the North York Moors National Park (North York Moors National Park Authority, 2011).

- Cumulative effects of a number of changes to conditions for agricultural production may lead to different types and/or new ways of managing crops and stock in the future;
- Cumulative effects of a number of changes to conditions for biodiversity may result in loss of some species and an increase / introduction of other, potentially threatening, species;
- Changing composition of native woodland, including tree species and ground flora, and economic implications in relation to timber production;
- Increased occurrences of disease affecting wildlife, trees, crops and livestock;
- Pressure on water resources;
- Increased physical stress on cultural heritage;
- Increased pressure on health and emergency services;
- Damage to transport infrastructure.

As part of the adaptation to and mitigation of flooding within the plan area, a Strategic Flood Risk Assessment (SFRA) will be carried out alongside the development of the Joint Plan to support the Sustainability Appraisal. The SFRA will aim to assess the vulnerability of potential minerals and waste sites to flooding and allow a reasoned approach to be taken when making decisions on specific minerals and waste sites and their likelihood to contribute towards the increased risk of flooding in other locations. Similar SFRAs have been carried out for York and for north east Yorkshire, including the National Park.

Key messages from the baseline

- Harrogate has the highest total emissions of CO₂, followed by York and Selby, though across the Plan Area total emissions are falling.
- Per capita emissions are falling, but remain highest in the more rural parts of the Plan Area.
- Climate change is likely to have a range impacts on the Plan area including increased flooding, damage to infrastructure and effects on food production.

Predicted Future Trends

- The evidence suggests that temperatures will rise by around 3°C in the summer and 3.3°C in the winter by the 2080s, and rainfall will decrease by around 23% in summer whilst increasing by about 15% in the winter. The effects of this on the Joint Plan area are likely to include increased flooding, drought, changes to agricultural production and changes to habitats and species. In the short to medium term effects may be less pronounced.
- It is likely that emissions of CO₂ will continue to fall, although this may have a negligible effect on overall changes to the climate.
- Minerals and waste developments can be particularly energy intensive and are likely to contribute to the causes of climate change over which there would be less control without minerals and waste planning policies in place.

Indicators

Indicator	Baseline Data (and year)	Source
Emissions of CO ₂ per capita by local authority	See Table 7.4	DECC
Industrial and commercial per capita CO ₂ emissions by Local Authority	See Table 7.5	DECC
Road transport CO ₂ emissions per capita by Local Authority	See Table 7.5	DECC
Land use change CO ₂ emissions per capita by Local Authority	See Table 7.6	DECC
UKCP climate change scenarios	See Table 7.1	UKCP
Mapped extent of Flood Zones under Climate Change as reported in available Strategic Flood Risk Assessments	Data not yet available	NYCC
Allocations requiring exception testing in North Yorkshire SFRA	Data not yet available	NYCC

7 SA/SEA Category – Cultural Heritage and Historic Environment

Heritage Assets

There is a wealth of built and cultural heritage with the Joint Plan Area ranging from castles and abbeys to ancient field systems, bridges and historic parks, as well as numerous important historic buildings and townscapes.

Listed Buildings are statutorily protected in recognition of their architectural or historic significance. According to English Heritage 'Listing helps us acknowledge and understand our shared history. It marks and celebrates a building's special architectural and historic interest, and also brings it under the consideration of the planning system so that some thought will be taken about its future.'³³

There are three categories of listed buildings. These are:

- Grade 1: Buildings of exceptional interest, sometimes considered to be internationally important
- Grade 2*: Particularly important, of more than special interest; 5.5% of listed buildings nationally are Grade 2.
- Grade 2: These buildings are nationally important and of special interest.

Within the Plan Area there are over 14,000 listed buildings. Of these listed buildings, 47 are on English Heritage's 'at risk' register³⁴; although more are on local 'at risk' registers. The main reasons for buildings being at risk are being in remote and inaccessible locations, being replaced by modern agricultural buildings and through lack of repair.

Conservation areas are designated by local planning authorities; they can include a wide variety of environs, designated for their special architectural and historic interest. They can include areas such as the centres of historic towns, historic suburbs and country houses set in historic parks and gardens. Many conservation areas are the subject of conservation area appraisals. There are a total of 327 Conservation Areas in the Joint Plan Area. Like Listed Buildings, Conservation Areas are designated for their special architectural and historic interest although they do no benefit from statutory protection. Of the 327 Conservation Areas, 3 are identified on English Heritage's 'at risk' register.

According to English Heritage 'Scheduling is shorthand for the process through which nationally important sites and monuments are given legal protection by being placed on a list or schedule'³⁵. There are a total of 1,605 Scheduled Monuments in the Plan Area, as well as many thousands more archaeological sites and features. The North York Moors National Park is particularly significant in terms of archaeological heritage, containing around a third of all Scheduled Monuments in the Yorkshire and Humber region, whilst the City of York has been

³³ English Heritage www.english-heritage.org.uk/caring/listing/listed-buildings/.

³⁴ Data at March 2013 <http://risk.english-heritage.org.uk/register.aspx>.

³⁵ English Heritage www.english-heritage.org.uk.

designated as an Area of Archaeological Importance (one of only 5 nationally). Of the Scheduled Monuments in the Plan Area, 360 are on English Heritage's 'at risk' register. Scheduled Monuments are generally at risk from recreational pressure, upgrading access tracks and inappropriate land management such as drainage, arable ploughing and plant growth.

Registered Parks and Gardens are designated for their importance as a planned landscape. There are a total of 40 Registered Parks and Gardens in North Yorkshire and York, and of these 5 are at risk. North Yorkshire also has two Registered Battlefields and one Protected Wreck Site, the Bonhomme Richard³⁶, off the coast of Filey Bay.

Listed Buildings, World Heritage Site property boundaries and buffer zones, Protected Wrecks, Scheduled Monuments, Registered Parks and Gardens and Battlefields are shown on English Heritage's National Heritage List for England webmap tool available at <http://list.english-heritage.org.uk/mapsearch.aspx>

Heritage at Risk

The current number of heritage assets 'at risk' is shown in Table 8.1.

District / Borough	Listed Buildings	Scheduled Monuments	Conservation Areas	Registered Historic Parks and Gardens	Registered Battlefields
North Yorkshire (outside the National Parks)	42	238	1	5	2
York	0	0	2	0	0
North York Moors National Park	5	122	0	0	0

Table 8.1: Heritage assets 'at risk'.

Source – English Heritage. (Table calculated at May 2013).

³⁶ Detailed assessment at www.english-heritage.org.uk/content/imported-docs/a-.

There are many other non-designated historic assets which are recorded on the Historic Environment Records of the authorities. Around 45,000 assets in the Joint Plan Area are identified on the Historic Environment Records.

Historic sites play a key role in the economy of the region, with hundreds of thousands of visits each year, as shown in Table 8.2.

Attraction	2009 (thousand visitors)	2010 (thousand visitors)
Castles / forts	446	733
Gardens	401	613
Historic houses	1338	1076
Historic monuments	255	226
Visitor / heritage centres	550	219
Places of worship	1729	1036
Other historic properties	35	378

Table 8.2: Visits to Historic Sites in Yorkshire and Humber region.

Source – Visitor attraction trends in England: annual report for Heritage Counts (BDRRC/English Heritage, 2010).

Key Sustainability Issues arising from the baseline

- The Plan Area is rich in historic assets
- Large number of Listed Buildings, which as well as needing to be protected also require minerals for their upkeep;
- The Joint Plan will need to consider the settings of these assets as well as the protection of the assets themselves.
- Whilst most designated assets in the area are not 'at risk' more than a third of the designated historic assets identified as being at risk in the region are in the Plan Area.

Predicted Future Trends

- In the short term there is unlikely to be significant changes to the historic and cultural environment. Over the medium to longer term, the number of designations may increase in various locations across the plan area in line with ongoing assessment.
- The future without a plan would be reliant on the NPPF for ensuring the historic environment is conserved and enhanced to a satisfactory degree as well as other relevant legislation relating to designated historic assets (Areas of Archaeological Importance Act, 1979; Planning (Listed Buildings and Conservation Areas) Act, 1990). This would provide a level of protection for all designated and non-designated sites important to the historic environment.

Indicators

Indicator	Baseline Data (and year)	Source
Buildings, scheduled monuments, conservation areas, registered parks and gardens, registered battlefields 'at risk' as defined by the Heritage at Risk Register	See Table 8.1	English Heritage
Number of visits to historic sites (Yorkshire and Humber)	See Table 8.2	English Heritage

8 SEA/SA Category – Additional Environmental Issues

Minerals Restoration

According to British Geological Survey's 'Minerals UK' website 'the extraction of minerals is a temporary land use. Once quarrying has finished the land can be recycled or re-used though restoration. In many cases, restoration involves returning the land use to its original use. However, this is not always feasible or desirable. Through creative restoration planning, minerals extraction offers the opportunity to improve the environment in and around quarry sites or to create new land uses'. The same website lists key types of restoration that are feasible on minerals sites, depending on the type of mineral that has been quarried. These include landfill, agriculture, habitat creation, social amenities, housing, flood storage and business or commercial properties.

The 'After Minerals' website features a database of quarry restoration plans for North Yorkshire including a summary of the restoration plans for the 62 minerals extraction sites listed. This is available at <http://afterminerals.com/maptool.aspx>. A review of the databases shows that current restoration plans in North Yorkshire include the following restoration types:

- For sand and gravel sites: agriculture, habitat creation, woodland, landfill, lake / wetland creation, recreation;
- For clay and shale sites: waste infill, agriculture, water bodies;
- For sandstone sites: lakes and wetlands, woodland creation;
- For limestone sites: waste infill, agriculture, woodland / tree planting, habitat creation, lakes and wetlands, grasslands;
- For silica sand: habitat creation, woodland;
- For chalk: agriculture, grassland, waste infill;
- For fluorspar: habitat creation.

Tranquillity

Tranquillity has been mapped for England by the Campaign to Protect Rural England. The mapping shows relative levels of higher or lower tranquillity. The mapping is based upon factors which are considered to either contribute to or detract from tranquillity including remote and wild landscapes, streams and rivers and native trees (contributing factors) and urban development, people, power lines and traffic noise (detracting factors).

Figure 9.1 shows tranquillity on a sliding scale from green (most tranquil) to red (least tranquil). This shows that much of the Plan Area, compared to surrounding more urban areas, is relatively tranquil. This is with the exception of York, Harrogate, Scarborough and the market towns, and also the main roads show up as being particularly less tranquil. The most tranquil parts of the Plan Area are the most upland areas of the North York Moors National Park and the Nidderdale AONB. CPRE have ranked North Yorkshire 6th out of 117 counties and unitary authorities in relation to tranquillity³⁷, suggesting it is one of the most tranquil parts of the country. However, between the early 1960s and 2007 the percentage of the county that is classed as 'disturbed by noise and visual intrusion' has increased from 7.8% to 26.8%³⁸.

The factors that contribute to tranquillity in the Plan Area are seeing remote, wild and natural landscapes, seeing deciduous woodland, seeing rivers and streams, seeing the sea and seeing stars at night. Factors that detract from tranquillity in the Plan Area include seeing urban development and signs of human impact and people, hearing noise from transport and seeing power lines and transport infrastructure.

Geologically Important Sites

On a national scale, many Sites of Special Scientific Interest are designated because of their geological interest. Locally important geological sites may be called either Regionally Important Geological Sites or (using the more recent term) Local Geological Sites.

Within the Plan Area there are 2,747 hectares of geological SSSIs. Of these 72.5% are in favourable condition, 27.5% are in unfavourable recovering condition, 0.23% are in unfavourable no change condition and 5.9% are declining. As 93.8% of the designation in the County is in

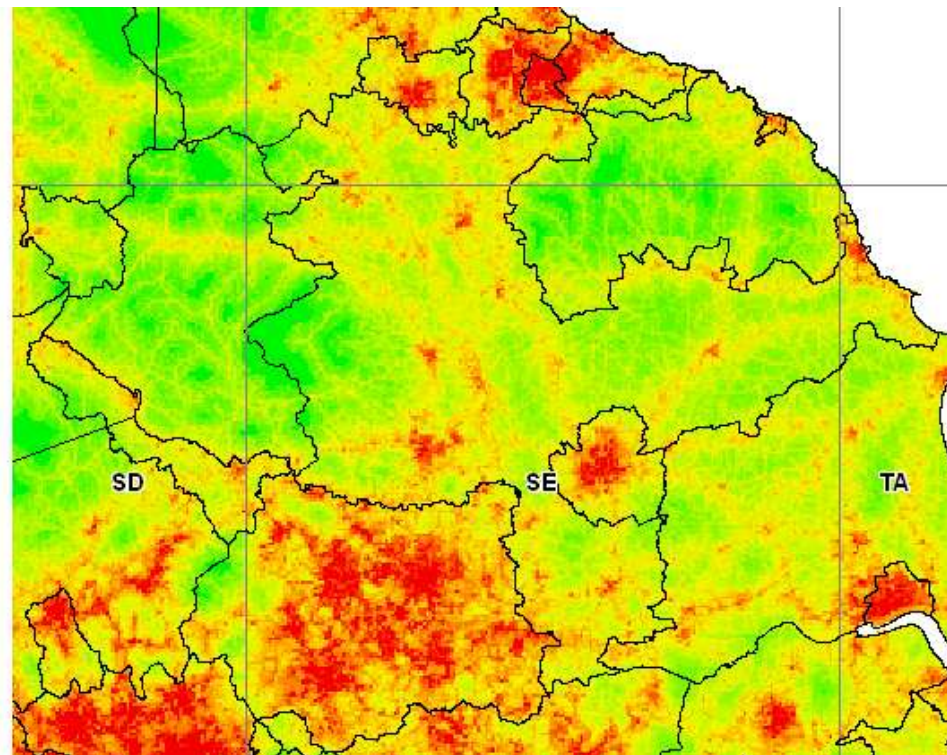


Figure 9.1 – Relative tranquillity in the plan area

Source – National Tranquillity Mapping Data 2007 developed for Campaign to Protect Rural England and Natural England by Northumbria University. OS Licence number 1000018881.

³⁷ <http://www.cpre.org.uk/resources/countryside/tranquil-places/item/1757-england-fragmented-countryside-ranking-of-counties-and-unitary-authorities>

³⁸ <http://www.cpre.org.uk/resources/countryside/tranquil-places/item/1753-englands-fragmented-countryside-yorkshire-and-the-humber-intrusion-statistics>

either favourable, or unfavourable recovering condition, this means that the Public Service Agreement (PSA) target, which aimed to bring 95 per cent of SSSIs to a target condition of favourable or recovering by December 2010, has not been met for geological and geomorphological SSSIs, for this part of the Joint Plan Area.

In addition to geological SSSIs there are a number of Regionally Important Geological Sites or Local Geological Sites in the Plan Area but at present, apart from those in the Redcar and Cleveland Part of the National Park, mapped information on these is not available.

Marine and Coastal Environment

The Plan Area includes a long stretch of coastline and although the jurisdiction of the planning authorities only extends to the low water mark it is necessary to consider any significant elements of the marine environment that may be affected by the Joint Plan. The 2009 Marine and Coastal Access Act will lead to the designation of Marine Conservation Zones – two on the coastline of the Joint Plan Area have been recommended for designation but have not been put forward for designation in 2013 as part of the first round. These are at Runswick Bay and at Castle Ground (focused around Scarborough and the coastline to the south of the town).

A Sensitive Marine Area is identified along the coastline south of Whitby to beyond Ravenscar. Sensitive Marine Areas are non-statutory designations notable for their animal and plant communities and which can provide education opportunities.

Heritage Coast is a non-statutory designation, managed to conserve the natural beauty and to improve accessibility where appropriate. The North Yorkshire and Cleveland Heritage stretches for 55km from Saltburn (outside of the Plan Area) to Scalby Mills just north of Scarborough (excluding an area around Whitby). A small part of the Flamborough Head Heritage Coast also extends into the Joint Plan Area. The designations extend inland and into the marine area, as shown on Figure 4.1 in Section 4 above.

Key messages from the baseline

- While the county of North Yorkshire as a whole is one of the most tranquil in England, outside of the national parks and AONBs tranquillity levels often fall due to transport corridors or when near to settlements
- The Plan Area has a wealth of geological interest
- Coastal erosion is affecting much of the coastline, in some places significantly
- Minerals development offers opportunities to create new environments such as habitats or recreational land

Predicted Future Trends

- Future trends in relation to minerals restoration are very much dependent upon having policies in place to guide this and therefore it is considered that without minerals and waste planning policies enhancements would be less likely to take place. In the short to medium term

it is considered that positive effects will continue as the restoration phase of current planning permissions is reached. In the longer term trends are uncertain as these depend upon the policies of the Joint Plan.

- It is unlikely that tranquillity would improve over the Joint Plan area when considering factors such as increasing population and likely future development rates, although targeted efforts in particular areas may result in localised improvements. Changes are likely to be incremental and therefore in the short to medium term may not be particularly pronounced but may become greater in the longer term. Minerals and waste developments may have localised effects on tranquillity over which there would be less control without minerals and waste planning policies in place.
- It is possible that geological sites identified as declining may continue to do so, although targeted efforts to enhance particular sites may lead to improvements over the Plan area through the short, medium and long term. Minerals and waste developments may have localised effects on geological sites over which there would be less control without minerals and waste planning policies in place.
- Coastal erosion is likely to continue to take place, particularly considering the predicted effects of climate change, and effects are likely to increase over time. Important marine environments may become better protected in the medium term through the potential designation of Marine Conservation Zones. These trends are not largely dependent upon the Minerals and Waste Joint Plan.

Indicators

Indicator	Baseline Data (and year)	Source
Percentage of (geological) SSSIs in favourable condition	72.5% (2012)	Natural England
Number of restoration plans approved	Data not available at present	NYCC, NYMNP and CYC

9 SEA Topic/SA Category – Economy, Employment, Education and Deprivation

Economy and Employment

The charts below show the main industries of North Yorkshire and York, in terms of number of employees within each sector. The main industries in North Yorkshire are health, retail, manufacturing, accommodation and food services and education and within York these are health, retail, transport and storage, education and accommodation and food services. There will be variances across the Plan Area, in the North York Moors National Park agriculture and other land management activities represent a higher proportion at 13% of employment.

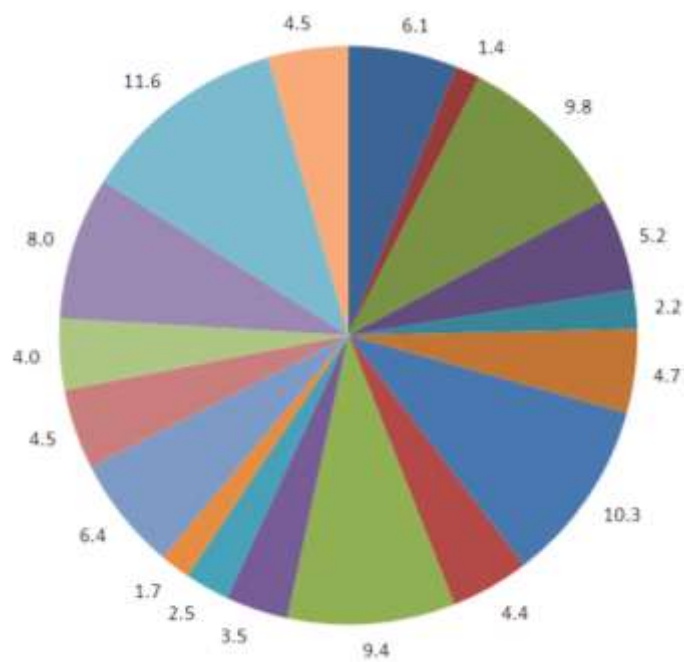


Figure 10.1: Percentage of employees within employment sectors – North Yorkshire

Source - ONS, Business Register and Employment Survey 2009-2011 (2013) with the exception of the Agricultural Sector which is sourced from: Defra, 2010 Agricultural Survey (2011)

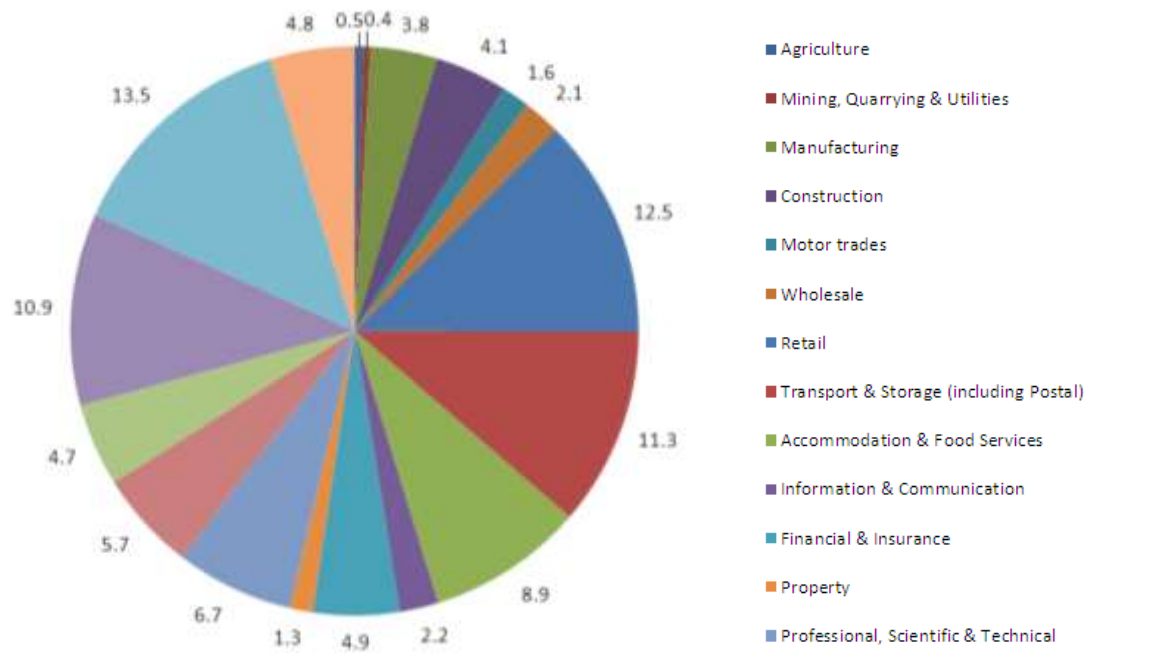


Figure 10.2: Percentage of employees within employment sectors – City of York

Source - ONS, Business Register and Employment Survey 2009-2011 (2013) with the exception of the Agricultural Sector which is sourced from: Defra, 2010 Agricultural Survey (2011)

In 2010, the minerals industry in the Plan Area (including the Yorkshire Dales and Cleveland) employed almost 2,000 people, as shown in Table 10.3. The majority of these are employed either at Boulby Potash Mine or within the coal industry. Total employment in the minerals industry in the Plan Area³⁹ is 2,513, down slightly from 2,602 in 2009, as shown in Table 10.4. Although the publishers of the data warn that should not be used for time series analysis, it provides an indication of the level of employment in the Plan Area compared to regional and national figures and shows that levels of employment in the minerals sector have remained relatively constant recently, experiencing only minor declines.

Mineral	Plan Area			Yorkshire and Humber			England		
	2009	2010	2011	2009	2010	2011	2009	2010	2011
Sand and gravel	61	81	75	144	177	n/a	1,982	2,129	1,835
Sandstone	53	53	49	389	347	n/a	823	747	805
Limestone	143	141	139	174	165	n/a	1,966	1,864	1,805
Dolomite	4	5	5	15	48	n/a	300	331	315
Chalk	10	2	0	70	47	n/a	214	183	330
Clay and shale	14	5	7	45	29	n/a	313	234	307
Coal	793	766	695	1,779	1,804	n/a	4,031	3,856	4,249
Other (includes Potash)	758	745	799	0 ⁴⁰	0	n/a	1,488	1,491	1,657
Total	1,836	1,798	1,769	2,621	2,661	n/a	11,783	11,989	11,303

Table 10.3: Direct employment in the minerals sector

Source – Minerals Extraction in Great Britain, 2009, 2010 and 2011(ONS). Coal figures from Coal Mining Production and Manpower statistics (2009-2011)

³⁹ Plan Area includes the Yorkshire Dales National Park and the whole of Cleveland. Most, if not all, of the employees in Cleveland will be employed in Boulby Potash Mine in the North York Moors National Park.

⁴⁰ Boulby mine is in the North East region

	Plan area			Yorkshire and Humber			England		
	2009	2010	2011	2009	2010	2011	2009	2010	2011
Sand and gravel	217	270	250	394	548	n/a	7471	7740	5967
Sandstone	137	120	127	635	540	n/a	2585	1405	1710
Limestone	518	454	465	683	538	n/a	5721	6136	5758
Dolomite	7	8	8	22	187	n/a	585	733	681
Chalk	14	4	0	129	127	n/a	374	379	590
Clay and shale	28	9	7	181	101	n/a	959	549	509
Coal	793	766	695	1,779	1,804	n/a	4,031	3,856	4,249
Other (include Potash)	888	872	961	0 ⁴¹	0	n/a	1,818	1,854	1,990
Total	2,602	2,503	2,513	3,831	3,862	n/a	24,340	25,109	21,454

Figure 10.4: Total employment in the minerals sector

Source – Minerals Extraction in Great Britain, 2009 and 2010 (ONS). Coal figures from Coal Mining Production and Manpower statistics (2009-2011)

To provide an indication of the economic activity related to the minerals and waste industry, in 2010/11 6 minerals applications were granted planning permission and 16 waste developments were granted permission, and in 2011/12 this was 9 and 21 respectively.

Looking at the economy more generally, North Yorkshire and York generally have a higher number of active enterprises⁴² per 10,000 population than the regional average, as shown in Figure 10.5 below, although the total number has declined slightly over recent years.

	2009	2010	2011
North Yorkshire	446	445	439
City of York	321	323	327
Yorkshire and Humber region	317	315	312

Figure 10.5 – Active enterprises per 1,000 population, 2009 - 2011

Source - ONS, Count of Active Businesses

⁴¹ Boulby mine is in the North East region

⁴² Those which have recorded activity at any point during the year

The number of small business bank accounts opened provides an indication of the number of business start-ups. Table 10.6 shows the latest data and shows that fewer small business bank accounts were opened in January 2013 compared to the previous year.

	Number of new accounts	Annual change (%)
York and North Yorkshire	524	-14.5
North Yorkshire	386	9.5
York	138	-28
Craven	36	-40.3
Hambleton	43	-28
Harrogate	115	-40.3
Richmondshire	30	-26.8
Ryedale	35	-7.9
Scarborough	70	-10.3
Selby	57	-28.8

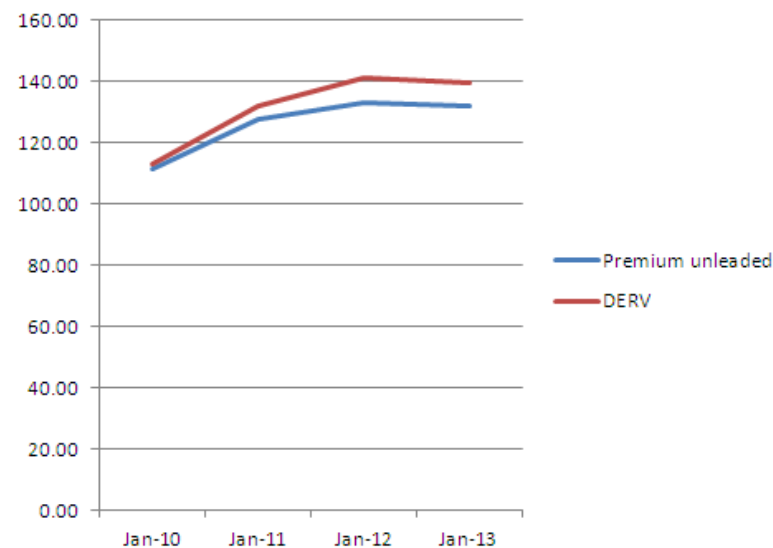
Table 10.6: Number of new bank accounts (first current accounts from a small business banking product range) (2013)

Source: York, North Yorkshire and East Riding LEP - Economic Data File February 2013

Fuel prices can have a significant effect on the economy, and particularly in relation to minerals and waste which involve the transportation of goods often by road. They also have an impact on the ability of those in remote areas to access services. Figure 10.7 shows that fuel prices have been rising over the past few years, although have tailed off slightly more recently.

Figure 10.7: Fuel prices

Source - Typical retail prices of petroleum products 1978 to 2012 (DECC, 2013)



Tourism is an important part of the economy of the Joint Plan area. Table 10.8 below shows, compared to England, that visitors to North Yorkshire (including York) generally spend less on average than those nationally.

	North Yorkshire (% of visitors)	England (% of visitors)
Nothing	83	74
£10 or less	9	13
£10.01 - 20.00	5	7
Greater than £20.01	3	7
Mean (including zeros)	£3.86	£7.46
Mean (excluding zeros)	£22.20	£28.16

Table 10.8: Amount spent by visitors to North Yorkshire⁴³.

Source - <http://naturalengland.tns-global.com/viewtable.aspx>.

Local Enterprise Partnerships are partnerships set up between local authorities and businesses to determine economic priorities and lead in job creation and growth. The Joint Plan area is covered by three Local Enterprise Partnerships. Most of the area is covered by the York, North Yorkshire and East Riding LEP whilst the area to the south west of North Yorkshire is also covered by the Leeds City Region LEP and a small part of the area in Redcar and Cleveland is covered by Tees Valley Unlimited.

Minerals development in particular can be seen as a potential indicator of activity in the wider economy, though at a local scale may also depend on the specific circumstances at individual sites. Table 10.9 shows planning applications for minerals and waste in North Yorkshire for 2010/11 and 2011/12.

Year	Minerals	Waste
2010/11	9	21
2011/12	6	16

Table 10.9: Planning Applications (Minerals and Waste) Granted in North Yorkshire.

Source – North Yorkshire County Council, 2012. Annual Monitoring Report 2011-12.

⁴³ Data is derived from Natural England's Measuring Engagement in the Natural Environment (MENE) program, 2012, and records visits to places out of doors by survey participants across a seven day period.

Employment and Unemployment

There are a total of 421,800⁴⁴ economically active people in North Yorkshire and York, around 53% of the population and around 76-78% of those aged 16-64, as shown in Table 10.10 below, slightly higher than the regional and national rates.

	North Yorkshire %	City of York %	Yorkshire and Humber %	England %
2007	76.2	78.5	75.5	76.6
2008	80.3	79.9	75.8	76.8
2009	78.7	77.6	75.5	76.9
2010	78.9	75.4	75.2	76.3
2011	79.1	79.4	75.0	76.4

Table 10.10: Economically Active Rate of 16-64 year olds.

Source – ONS Annual Population Survey, 2010.

Of these, 395,600 are in employment and 26,600 are currently unemployed. Table 10.11 below shows unemployment rates over the past 8 years – North Yorkshire consistently has lower rates of unemployment than the Yorkshire and Humber Region and Great Britain, although there are variances between different parts of the county. Scarborough, Selby and York, although below the regional and national averages, have tended to have higher unemployment rates than other parts of the Plan Area. Rates of unemployment in Redcar and Cleveland have consistently been higher than rates in the rest of the plan area and the Great Britain average. Following the national trend, unemployment levels have risen significantly over the past few years.

Area	Unemployment levels ⁴⁵ (% of economically active)							
	2004	2005	2006	2007	2008	2009	2010	2011
North Yorkshire ♦	2.7	2.5	3.9	3.4	3.4	5.6	5.8	7.6
York, North Yorkshire and East Riding LEP area ⁴⁶	2.7	2.8	4.5	3.6	3.6	5.4	6.1	6.6

⁴⁴ www.nomisweb.co.uk – Oct 2011 – Sept 2012

⁴⁵ Data relates to the Jan – Dec figure for each year. Note that District and Borough council figures are ONS modelled estimates whereas the other figures are Annual Population Survey (APS) rates. APS rates are comparable to the Government’s headline unemployment rate.

⁴⁶ The Plan area plus the part of the Yorkshire Dales National Park in North Yorkshire and the whole of the East Riding of Yorkshire, but excluding the part of the Plan Area in Redcar and Cleveland.

Yorkshire and Humber	4.5	4.8	5.6	5.5	6.3	8.6	8.8	9.5
Great Britain	4.8	4.9	5.4	5.2	5.7	7.7	7.7	8.0
Craven	2.1	2.2	2.9	3.0	3.0	4.2	4.8	5.6
Hambleton	2.4	2.8	3.5	3.3	3.8	4.5	4.2	5.3
Harrogate	2.2	2.4	3.1	2.8	3.3	4.9	5.0	5.0
Richmondshire	3.2	3.1	3.0	3.5	3.5	4.5	4.8	5.9
Ryedale	2.3	2.3	3.6	3.7	3.8	3.8	4.4	4.9
Scarborough	4.0	4.0	5.6	5.5	5.6	7.9	9.5	7.6
Selby	3.2	3.3	4.9	3.7	4.4	7.0	5.9	6.5
York	3.0	3.1	4.5	3.8	4.5	6.4	6.4	6.1
Redcar and Cleveland	5.7	6.3	7.2	6.7	8.5	10.7	12.2	12.5

Table 10.11: Unemployment levels

Source - www.nomisweb.co.uk

Table 10.12 below shows that the male claimant rate is significantly higher than female rate, although is still low when compared to the national and regional averages.

Area	Job Seekers Allowance Monthly Claimants (February 2013) and rate as percentage of all JSA claimants					
	Male	% of claimants	Female	% of claimants	Total	Rate % as percentage of working age population
North Yorkshire ♦	6067	65.5	3190	34.5	9257	2.5
Yorkshire and the Humber Region	113453	67.3	55230	32.7	168863	4.9
Great Britain	862276	65.4	456594	34.6	1318870	3.8
Craven	419	66.7	209	33.3	628	1.9
Hambleton	612	61.2	382	38.4	994	1.8
Harrogate	1077	67.4	522	32.6	1599	1.6
Richmondshire	368	60.3	242	39.7	610	1.7
Ryedale	449	60.6	292	39.4	741	2.4
Scarborough	42231	68.8	1012	31.2	3243	4.9
Selby	911	63.2	531	36.8	1442	2.7
York	2080	66.8	1032	33.2	3112	2.4

Figure 10.12 – Job seekers allowance claimants

Source - STREAM

For those who work in North Yorkshire and York, average wages are slightly lower than for residents, as shown in Figure 10.13, suggesting that residents commute to higher paid jobs. For York, the average wages of residents and those of workers look to be fairly equal. The earnings of residents of North Yorkshire county are on average lower than national earnings although are slightly higher in the City of York. Figure 10.14 shows that over the past four years wages in North Yorkshire have increased at a greater rates than the national average, although are still lower, whilst those in York have increased at a much lesser rate and are now lower than the national average.

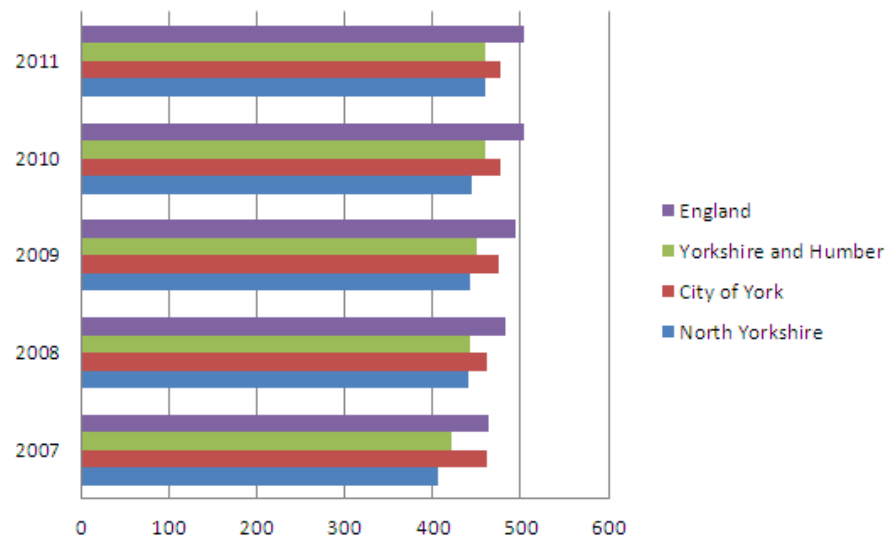


Figure 10.13: Average weekly earnings (£, residents)
 Source - ONS, Annual Survey of Hours and Earnings – Resident Analysis, 2012

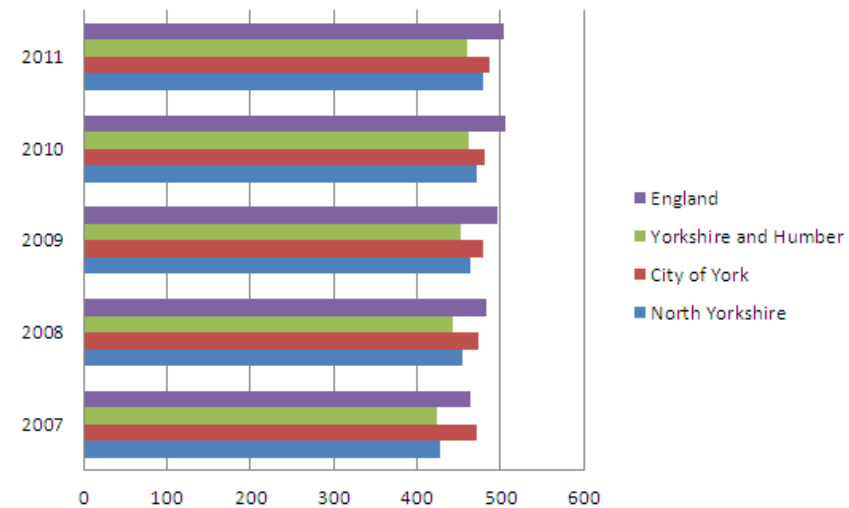


Figure 10.14: Average weekly earnings (£, those employed in the area)
 Source - ONS, Annual Survey of Hours and Earnings – Workplace Analysis, 2012

The growth in earnings, of both residents and those employed in North Yorkshire County has been greater than national and regional averages since 2007. Residents of North Yorkshire have seen a growth of 11% compared to 9% regionally and 8% nationally, whilst those who work in the area have seen a growth of 12% compared to 8% in the region and nationally. The story in York is different however where residents' and workers' earnings have only risen by 3%.

Underemployment

The Office for National Statistics defines underemployment as persons 'who want to work more hours' and estimate that nationally, between 2008 and 2012 the number of workers who wanted to work more hours has increased by 980,000 to a figure of 3.05 million, or around 1 in 10 of the people in work⁴⁷.

Across the UK part-time workers were four times more likely to be underemployed than full time workers (in 2012, 24 per cent of part-time workers wanted more hours, compared to 5.5% of full-time workers).

No figures on underemployment are available for the plan area, with the most local data available at a regional level. These figures show that the region has moved ahead of UK averages post-recession.

	Pre Recession Averages (2005 to 2008)		Post Recession Averages (2009 to 2012)	
	Total (thousands)	Average underemployment rate (per cent)	Total (thousands)	Average underemployment rate (per cent)
United Kingdom	1935	6.7	2,828	9.9
Yorkshire and Humber	160	6.7	252	10.6

Table 10.15: Underemployment: Regional Trend Contrasted with National Trend

Source – ONS, 2012

Education

Table 10.16 below provides a summary of educational attainment in North Yorkshire and York, compared to England. This shows that North Yorkshire has consistently higher levels of GCSE attainment than England, and that attainment has been improving over recent years. The number of economically active adults in the area with no qualifications is also consistently lower than the regional and national average, and for York is significantly lower.

⁴⁷ Office for National Statistics, 2012 www.ons.gov.uk/ons/rel/lmac/underemployed-workers-in-the-uk/2012/index.html

Year	North Yorkshire	City of York	England
2006	64.0	61.8	58.4
2007	65.8	67.4	60.4
2008	69.7	69.2	65.6
2009	76.5	73	69.8
2010	81.7	80.4	76.1

Table 10.16: Attainment at GCSE level - % of 15 year olds achieving 5+ A*-C (and equivalent)

Source – ONS Pupil Attainment

Table 10.17 below shows that the percentage of economically active adults with no qualifications is generally lower in the Plan area than for the Yorkshire and Humber region or for England, and that this has been decreasing over recent years.

Year	North Yorkshire	City of York	Yorkshire and Humber region	England
2007	8.6	7.4	10	9.2
2008	7.2	5.6	8.8	8.8
2009	7	5.4	8.2	7.9
2010	7.4	5	7.7	7.1

Table 10.17: Percentage of economically active adults with no qualifications

Source – ONS, Annual Population Survey

Table 10.18 below shows the percentage of people qualified to at least level 4⁴⁸. This shows that in the Plan Area people are generally better qualified than the regional and national average although this has declined notably in recent years, in line with the regional and national averages. Qualification levels vary across the local authority areas, with Harrogate, Hambleton and York having the highest proportion of people with higher level qualifications.

	2007	2008	2009	2010
North Yorkshire	33.93	34.7	31.29	29.35
North Yorkshire and York	36.94	37.23	32.63	30.78
Craven	30.22	37.60	48.5	29.02
Hambleton	41.4	35.05	29.45	29.41

⁴⁸ Higher National Certificate / Certificate of Higher Education level or equivalent

Harrogate	38.65	40.21	34.07	38.73
Richmondshire	25.50	27.35	25.14	23.40
Ryedale	30.80	33.1	29.87	26.14
Scarborough	28.36	28.66	24.62	23.13
Selby	33.18	31.9	29.35	25.77
York	45.38	44.91	36.32	34.73
England	35.56	33.64	28.67	28.31
Yorkshire and Humber	30.62	30.24	25.04	23.84

Table 10.18: Percentage of people with level 4 or higher qualifications

Source - www.streamlis.org.uk

In North Yorkshire, 29.5% of residents volunteered at least once a month in 2008, and in York for the same year it was 23%. This is higher than the regional and national volunteering rates of 22.8% and 22.3% respectively⁴⁹. In 2012, 76,719 volunteer hours were provided in the National Park alone undertaking a range of activities including practical conservation tasks, information services, data inputting and also voluntary rangers. The value of this volunteering alone equates to £1,171,500.

Deprivation

Indices of deprivation measure a range of factors which can contribute to or detract from the quality of life of an area including employment, crime, access to services and health. Each local authority area in the country is ranked according to its overall level of deprivation – the lower the figure the higher the level of deprivation. Although most parts of the plan area are closer to the least deprived areas nationally, within the rural parts of the county a key factor in deprivation is related to difficulty of access to services whereas within the more urban areas issues such as crime and poorer education are more significant.

Local authority	Ranking
Craven	241
Hambleton	265
Harrogate	283
Richmondshire	261
Ryedale	200
Scarborough	83
Selby	236
York	244

⁴⁹ Source: Stream website ([http://www.streamlis.org.uk/\(S/rfvvtqlzu3jahqn3xh0rvyuvj\)\)/code/MasterFrame/MasterFrame.aspx?type=WhatInfo](http://www.streamlis.org.uk/(S/rfvvtqlzu3jahqn3xh0rvyuvj))/code/MasterFrame/MasterFrame.aspx?type=WhatInfo))

Redcar and Cleveland	271
North Yorkshire	129

Table 10.19 – Indices of deprivation

Source – English Indices of Deprivation: Local Authority Summaries 2010 (DCLG, 2011)

Districts, Boroughs and Unitaries are ranked out of 354, North Yorkshire is ranked out of 149

Key messages from the baseline

- Since the economic downturn unemployment has risen across the county, though small declines have been recorded in several districts more recently
- There is, however, a higher rate of economically active people in the Plan Area than for the region and England
- In Yorkshire as a whole more than 1 in 10 people feel that they are underemployed
- The minerals sector is a significant employer directly supporting nearly 2,000 jobs.
- Business appears to be 'holding up' during the down turn with only modest falls in active enterprises across the Plan Area (and growth in the number of active enterprises in York). There are signs that new business formation is reducing however, and continued uncertainty over the economy may erode resilience;
- Wage levels in the Plan Area are lower than England as a whole. Median earnings are significantly higher for men than women.
- Fuel prices are rising nationally, which will have impacts on businesses and rural communities in such a large economic area;
- Outdoor recreation brings income to many rural areas, though less money is spent outdoors by North Yorkshire people than the rates for England as a whole. Heritage assets are also popular tourist destinations.
- The Plan Area has generally better than average educational attainment levels
- The Plan Area is generally one of the least deprived areas in the country, though Scarborough and some parts of York rank significantly higher on the indices of deprivation than the rest of the Plan Area

Predicted Future Trends

- If the UK economic recovery is sustained, employment levels are expected to improve in the short term, though the historic pattern of boom and bust in the economy means that there are considerable doubts over whether this will be sustained in the longer term.
- Secondary education GCSE pass levels are likely to continue to be ahead of the England average into the long term, though the gains of recent years may be difficult to emulate due to the higher baseline level (which is already high)⁵⁰. Meanwhile, the percentage of those attaining higher qualifications, which declined slightly in recent years, is likely to grow again as the longer scale national trend (2003 to 2011) shows significant growth in numbers⁵¹. However, in the medium to long term too much depends on trends in the economy.
- While most of the plan area is relatively prosperous, pockets of deprivation continue to exist. Whether these places continue to suffer deprivation depends on factors such as state of the economy, wage levels and other factors such as housing costs. Nationally, the

⁵⁰ In 2013 Ofqual recorded a 1.3 percent decline in the pass rate at A to C nationally, though explained this as being attributable to the age profile of the cohort for that year. See Ofqual, 2013. A brief explanation of summer 2013 GCSE results [URL: <http://ofqual.gov.uk/files/2013-08-22-brief-summary-of-summer-2013-gcse-results.pdf>]

⁵¹ Universities UK, 2012. Patterns and Trends in UK Higher Education 2012 [URL:

<http://www.universitiesuk.ac.uk/highereducation/Documents/2012/PatternsAndTrendsInUKHigherEducation2012.pdf>]

longer scale trend in relative poverty after housing costs has declined only slightly since the mid 1990s⁵², so it is expected that in the short to long term deprivation, at least in terms of relative poverty, may well endure.

Indicators

Indicator	Baseline Data (and year)	Source
Economically active rate of 16 to 24 year olds	See Table 10.10	STREAM
Number of new bank accounts (first current accounts from a small business banking range)	See Table 10.6	LEP
Unemployment rate	See Table 10.11	STREAM
Gross median weekly earnings of residents and people who work within the area	See Figures 10.13 and 10.14	STREAM
Number of minerals and waste planning applications	Data not yet available	NYCC, CYC, NYMNPA

⁵² Joseph Rowntree Foundation, 2013. Relative and Absolute Poverty over Time [URL: <http://data.jrf.org.uk/data/relative-absolute-time/>]

10 EA Topic/SA Category – Population and Human Health

Population

The population of the plan area was 782,080 in 2011⁵³. Table 11.1 shows the population change in different parts of the plan area between 2001 and 2011. Increases have been seen across the area with the exception of the North York Moors National Park which has seen a decrease.

	2001	2011	% change
North Yorkshire	569,660	598,400	+5%
City of York	181,094	198,100	+9.4%
North York Moors National Park	23,939	23,380	-2.3%

Table 11.1: Population change in the plan area 2001 – 2011

Source - Census

Population change is not evenly spread across the county council area and Table 11.2 below shows that recently the population of some parts of the county have been increasing whilst others, particularly those more rural areas, have been decreasing.

	2008	2009	2010	2011	% change
Craven	55,700	55,500	55,400	55,400	-0.5%
Hambleton	86,900	87,300	87,600	89,100	+2.5%
Harrogate	156,100	157,900	158,700	157,900	+1.2%
Richmondshire	51,400	52,800	53,000	52,000	+1.2%
Ryedale	53,300	53,600	53,600	51,800	-2.8%
Scarborough	108,500	108,500	108,600	108,800	+0.3%
Selby	81,600	82,200	82,900	83,400	+2.2%

Table 11.2: Population change in North Yorkshire and York

Source – 2008 – 2010 data ONS mid-year estimates. 2011 data from the Census

Population projections suggest that North Yorkshire's population will increase by around 4% by 2021 to 627,900 and that the City of York's population will increase by around 6.4% to 212,600⁵⁴.

⁵³ 2011 Census. This is the sum of the population of the North York Moors National Park and the City of York plus an estimate of the population of the North Yorkshire County Council area outside of the two National Parks.

The average age of residents in North Yorkshire is 43, although this is higher in some parts of the county, particularly in Craven and Ryedale. In the City of York the average age of residents is 40 which is closer to the England and Yorkshire and Humber averages of 39. At 9.7% in North Yorkshire and 8.4% in the City of York there is a higher proportion of people aged 75 or over in the plan area than the regional and national average of 7.8%. However, York also has a relatively high proportion of 15-19 and 20-24 year olds, due to the presence of two universities. It is projected that there will be a further rise in the proportion of people in the older age groups and a fall in the proportion of people in younger age groups in the future. Table 11.3 shows the proportion of population in each age group for North Yorkshire and York compared to the regional and national proportions, which demonstrates the relatively large number of older people and lower proportion of younger people.

% of population	North Yorkshire and York	Yorkshire and Humber	England
0-14	15.9	17.6	17.7
15-29	18.2	21.7	20.0
30-44	18.3	19.7	20.6
45-59	20.9	18.3	19.4
60-74	17.4	14.9	14.6
75+	9.3	7.8	7.7

Table 11.3: Proportion of population in age groups, 2011

Source - Census

North Yorkshire is sparsely populated with a population density of around 74 residents per km². In the North York Moors National Park this is considerably sparser with around 16 residents per km², and in York the population density is considerably higher.

The percentage of the population of North Yorkshire from black and minority ethnic groups is 5.6%⁵⁵. This is lower than the regional proportion of 14.2%. Within the county, Harrogate and Richmondshire have higher proportions of 8.3% and 6.6% respectively, whilst Ryedale and Hambleton have lower proportions of 3.8% and 3.7% respectively. The City of York has a slightly higher proportion of black and minority ethnic groups at 9.8% although this is still lower than the regional proportion. The proportion of black and minority ethnic groups living in the North York Moors National Park is significantly lower than regional proportion at around 3%.

Population projections are set out in table 11.4 below. Population projections are important factors in setting planning policies for minerals and waste, and will be examined in more detail as part of the plan making process.

⁵⁴ Interim Census Based Subnational Population Projections (ONS, 2012)

⁵⁵ 2011 Census

	2010	2013	2014	2018	2023	2028	2033
North Yorkshire	593	599	602	611	625	637	647
York UA	197	202	203	208	213	219	225
Yorkshire and the Humber	5,247	5,348	5,382	5,514	5,669	5,814	5,946
England	52,213	53,563	54,018	55,767	57,829	59,709	61,421

Table 11.4 Population Projections (Source – ONS and CLG, 2012)

The table above shows an increasing population across both North Yorkshire and York with an increase of 9% and 29% respectively until 2033. This shows that the projected growth in York is likely to be significantly above that for North Yorkshire as well as regional (13%) and national (17%) growth projected across the same timeframe.

Households and Housing

There are a total of 340,146 households in North Yorkshire and York, an increase of 8.2% since 2001, slightly greater than the national increase of 7.9%⁵⁶. Average household size is 2.3 persons per house in Yorkshire and the Humber, and data for the Plan Area suggests a similar rate (2.2 in the North York Moors National Park and 2.3 in North Yorkshire and the City of York).

Household growth in the plan area is related to population growth, household size and house building trends. Consequently, percentage growth of households will be influenced differently across the plan area depending on these factors. Interim household projections for the next 10 years are shown in table 11.5 although these only address trends relating to natural change and migration and do not factor in planning policy decision-making.

	2011	2014	2018	2021
England	22,102	22,765	23,655	24,307
York UA	84	86	89	91
North Yorkshire	258	263	270	276

Table 11.5 Interim Household Projections (Source – CLG, 2013)

⁵⁶ Census, 2001 and 2011

Over 16,000 houses have been completed in York and North Yorkshire since 2003, and as would be expected the majority have been built in the more urban parts of the Plan Area namely York, Selby and Harrogate districts. As a result of the economic downturn in recent years, house building has slowed, as shown in Table 11.5 below. (It should be noted that data for 2009 is incomplete).

Year	Houses completed
2003	2126
2004	1731
2005	1793
2006	2345
2007	3939
2008	2019
2009	939*
2010	1460
Total	16,352

*Incomplete data

Table 11.5: Number of houses completed in York and North Yorkshire

Source - CLG

Average house prices in the Joint Plan area are generally higher than the national average, as shown in Figure 11.6 below. House prices in the Joint Plan area are generally higher than the national average of £160,384. In some parts of the Plan Area house prices can be considerably higher – the average in the North York Moors National Park was £256,988 for the same year⁵⁷.

⁵⁷ North York Moors House Price Survey (North York Moors National Park Authority, 2011)

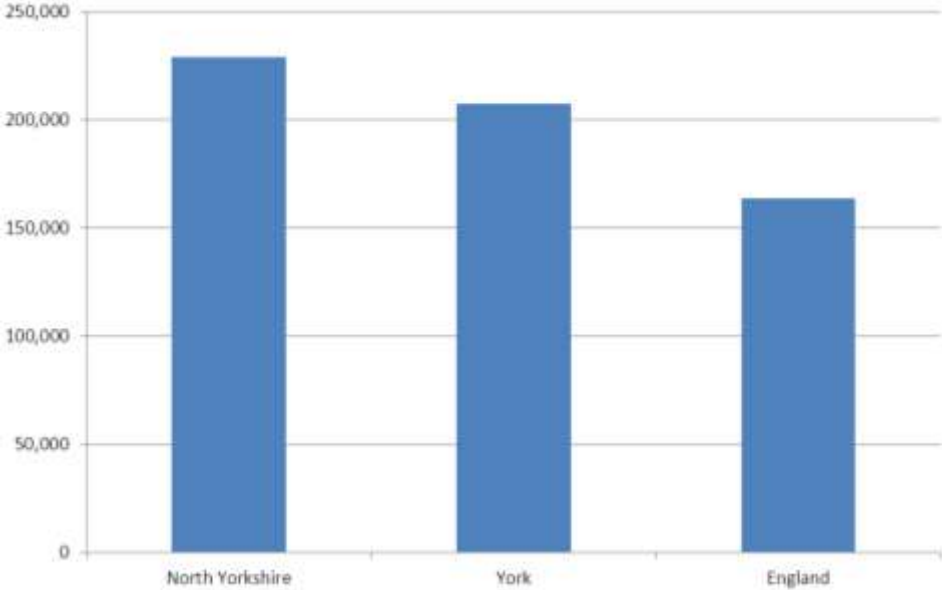


Figure 11.6: Average house prices (2010)
Source – York and North Yorkshire data – Land Registry

Figure 11.7 below is a map of the entire plan area, from which can be see the locations where all development, including housing, is distributed.

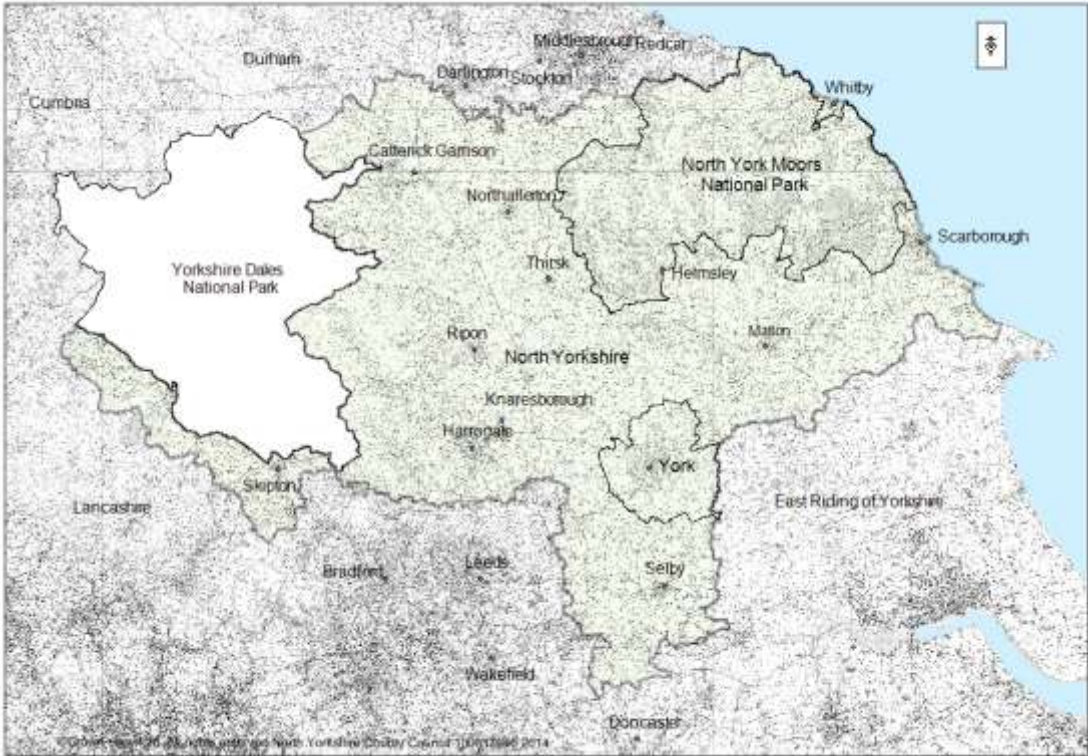


Figure 11.7: Map showing built up areas

Health and Wellbeing

Life expectancy at birth in the Plan Area is higher than the regional and national averages, as set out in Table 11.7 below. This varies across North Yorkshire and is higher in Craven, Hambleton and Ryedale than in those districts and boroughs with more urban areas, with life expectancy in Scarborough falling slightly below the national, but not regional, average.

	Male	Female
North Yorkshire	79.7	83.5

City of York	79.8	83
Craven	80.2	84.2
Hambleton	81	84.2
Harrogate	79.6	83.8
Richmondshire	78.6	82.9
Ryedale	80.3	83.9
Scarborough	78.3	82.2
Selby	79.9	83.4
Yorkshire & Humber	77.7	81.8
England	78.6	82.6

Table 11.7: Life expectancy at birth

Source - ONS, life expectancy at birth and at age 65, England and Wales, 1991 - 1993 to 2008 - 2012 (2011)

North Yorkshire has a higher mortality rate per 1,000 populations (9.9) than both the regional and national averages (9.2 and 8.9 respectively)⁵⁸. However, this is most likely to be due to the relatively high number of older people living within the county.

	All Deaths
North Yorkshire	9.9
Craven	11.3
Hambleton	9.4
Harrogate	9.6
Richmondshire	8.2
Ryedale	10.2
Scarborough	8
Selby	8.5

⁵⁸ ONS 2012

Yorkshire & Humber	9.2
England	8.9

Table 11.8: Mortality rate

Source - ONS, 2012, all deaths (rate per 1,000 people)

Table 11.9 below shows that, with the exception of Scarborough borough, rates of mortality relating to coronary heart disease in all parts of York and North Yorkshire were lower than the regional average for the period 2005 to 2010. In relation to incidences of cancer North Yorkshire and York as a whole are below the national and regional levels of incidences per 100,000 people, although the rates vary considerably amongst the districts and boroughs, with Richmondshire in particular having a high rate. There does not appear to be any correlation with the how rural or urban an area is. Mortality for respiratory disease is generally lower than England as a whole

	Standardised mortality ratio for coronary heart disease, 2005 to 2010	Incidences of cancer per 100,000 people, 2008	Standardised mortality ratio for deaths from respiratory diseases (all ages) 2006 2010
North Yorkshire	105.98	352.75	-
York	93.66	387.27	90.3
North Yorkshire and York	103	360.35	-
Craven	98.91	322.62	81.1
Hambleton	97.01	359.45	70.4
Richmondshire	101.28	422.68	75.3
Ryedale	110.47	361.01	90.5
Scarborough	121.44	343.82	98.2
Selby	101.07	346.76	98.9
England	100	382.14	100
Yorkshire and the Humber	112.77	391.74	-

Table 11.9: Coronary Heart Disease (all ages) 2005 to 2010 / Incidences of Cancer / Deaths from Respiratory DiseaseSource – www.streamlis.org / Public Health England, 2011, Small Area Indicators for Joint Strategic Needs Assessment

Deaths on the roads are particularly an issue in North Yorkshire which has an extensive network of rural roads. The table below shows that over 400 people are killed or seriously injured on the roads of the county every year.

	Number of people killed or seriously injured
2010	491
2011	454

Table 11.10: Road Accident Casualties (Killed and Seriously Injured)

Source: STREAM / North Yorkshire Joint Strategic Needs Assessment

Within the plan area residents generally describe their health as good or very good, with 82% of North Yorkshire residents and 81% of North York Moors National Park residents reporting this in the 2011 census. Table 11.11 below shows that, with the exception of Scarborough, there are relatively fewer people claiming Employment and Support Allowance (ESA) and Incapacity Benefit in North Yorkshire and York.

Area Name	ESA and Incapacity Benefit claimants,	ESA and Incapacity Benefit claimants (% of working age population)
Craven	1,370	4.1
Hambleton	1,960	3.6
Harrogate	3,580	3.6
Richmondshire	980	2.8
Ryedale	1210	3.9
Scarborough	4,920	7.5
Selby	2,180	4
York	5,090	3.8
Great Britain	-	6.3
Yorkshire and The Humber	-	6.6
Redcar and Cleveland	6,900	8.2

Table 11.11 – Number and proportion of population claiming ESA and Incapacity Benefit (August 2012)

Source – NOMIS, undated. Labour Market Profiles

The provision of spaces for recreation plays an important role in keeping people active and healthy. As well as rights of way there are numerous open spaces and parks throughout the Plan area (see also section 12). The City of York has over 480 hectares of parks and open spaces. Part of the reason for the designation of the North York Moors National Park is for providing opportunities for the understanding and enjoyment of the Park's special qualities and at 1,436sq km is therefore an important asset in supporting healthy lifestyles. Further discussion on recreation and leisure is provided in Section 12 below.

Key messages from the baseline

- There are many sparsely populated parishes and most settlements are relatively small. However York is a significant city of 198,000 in the heart of the plan area;
- The largest settlements outside of York are Selby, Harrogate and Scarborough, each with populations over 50,000. Most people, however, live outside of rural settlements
- Population of the Plan area as a whole is increasing and is expected to continue to rise, but at a lower rate than the region as a whole
- North Yorkshire as a whole has a higher proportion of older people than the region and nationally. However a younger population profile can be found in York. In the future older people will form a larger proportion of the population;
- Most districts and the City of York receive a net inflow of new residents, though there is a net outflow in Craven; Harrogate and Richmondshire receive the most new residents;
- Life expectancy is increasing in all Districts in North Yorkshire, but there are significant geographical variations in both male and female life expectancy within the County; Scarborough is the only district with lower male and female life expectancy than England as a whole;
- Scarborough has the highest rates of mortality from cancer and circulatory diseases

Predicted Future Trends

- It is likely that there will be a continuation of current trends in the short to medium term in relation to population and households. Population and household growth is projected to grow across the Joint Plan area although this is identified to be unevenly spread. Longer term effects on growth are likely to be influenced by social trends as well as strategic planning and house building rates, which vary within each authority both in terms of quantum and timescales for delivery. This may also effect settlement patterns and the locations people live and may have an impact on the urban/rural household split.
- Peoples' health in the joint plan area is also likely to continue existing trends over the short, medium and long-term of the Joint Plan. It is anticipated that life expectancy will continue to increase and that the general health of the population remains generally good. External influences on health in the medium to long term will be in line with improving / access to medical treatment as well as

continuing implementation of safety schemes (such as road safety). The NPPF (Section 8: Promoting Healthy Communities) would also be a default position for ensuring consideration for health and safety should plans or applications be taken forward.

Indicators

Indicator	Baseline Data (and year)	Source
Incapacity benefit claimants as percentage of working age population	See Table 11.11	STREAM
Mortality rate from coronary heart disease	See Table 11.9	STREAM
Road accident casualties	See Table 11.10	STREAM
Life expectancy at birth	See Table 11.7	ONS
All age respiratory diseases	See Table 11.9	Public Health England

11 SEA Topic/SA Category - Recreation and Leisure

Recreational Activities

As mentioned above access to the natural environment is important for peoples' health and wellbeing, and a key aim in the Natural Environment White Paper. A Natural England survey of visits to places outdoors shows that in North Yorkshire (including York) almost half of the population visit outdoors places once a week, greater than the England average, and most of these visit the countryside, as shown in Table 12.1. Where towns and cities are referred to, outdoors means the open spaces in these places.

	North Yorkshire (% of visitors)	England (% of visitors)
Town or city	25	38
Seaside resort or town	14	6
Other seaside coastline	4	4
Countryside	58	52

Table 12.1: Places visited 'outdoors'

Source - <http://naturalengland.tns-global.com/viewtable.aspx>

As well as the countryside, heritage attractions are important tourism destinations in the Joint Plan area. Figure 8.1 in section 8 shows the locations of historic assets in the Plan Area. Table 12.2 below shows that the area's heritage assets are important visitor attractions.

Attraction	Number of visitors (000s) 2009	Number of visitors (000s) 2010
Castles / Forts	446	733
Gardens	401	613
Historic Houses	1338	1076
Historic Monuments	255	226
Visitor / heritage centres	550	219
Places of worship	1729	1036
Other historic properties	35	378

Table 12.2: Visitors to heritage assets in Yorkshire and the Humber

Source: BDRC / English Heritage, 2010. Visitor Attraction Trends in England 2010: Annual Report for Heritage Counts www.english-heritage.org.uk/content/imported-docs/p-t/survey-heritage-visitor-attractions-2010.pdf

North Yorkshire County Council is responsible for managing the longest public rights of way network in England at over 10,000km, The Yorkshire Dales and North York Moors National Park Authorities manage approximately 4,000km through an agency agreement with the County Council. This network provides routes into some of the finest landscapes and countryside in Britain. The North York Moors National Park has 2,300km of right of way as well as 65,000 hectares of open access land⁵⁹.

Figure 12.3 below shows the distribution of public rights of way in the Plan Area

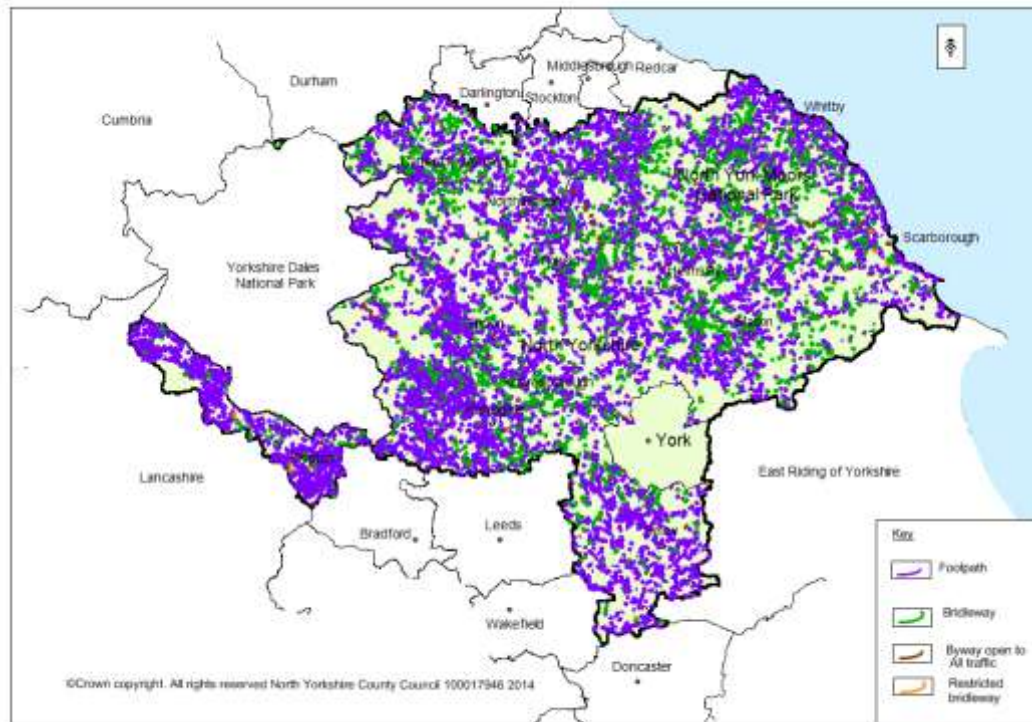


Figure 12.3: Public Rights of Way

⁵⁹ North York Moors National Park Management Plan (North York Moors National Park Authority, 2012)

Figure 12.4 shows the National Cycle Network across the Plan Area.

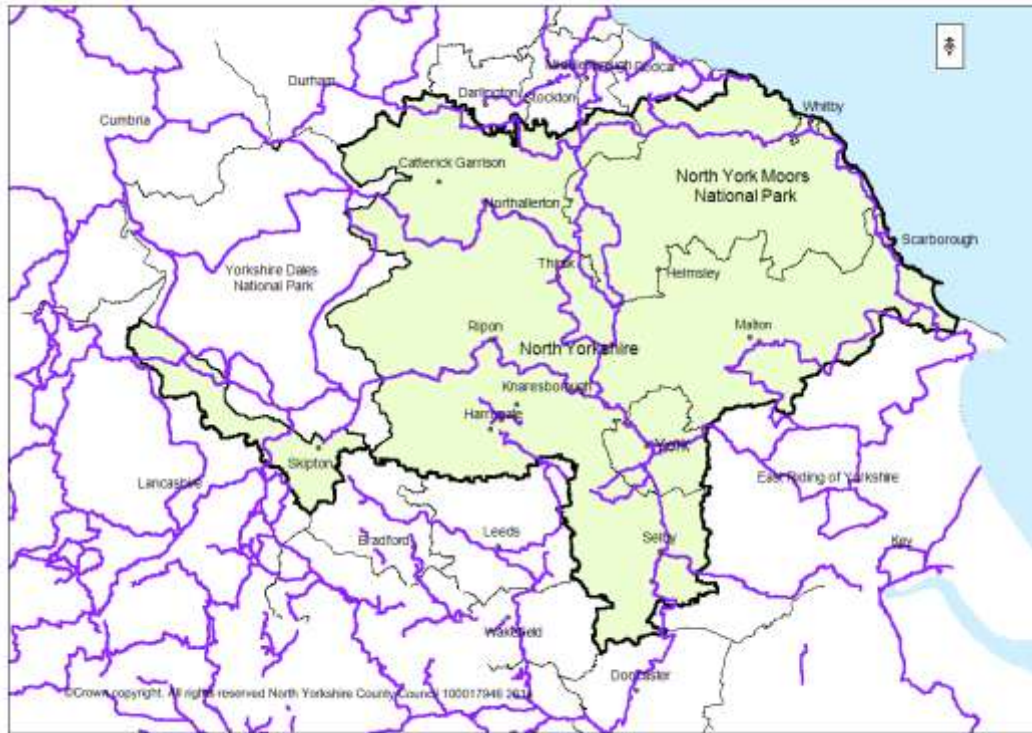


Figure 12.4: Sustrans National Cycle Network Routes

Natural England maintain a web map of open access land and coastal access land. This available at <http://www.openaccess.naturalengland.org.uk/>

The second statutory purpose of National Parks is to ‘Promote opportunities for the understanding and enjoyment of the special qualities of the Park by the public.’ The North York Moors baseline shows that within the National Park the main activities people undertake are long walks, visiting country pubs, visiting the beach and short walks. Ease of use of rights of way has been improving over recent years. The Casual User

Survey showed that in 2011 96% of visitors to the Park states that they had enjoyed their visit. Visitor numbers have however been declining in recent years, with a drop of around 6% since 2007⁶⁰.

The world famous heritage of York, including the Minster and city walls, makes it a popular visitor destination for people from across the globe.

Key sustainability issues arising from the baseline

- The Plan Area provides many opportunities for recreation and leisure including the North York Moors National Park and an extensive network of rights of way
- The natural environment and heritage are key attractions

Predicted Future Trends

- The Joint Plan Area has good access to a variety of recreation and leisure opportunities that attracts people from within and outside of the plan area, which is likely to sustain for the duration of the plan.
- The opportunities offered in relation to the natural and historic environment, such as the rights of way access and availability of historic places and buildings, is extensive and unlikely to change from its current form in the short, medium or long term.
- External influences on recreation and leisure in the medium to long-term would be as a result of strategic planning at local authority level in line with the NPPF. Any plans or programmes would need to consider their relationship and influence on recreation and leisure, as per national planning policy, prior to their development to ensure that these are retained or sufficiently provided for the benefit of the population.

Indicators

Indicator	Baseline Data (and year)	Source
Visitor days to the North York Moors National Park	10.1 (2011)	STEAM reports
Number of visitors to historic attractions	See Table 12.2	English Heritage

⁶⁰ Scarborough Tourism Economic Activity Monitor reports 2008 – 2012 (Global Tourism Solution (UK) Ltd)

12 SEA Topic/SA Category - Communities

Access to Services and Facilities

Accessibility to important facilities and services varies significantly across the Joint Plan Area. As would be expected, the more rural parts of the plan area have poorer access to services and facilities compared to the more urban parts. Some of the most rural parts of the plan area are in the worst 10% of areas nationally in terms of access to GPs, primary schools, post offices and convenience stores. In the North York Moors National Park the number of villages with a general store has declined from 44% in 1989 to 28% in 2012, and the number with a Post Office service has declined from 63% to 29% over the same period⁶¹. There are 20 household waste recycling facilities in North Yorkshire, including 2 which accept commercial waste, and 2 in York.

Broadband and Communications

In the past access to broadband has been variable, particularly in rural areas. Due to a project called Superfast North Yorkshire, by the end of 2014 90% of homes and business in North Yorkshire will have access to fibre broadband. Superfast North Yorkshire is also working to identify the communities in the harder to reach final 10%. A minimum of 2mbps will be available to premises in all these harder to reach areas. Full details are available at www.superfastnorthyorkshire.com.

Crime

Table 13.1 below shows that only 10% of the total incidences of criminal damage occurring in the Yorkshire and Humber region in 2010/11 were in North Yorkshire and York, suggesting that crime is not particularly widespread in the area. This is reflected in the perception of crime statistics which shows that far fewer people in North Yorkshire and York consider anti-social behaviour to be a problem in their local area when compared to regional and national levels. Scarborough and Selby have the highest rates in the area, but these are still below national and regional averages.

⁶¹ State of the Park Report (North York Moors National Park Authority, 2012)

	Number of criminal damage offences	Percentage who think that anti social behaviour is a problem in their local area (%)
Craven	400	9.5
Hambleton	722	8.8
Harrogate	1295	9.3
Richmondshire	356	7.2
Ryedale	350	10.8
Scarborough	1579	16.3
Selby	640	14.5
York	2477	11.3
Yorkshire and Humber	76262	22.52
England	652587	20.71

Table 13.1: Criminal damage (including arson) - offences April 2010 to Mar 2011 and percentage who think anti-social behaviour is a problem in their area (2008)

Source: ONS Neighbourhood Statistics and STREAM

Fly tipping is the illegal deposit of waste on land contrary to Section 33(1)(a) of the Environmental Protection Act 1990. The types of waste fly tipped range from 'black bag' waste to large deposits of materials such as industrial waste, tyres, construction material and liquid waste. Fly tipping is a significant blight on local environments; a source of pollution; a potential danger to public health and hazard to wildlife. It also undermines legitimate waste businesses where unscrupulous operators undercut those operating within the law. Local councils and the Environment Agency (EA) both have a responsibility in respect of illegally deposited waste. Local councils deal with most cases of fly tipping on public land, whilst the EA investigates and enforces against the larger, more serious and organised illegal waste crimes.

Table 13.2 below shows that within the area Scarborough and Redcar and Cleveland would appear to be locations where fly tipping is reported most frequently by local authorities.

	Number of fly tipping incidents
Craven	86
Hambleton	184
Harrogate	349
Richmondshire	126
Ryedale	74
Scarborough	3,939
Selby	482
York	1034
Redcar and Cleveland	2,424

Figure 13.2: Fly tipping Incidents reported by Local Authorities

Source Defra Flycapture data in Defra, 2013. Fly tipping Incidents and Actions Reported by Local Authorities in 2012-13

Key messages from the baseline

- Access to services is generally poor in the rural parts of the Plan area whilst the urban areas have a wide range of services and facilities
- The most remote parts of the Plan area have little or poor access to broadband and mobile phone coverage
- Crime and the perception of crime are not widespread issues

Predicted future trends

- It is likely that the current variation in accessibility to services between rural and more urban areas will continue in the short term, however there is more uncertainty regarding medium term and long term trends. It is likely that rural areas will continue to have poorer access to services such as post offices, schools and GP surgeries however it is possible that improved access to broadband and an increase in services available online, will contribute to readdressing the balance between accessibility in rural and urban areas in relation to certain services (e.g. online grocery shopping). These trends are largely not dependent upon the Minerals and Waste Joint Plan.
- It is likely that access to broadband and communications will continue to improve in the short term, medium term and long term led by technological advances and a shift to online businesses/services. These trends are largely not dependent upon the Minerals and Waste Joint Plan.
- It is reasonable to assume that crime will continue to remain relatively low in the short term (compared to national and regional averages), however levels of crime in the medium term and long term are more uncertain as these will be determined by a number of external

influences including the economy, governance and the law enforcement system. These trends are largely not dependent upon the Minerals and Waste Joint Plan.

Indicators

Indicator	Baseline Data (and year)	Source
Fly tipping incidents (by local authority)	See Figure 13.2	STREAM
Anti-social behaviour incidents	See Figure 13.1	STREAM

13 SEA Topic/SA Category – Material Assets and Resources

Waste

The Waste Framework Directive (2008/98/EC) was originally developed in 1975 and provides the legislative framework for the collection, transport, recovery and disposal of waste. The Directive requires all EU Member States to:

- take the necessary measures to ensure that waste is treated and disposed of correctly;
- set targets for re-use and recycling; and
- draw up binding national programmes for waste prevention.

The Directive introduced the concept of the 'waste hierarchy' (see Figure 14.1) which places five categories of waste management in their order of priority: prevention, re-use, recycle, recovery and disposal. This concept continues to be a guiding theme for waste policy at all levels and places greater emphasis upon preventing the production of waste at source as a way of reducing the necessity to deal with it after disposal, as this offers the greatest environmental gains. With regard to the Joint Minerals and Waste Plan, a key concern is ensuring that this set of priorities is central to development of policy and proposals for specific waste management facilities.

The Waste Framework Directive set targets for waste treatment in member states, including:

- Recycle 50% of household waste by 2020; and
- Recycle 70% of construction, demolition and excavation waste by 2020.

The Directive places greater emphasis upon the implementation of the waste hierarchy concept than its predecessor (the 2006 Waste Framework Directive), stating that the member states must apply the hierarchy as a 'priority order' throughout waste management legislation and policy. Annex I and II of the Waste Framework Directive define what is disposal and what is recovery of waste.

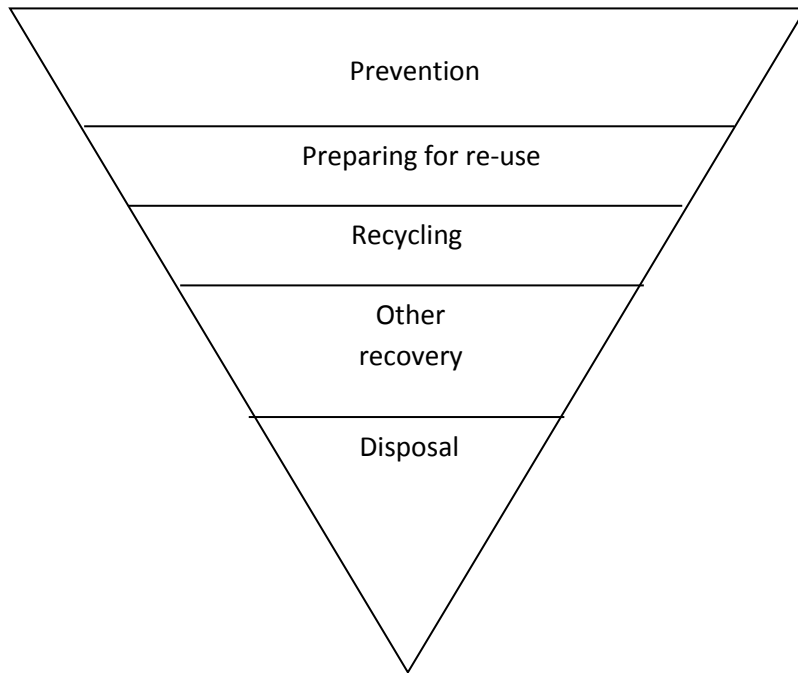


Figure 14.1: Waste hierarchy

Planning Policy Statement 10 states additional detail:

- The most effective environmental solution is often to reduce the generation of waste, including the re-use of products – prevention
- Products that have become waste can be checked, cleaned or repaired so that they can be re-used – preparing for re-use
- Waste materials can be reprocessed into products, materials, or substances – recycling
- Waste can serve a useful purpose by replacing other materials that would otherwise have been used – other recovery
- The least desirable solution where none of the above options is appropriate - disposal

Waste is generated from a variety of sources in the plan area, including from households, businesses, agriculture, construction and industrial uses.

In 2012/13, a total of 302,645⁶² tonnes of household waste were produced in North Yorkshire. Table 14.2 shows changes in the amounts of waste produced over the past few years⁶³. This shows that total levels of waste produced have been declining. Whilst there is no specific data for the North York Moors National Park, most of this is covered by North Yorkshire data (with the exception of the small part of the Park in Redcar and Cleveland).

⁶² Estimate – to be reviewed

⁶³ Note that data is not available for the North York Moors National Park as it is not a waste collection or waste management authority, just a waste planning authority

	2009/10	2010/11	2011/12	2012/13	% change
North Yorkshire	306,687	305,778	301,267	298,470	-2.68%
City of York	TBC	TBC	101,070	TBC	TBC
Plan area	TBC	TBC	TBC	TBC	TBC

Table 14.2: Production of household waste

Source – North Yorkshire County Council and City of York Council data

Table 14.3 below shows the proportion of household waste which has been reused, recycled or composted compared to the proportion which has been landfilled. In line with the principles of the waste hierarchy, the York and North Yorkshire Waste Management Strategy has set targets to recycle or compost 45% of household waste by 2013 and to recycle or compost 50% of household waste by 2020, and to divert 75% away from landfill by 2013.

	2009/10	2010/11	2011/12	2012/13
North Yorkshire				
Reused, recycled, composted (%)	44.3	45.1	46.2	45.7
Landfilled (%)	58.3	56.7	54.1	54.6
Recovery of heat and power (%)	0.03	0.03	0.03	0
City of York				
Reused, recycled, composted (%)	43.26	45.1	TBC	TBC
Landfilled (%)	56.7	54.5	55.1	TBC
Recovery of heat and power (%)	0	0	0	TBC

Table 14.3: Management of household waste

Source – North Yorkshire County Council and City of York Council data (figures may not add up)

The total amount of Local Authority Collected Waste (which includes all waste collected by the local authority, not just household waste) has also declined in North Yorkshire over recent years from 352,116 tonnes in 2009/10 to 334,031 tonnes in 2012/13. Most local authority collected waste from the Redcar and Cleveland part of the National Park that isn't reused, recycled or composted is sent to Haverton Hill energy from waste plant, in Stockton-on-Tees borough, and is only sent to landfill when the plant is not operational.

Arisings of Commercial and Industrial waste in the sub-region⁶⁴ are shown in Table 14.4 below, although these figures should be treated with caution as there is a lack of robust data on this waste stream. Note there are two figures as two different methodologies have been used for estimating the data in the Waste Arisings and Capacity Requirements report. A large proportion of commercial and industrial waste generated

⁶⁴ North Yorkshire and York, including the parts of the two National Parks in North Yorkshire

in North Yorkshire is from the power stations in the county, but this is excluded from the figures below. C&I waste arisings have remained relatively constant in North Yorkshire over recent years⁶⁵. The vast majority of this waste arises in the North Yorkshire County Council area, with very low amounts (estimated 6,915 tonnes) arising in the National Park.

Waste Stream	Defra National C&I Survey 2009/10	North West Region C&I Survey 2009
Commercial Waste	344,717	455,622
Industrial Waste	571,491	289,559
Commercial & Industrial Waste	916,208	745,179

Table 14.4: Arisings of Commercial and Industrial Waste in the sub region (excluding power and utilities) (2011)

Source – North Yorkshire Sub-Region Waste Arisings and Capacity Requirements (Urban Vision / 4Resources, 2013)

Table 14.5 below shows estimates for arisings of construction, demolition and excavation waste in the North Yorkshire sub region in 2011. Arisings in this waste stream have been declining since around 2008 due to the recession.

Waste Stream	Tonnes
Construction & Demolition Waste	215,559
Excavation Waste	553,205
Total CD&E	768,765

Table 14.5: Arisings of Construction, Demolition and Excavation Waste in the North Yorkshire sub region (2011)

Source – North Yorkshire Sub-Region Waste Arisings and Capacity Requirements (Urban Vision / 4Resources, 2013)

In relation to hazardous waste, the Waste Arisings and Capacity Requirements report identifies that 27,014 tonnes were generated in the sub region in 2011. Arisings of hazardous waste have been falling and declined by around 37% in North Yorkshire between 2008 and 2011, in line with the national trend.

⁶⁵ ⁶⁵ Urban Mines, Projection of Commercial & Industrial Waste Arisings in Yorkshire & Humber to 2026, November 2009

In relation to agricultural waste, the Waste Arisings and Capacity Requirements report estimates that 3.65 million tonnes as generated in the Plan area in 2011, most of which is disposed of on the farm. A relatively low proportion of agricultural waste arises within the City of York, estimated at 168,403 tonnes, with 2,347,889 tonnes and 1,135,923 tonnes estimated to arise in the NYCC area and the NYMNP respectively.

In relation to Low Level Non-Nuclear Radioactive Waste, the Waste Arising and Capacity Requirements report estimates that the total amount arisings in the Joint Plan area is not likely to exceed 100m³ per year.

Landfill is the predominant method of waste management in the Plan area, but amounts of waste sent to landfill have been decreasing over recent years. There are 19 landfill sites in the North Yorkshire part of the Joint Plan area and 1 in the City of York area. There are no landfill sites in the North York Moors National Park as waste from within the Park is largely managed elsewhere in North Yorkshire or in the Tees Valley as explained above.

There are 6 energy from waste plants in North Yorkshire with a total capacity of 9.7MW. In 2011/12 63,121MWh of electricity was generated from these facilities. The official biogas map shows that two anaerobic digestion CHP plants operate using brewery effluent in Tadcaster. One anaerobic digestion facility has been granted planning permission in North Yorkshire in 2011/12 with a capacity of 0.6MW⁶⁶. The official biogas plant map can be viewed in a web map format at <http://www.biogas-info.co.uk/index.php/ad-map.html> .

In North Yorkshire, there has been an increase in the rate of composting over recent years. In 2009/10 20.5% of household waste was composted, rising to 22.1% in 2012/13⁶⁷.

More detail on waste arisings and capacity is contained in the Waste Topic Papers, the Waste Arisings and Capacity Requirements reports and the Waste Technical Papers of the three authorities. These are available on the Joint Plan website at www.northyorks.gov.uk/mwevidence.

Minerals

Generally, the geology of North Yorkshire is comprised of sedimentary rocks including the western-dominating Carboniferous Limestone which overlies the Upper Carboniferous Millstone Grit. Millstone Grit is also exposed in the west of the county, which gives rise to the uplands of the Yorkshire Dales and the North Pennines. To the east of the Millstone Grit exposures the Permian Magnesian Limestone and Triassic mudstones and sandstones are exposed (these underlie the lower-lying Vale of York). North-east Yorkshire is dominated by the Hambleton Hills and the North York Moors – the whole of this area comprises of mudstones and sandstones of Jurassic age, with the sandstone forming the main scarp slope around the edges of hills and mudstones forming the lower ground. The Vale of Pickering is underlain by the Jurassic

⁶⁶ Authority Monitoring Report 2011/12 (North Yorkshire County Council, 2012)

⁶⁷ NYCC Waste Management Data

Kimmeridge Clay, which gives way to the Speeton Clay and white limestone of the chalk which forms the Yorkshire Wolds in the south-east of the County.⁶⁸

The following minerals are the main ones present in the Joint Plan area:

- Sand and gravel;
- silica sand;
- sandstone;
- limestone;
- chalk;
- brick clay;
- coal;
- potash;
- rock salt;
- building stone; and
- oil and gas.

Aggregates

Aggregates are materials which are used in the construction industry for purposes such as making concrete, mortar or asphalt for roadstone, drainage or bulk filling. In the Joint Plan area the aggregates mined are limestone, chalk and crushed rock. There are two broad forms of aggregate in the Joint Plan area - sand and gravel and crushed rock. Sales for the past ten years are shown in Figure 14.5 below. This is shown for each individual authority and for the plan area as a whole. Sales from the North York Moors, which were comparatively small, ceased following the closure of both aggregates quarries. There are no operational aggregates quarries in the City of York area. Crushed rock mainly supplies markets in the Plan Area and the rest of the Yorkshire and Humber with smaller proportions going to the north east and north west. Much of the sand and gravel produced stays within the plan area, although over a third goes to the north east region, with smaller amounts supplying markets in west and south Yorkshire. In 2009 sand and gravel production from the plan area represented 53% of that supplied from the Yorkshire and Humber region and supplied 34% of the crushed rock supplied from the region.

	Sand and Gravel sales (mt)				Crushed rock sales (mt)			
	NYCC	NYMNP	CYC	Total	NYCC	NYMNP	CYC	Total
2002	2.5	0	0	2.5	4.1	0.3	0	4.4
2003	2.5	0	0	2.5	3.7	0.3	0	4.0

⁶⁸ http://www.naturalengland.org.uk/ourwork/conservation/geodiversity/englands/counties/area_ID41.aspx

2004	2.8	0	0	2.8	4.2	0.2	0	4.4
2005	2.8	0	0	2.8	3.9	0.1	0	4.0
2006	2.7	0	0	2.7	3.8	0.1	0	3.9
2007	2.7	0	0	2.7	4.3	0.1	0	4.4
2008	2.3	0	0	2.3	3.8	0	0	3.8
2009	1.7	0	0	1.7	2.6	0	0	2.6
2010	1.6	0	0	1.6	2.9	0	0	2.9
2011	1.7	0	0	1.7	1.9	0	0	1.9
Average	2.3	0	0		2.3	0.1	0	

Table 14.5: Historic sales of aggregate from MPAs in the JOINT PLAN area 2002 – 2011

Source: North Yorkshire Sub-region Local Aggregate Assessment, 2013

For the NYCC area, sales of sand and gravel are split into northwards and southwards distribution areas, reflecting the markets supplied by different parts of the county, and building sand. Historic sales are shown in Table 14.6 below.

	Northwards distribution area (mt)	Southwards distribution area (mt)	Building sand (mt)
2009	0.89	0.83	0.07
2010	0.67	0.88	0.09
2011	0.75	0.87	0.11
3 yr average	0.77	0.86	0.09
3 yr average as % of total	45%	50%	5%

Table 14.6: Sales of landwon sand and gravel for NYCC split into distribution areas

Source: North Yorkshire Sub-region Local Aggregate Assessment, 2013

Total reserves of aggregates at the end of 2011 are shown in Table 14.7 below. (Reserves relate to the amount of material permitted for extraction at sites with a valid planning permission). All reserves in the plan area are located within the NYCC area. Reserves have declined over the past decade – in 2002 the NYCC area had 31.3mt of sand and gravel in reserves and 110.5mt of crushed rock in reserves.

	Sand and Gravel (mt)	Crushed rock (mt)				Total crushed rock
		Carboniferous limestone	Magnesian limestone	Jurassic limestone	Chalk	
NYCC	16.24	79.7	7.85	10.15	Some available but sites closed	97.7

					by operator	
NYMNP	0	0	0	0	0	0
CYC	0	0	0	0	0	0
Total	16.24	79.7	7.85	10.15	Some available but sites closed by operator	97.7

Table 14.7: Reserves at end 2011

Source: North Yorkshire Sub-region Local Aggregate Assessment, 2013

For NYCC, sand and gravel reserves can be split between the two distribution areas and building sand, as shown in Figure 14.8 below.

Northwards dist. area (mt)	Southwards dist. area (mt)	Building sand (mt)	Total (mt)
7.78	6.97	1.49	16.24

Table 14.8: Sand and Gravel reserves in NYCC, by distribution area, at end 2011

Source: North Yorkshire Sub-region Local Aggregate Assessment, 2013

Based upon 10 year average sales (as required by the NPPF) landbanks, in terms of years of supply, are shown in Table 14.9. There are no landbanks within the North York Moors National Park and the City of York as there are no reserves in these areas. In the past landbanks were calculated based upon apportionments in the Regional Spatial Strategy and, more recently, based upon 7 year average sales (as advised by the Yorkshire and Humber Regional Aggregates Working Party). The total years of landbanks for sand and gravel have declined since 2002 from 14.7 to 7 whereas for crushed rock the total years of landbanks has increased from 12.3 to 28. (The NPPF requires landbanks of 7 years for sand and gravel and 10 years for crushed rock).

	Sand and Gravel (yrs)	Crushed Rock (yrs)
NYCC	7.0	28.0
NYMNP	-	-
CYC	-	-

Table 14.9: Landbanks at 2011 based upon 10 year average

Source: North Yorkshire Sub-region Local Aggregate Assessment, 2013

The sand and gravel landbanks can also be split between the two distribution areas and building sand, as shown in Figure 14.10 below. Landbanks for both distribution areas have been declining over the past ten years and have been below 7 years in the southwards area since 2005. Landbanks of building sand have fluctuated but have been consistently above 7 years throughout the past decade. (The NPPF requires landbanks of at least 7 years for sand and gravel).

Northwards dist. area (yrs)	Southwards dist. area (yrs)	Building sand (yrs)
7.9	6.3	12.4

Table 14.10: Sand and gravel landbanks in the NYCC area at end 2011

Source: North Yorkshire Sub-region Local Aggregate Assessment, 2013

Secondary aggregates are the by-products of other processes which can be used as aggregates. Secondary aggregates are only sourced from within the NYCC part of the Plan Area. Figure 14.11 shows the volume of sales of secondary and recycled aggregates produced over the past ten years. The amount produced has generally stayed around the same over this period. Secondary aggregates in the Plan Area are sourced from Drax, Eggborough, Ferrybridge and Gale Common power stations and spoil from Kellingley Colliery.

	Ash			Colliery Spoil Sales (mt)
	Pulverised Fuel Ash (mt)	Furnace Bottom Ash (mt)	Total Ash (mt)	
2002	0.87	0.305	1.174	0.82
2003	0.909	0.378	1.287	0.67
2004	0.979	0.367	1.346	0.48
2005	0.97	0.35	1.32	0.41
2006	1.02	0.4	1.42	0.24
2007	0.97	0.41	1.38	0.08
2008	0.652	0.318	0.97	0.15
2009	0.635	0.202	0.837	0.67
2010	0.826	0.228	1.054	0.1
2011	0.968	0.302	1.27	0.66

Table 14.11: Sales of secondary aggregates

Source: NYCC Authority's Annual Monitoring Report 2011/2012 - YHRAWP and NYCC Survey 1999 – 2011

Recycled aggregates arise from various sources including from construction, demolition and excavation waste (CDEW), which is produced during construction and demolition of buildings, structures and civil engineering works. Other forms of recycled aggregate include asphalt planings from resurfacing roads and railway track ballast. Recycled aggregates, once processed, have generally been used for less demanding applications such as fill, where they mainly compete with crushed rock. Specific data on production or sales is not available.

Non-aggregates

There are several other minerals which are quarried in the Plan Area, but these are generally produced in much smaller quantities than aggregates and coal. The other minerals include building stone, clay, silica sand, onshore gas, potash and salt. The potash mine at Boulby is the UK's only potash mine, and also produces large quantities of salt. Table 14.12 provides data summarising, for the most recent year available, how much of each mineral is produced in the Yorkshire and Humber region, compared with production in the Plan Area and, where applicable, the percentage share North Yorkshire provides compared with the regional figure.

There has been no regional figure for aggregate minerals published for 2010 and 2011 due to the Regional Aggregate Working Party not collecting data for this period, so the table is based on the last year that data was compiled for the region, which was 2009.

Mineral Type	Yorkshire and Humber Region (mt)	Plan area production (mt)	% of regional total originating from within the Plan area
Deep Mined Coal ⁶⁹	3.31	1.62	48.90%
Clay ⁷⁰	1.05	No published data available	-
Silica Sand ⁷¹	0.075	c. 0.030	c. 40%
Building stone ⁷²	0.141	No published data available	-
Oil and gas ⁷³	28 Active gas wells Tonnage not available	0.019 – six active gas wells	-

⁶⁹ UK Minerals Yearbook 2011 – Statistical data to 2010 (British Geological Survey, 2012)

⁷⁰ UK Minerals Yearbook 2008 (BGS, 2009)

⁷¹ Regional figure includes silica sand used for other industrial uses and agriculture, horticulture and leisure uses only (i.e. excludes uses for glass manufacture and foundry uses). North Yorkshire figure published by BGS in 2006

⁷² UK Minerals Yearbook 2007 (BGS, 2008)

⁷³ Department of Environment and Climate Change 2008/09 data. Figures do not include coal mine methane sites.

Potash	0.7	0.7	100%
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Table 14.12: Non-aggregate minerals production

Source – United Kingdom Minerals Yearbook 2008, 2009 and 2010 and Yorkshire and Humber Regional Aggregates Working Party Annual Report 2009; BGS 2006; DECC

Following the closure of the Selby Coalfield in 2004, Kellingley Colliery, near Knottingley, is the only active mine in the County and works permitted reserves in the eastern part of Selby District. Table 14.13 below shows the output of coal in the plan area over the past 7 years.

Year	Coal Production (tonnes)
2005	1,960,000
2006	2,104,521
2007	1,771,520
2008	1,154,778
2009	984,736
2010	1,490,000
2011	2,276,000

Table 14.13: Coal production Source – UK Coal

Energy

Emissions associated with energy use have been considered in the section of this baseline on climatic factors.

Energy use in North Yorkshire and York was 11559GWh in 2011⁷⁴. Of this, 7,561GWh of gas was consumed and 3,998GWh of electricity was consumed, split between domestic and commercial use as shown in Table 14.14 below. This shows that the plan area is responsible for 1.5% of Great Britain’s gas consumption and 1.4% of Great Britain’s electricity consumption. While the figures are low in proportion to the sizeable area of North Yorkshire and York this figure is not particularly surprising given the particularly rural nature of many parts of the plan area.

	Gas consumption			Electricity consumption		
	Total gas	Total domestic	Total	Total electricity	Total domestic	Total

⁷⁴ This is just gas and electricity and does not include solid fuel and oil which are used in many off-grid areas

	consumption (GWh)	gas consumption	commercial gas consumption	consumption (GWh)	electricity consumption	commercial electricity consumption
North Yorkshire	5798	3055	2743	3,194	1206	1983
City of York	1763	1146	617	812	330	479
NY&Y	7561	4201	3360	3998	1536	2462
Great Britain	512467	323981	188486	283322	111083	172239

Table 14.14: Energy consumption in the plan area, 2011
 Source - Sub-national Energy Consumption Statistics (DECC)

Figure 14.15 shows that total energy use in the Plan Area has declined over recent years, and 2011 consumption levels were 18% lower than 2005 levels.

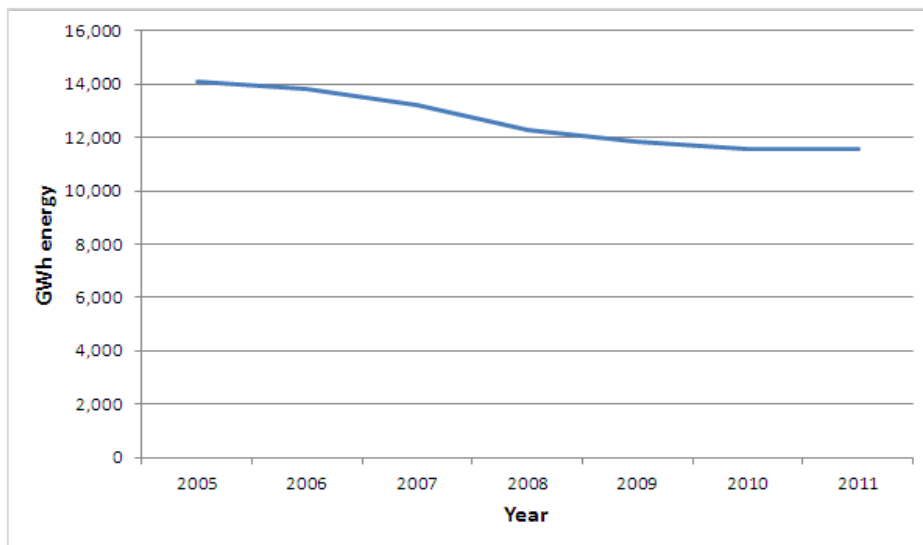


Figure 14.15: Energy use in North Yorkshire and York 2005 – 2011
 Source - DECC

Average domestic energy consumption per consumer in the Plan Area is shown in Figure 14.16 below. This shows that domestic gas consumption per consumer is slightly higher than the regional and national average for most of the plan area with the exception of the more urban areas where it is slightly lower. Table 14.16 shows that electricity consumption is generally higher than the national and regional average across most of the plan area with the exception of the City of York and Redcar and Cleveland which are the most urban areas (although only the more rural parts of the latter are within the plan area). Average commercial use per consumer is generally lower than the national average apart from in Selby and in Redcar and Cleveland where the figures are likely to be influenced by large industrial uses in these districts.

	Average domestic gas consumption (kWh per consumer)	Average commercial gas consumption (kWh per consumer)	Average domestic electricity consumption (kWh per consumer)	Average commercial electricity consumption (kWh per consumer)
Craven	15,860.7	368,183.9	4,437.5	41,556.1
Hambleton	15,204.2	984,618.9	4,543.9	59,798.4
Harrogate	16,881.5	483,693.6	4,469.9	67,041.9
Richmonds hire	15,612.5	635,347.9	4,556.7	45,155.1
Ryedale	14,899.6	1,460,263.1	4,607.4	49,640.6
Scarborough	14,282.1	700,805.8	3,787.0	50,123.4
Selby	14,703.5	4,475,980.6	4,445.8	120,273.8
City of York	14792	533060	3779	68848
Redcar and Cleveland	13722	1226442	3,517.1	196,742.5
North Yorkshire	15477	956536	4352	61204
Yorkshire and Humber region	14775	874782	3799	85510
Great Britain	14206	686814	4,078.7	72,905.5

Table 14.16: Average household energy consumption 2011

Source – Sub-national Gas Consumption Statistics 2010-11 and Sub-national Electricity Consumption Statistics 2010-11, DECC

As well as using less energy, the use of renewable energy in place of fossil fuels is a means of reducing greenhouse gas emissions. In rural areas, renewable energy can also provide a reliable and more cost-efficient source of energy for properties which are off-grid. Whilst comprehensive data on the amount of renewable energy generated in the Plan Area is not available it is known that 10MW of renewable energy was generated in the City of York in 2010 and a total of 1,068kW has been approved in the National Park since 2006. In North Yorkshire, 36.5MW of renewable energy capacity has been installed in energy from waste facilities. The chart below shows installed renewable energy capacity, in MW, for each technology type. This shows that wind energy makes up the largest proportion of renewable energy capacity, followed by energy from waste from landfill gas and biomass from agricultural arisings⁷⁵.

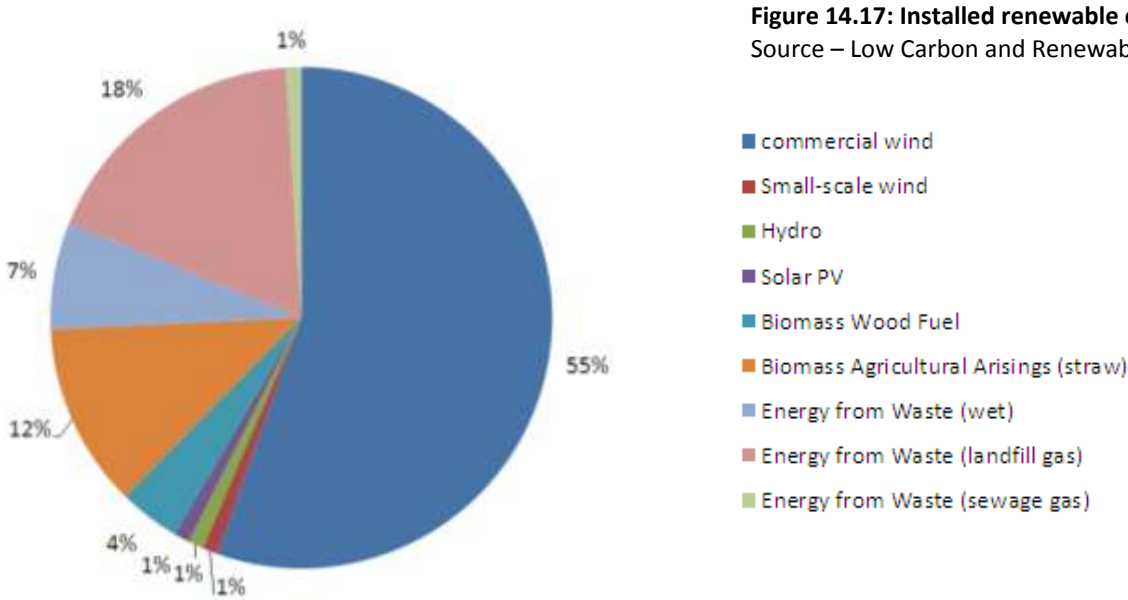


Figure 14.17: Installed renewable energy capacity by technology (2011)
Source – Low Carbon and Renewable Energy Capacity in Yorkshire and Humber (AECOM, 2011)

⁷⁵ Note that ground source heat pumps and solar water heating are not shown because they make a less than 1% contribution to overall capacity.

Key messages from the baseline

- The area has economically important areas of minerals, including aggregates such as crushed rock, sand and gravel and silica sand; energy minerals such as deep mined coal; and non-aggregate building stone
- Most deposits of waste in North Yorkshire are dealt with in landfill sites, while the waste deposits managed via recycling and treatment are below regional and national rates.
- The percentage of household waste recycled, reused and composted has risen in recent years, with North Yorkshire as a whole recycling more than the national average; though more waste is not recycled than is.
- There is significant variation between district levels of recycling: within the Plan area the highest household rates of re-use / recycling composting are in Ryedale, the lowest rates are in Scarborough.
- Energy consumption is generally higher than average

Predicted Future Trends

- In relation to waste, the following likely future trends have been identified⁷⁶:
 - Arisings of Local Authority Municipal Solid Waste are expected to increase over the period to 2040;
 - Commercial and Industrial waste arisings are predicted to remain relatively constant over the next decade;
 - Construction, Demolition and Excavation waste arisings are linked to development and therefore should there be an economic recovery it is likely that arisings would increase;
 - There would be an increase in hazardous waste arisings in the medium and longer term should the Allerton Waste Recovery Park be developed;
 - It is possible that arisings of Low Level Non-Nuclear Radioactive Waste will decrease;
 - There is likely to be a decrease in the amount of waste going to landfill, particularly should the Allerton Waste Recovery Park be developed.
- In relation to minerals supply, the Plan will have a significant influence over this although it is reasonable to assume that provision would be likely to come forward without the Plan albeit in a less co-ordinated way and with impacts on other areas of sustainability more likely. These effects would become more pronounced over time.

⁷⁶ See North Yorkshire Waste Evidence Paper at www.northyorks.gov.uk/mwevidence

- It is reasonable to assume that energy use within the Plan area will continue to decline whilst the amount of installed renewable energy capacity will continue to increase throughout the short, medium and long term. These trends are largely not dependent on the Minerals and Waste Joint Plan.

Indicators

Indicator	Baseline Data (and year)	Source
Total waste received by waste facilities by category ('household, industrial and commercial', inert/construction and demolition', 'hazardous' and 'unknown')	See Figure 14.3	Environment Agency
Waste Management method of household waste arisings	See Figure 14.3	NYCC
Number of anaerobic digestion plans	2 industrial CHP plants in Tadcaster	www.biogas-info.co.uk
Number / type / area of Minerals Safeguarding Areas defined in Plan	Not yet available	
Reserves of primary land won aggregate and crushed rock	See Figure 14.15	Local Aggregate Assessment
Sales of secondary aggregate in the North Yorkshire sub-region	See Figure 14.11	Local Aggregate Assessment
Installed renewable energy capacity by type	See Figure 14.17	

14 SEA Topic/SA Category – Transport

Transport Infrastructure

The Plan area contains a number of strategic transport routes. This is significant for minerals and waste planning as both of these activities involve the transportation of large amounts of material. The A1M is the main road route, crossing the centre of the county in a north-south direction. There are a number of A-roads linking the main settlements within the Plan Area and linking the Plan area with towns and cities beyond its boundaries.

York is a major hub in the rail network and the main east coast rail line passed through here and proceeds northwards through the Plan area towards Darlington. There are also some branch lines linking settlements within the Plan area including the York to Scarborough line, the Leeds to Harrogate line, the Thirsk/Northallerton to Teesside line and the Esk Valley line.

There are no commercial airports in the Plan Area, the nearest being Leeds Bradford to the south and Durham Tees Valley to the north. Robin Hood Airport in Doncaster is also within easy reach of the Plan area.

There are also no major shipping ports in the Plan area, the nearest being Teesport to the north and Hull to the south. There is also an inland port at Goole, just outside the Plan Area.

Figure 15.1 shows the strategic rail and road network in the Plan area.

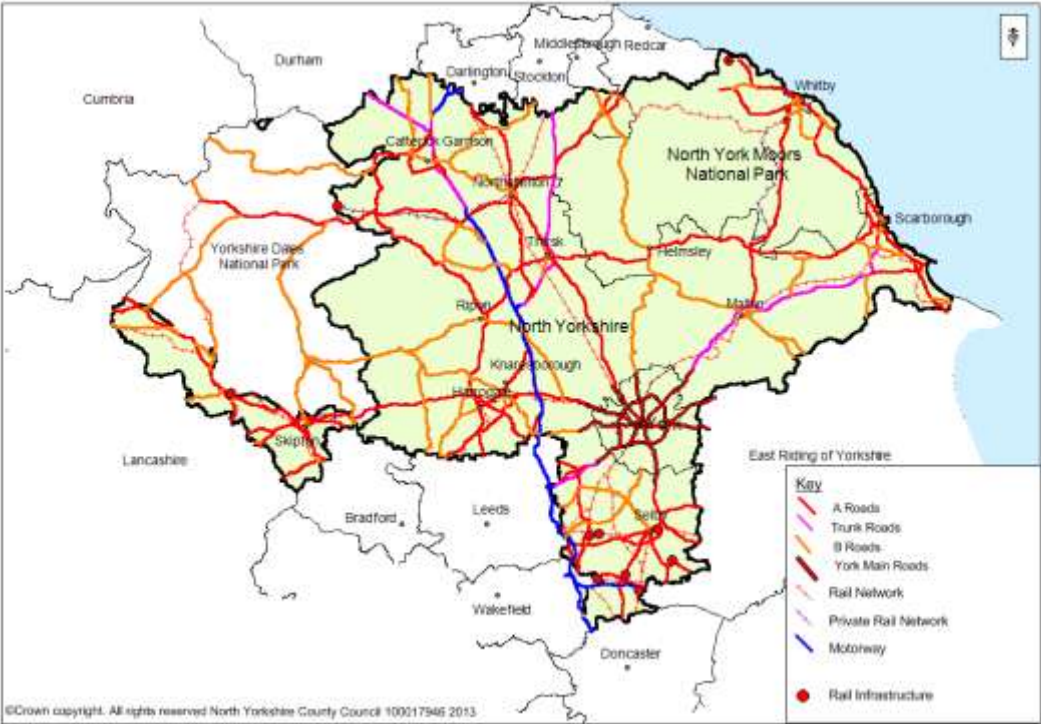


Figure 15.1: Strategic Road and Rail Network in the Plan Area

Figure 15.2 shows the inland waterways network with the potential for freight movement



Figure 15.2: Inland waterways network with potential for freight movement.

Figure 15.3 shows a map of rail infrastructure and wharves

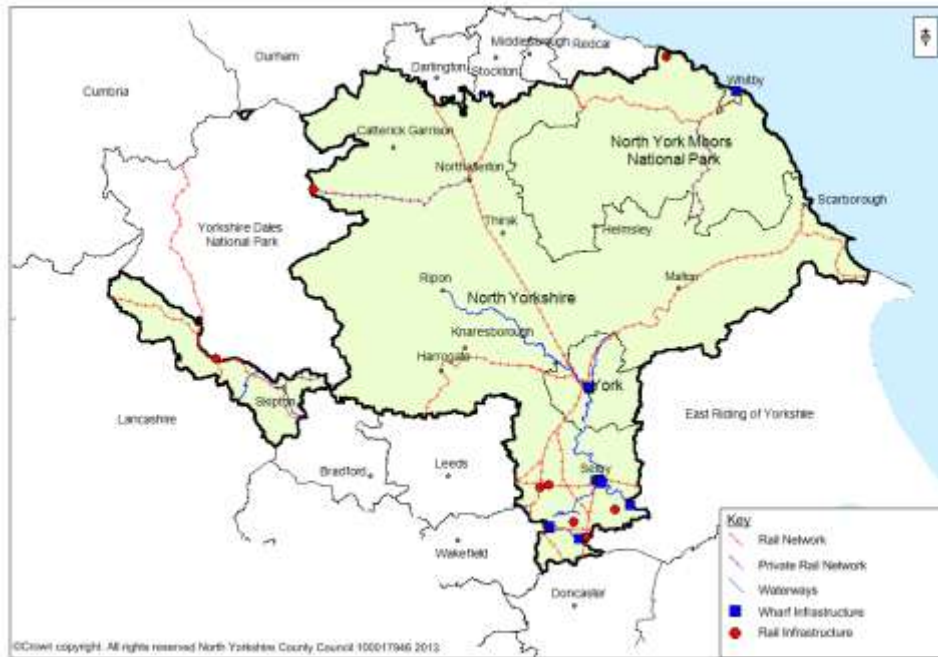


Figure 15.3: Rail infrastructure and wharves

The Timber Freight Quality Partnership provides a map of timber transport routes. These may indicate where timber related freight may be used, which in combination with minerals and waste traffic may lead to impacts on the road network. A web map is available at http://maps.northyorks.gov.uk/connect/index2.jsp?mapcfg=Timber_transport_.

Transport Usage

17% of households in North Yorkshire have no car, compared to 26% in the City of York. In the North York Moors National Park only 11% of households have no car. This shows that, as would be expected, in the more rural parts of the Plan area car use is greater. Since 2001 the number of households with no car has declined suggesting that less use is being made of other forms of transport and/or that more people are able to access the services and facilities they need.

Table 15.2 shows the changes in transport miles over recent years in North Yorkshire. This shows that miles for cycles and HGVs have decreased whilst miles for buses and light goods vehicles have increased. HGVs are particularly relevant to the minerals and waste industry as this is a major form of transportation for many operators. Total vehicle miles in North Yorkshire have increased by 4% over the past decade. HGV use has declined by 12% since 2002 although the major decrease has been since 2007, reflecting the economic downturn.

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Pedal Cycles	4,347	4,246	4,145	3,245	3,544	3,096	3,893	4,250	4,227	3,977
Motorcycles	24,574	27,589	23,974	23,791	24,878	26,320	25,631	25,775	23,601	24,885
Cars	2,518,101	2,546,492	2,565,703	2,616,525	2,740,057	2,698,134	2,575,094	2,597,957	2,571,775	2,594,645
Buses & Coaches	22,915	22,879	22,997	22,426	26,674	26,696	22,977	23,931	24,803	25,189
Light Goods Vehicles	334,814	345,982	374,912	399,330	434,939	468,806	436,619	433,541	432,002	444,060
All HGVs	400,683	374,834	397,092	395,931	410,414	415,374	387,081	353,902	354,444	352,846
All Motor Vehicles	3,301,102	3,317,779	3,384,679	3,458,004	3,636,968	3,635,340	3,447,390	3,435,108	3,406,642	3,441,639

Table 15.2: Transport use in North Yorkshire (thousand vehicle miles)

Source – DfT Traffic Counts

Figure 15.3 shows that in 2001 around half of the residents of the Plan Area travelled to work by car, although this was higher in North Yorkshire than in the City of York. The numbers of people cycling to work or catching the bus or train in York is far greater than in North Yorkshire, although this is as would be expected as rural areas tend to have fewer public transport services and roads and topography that are not conducive to cycling.

	% Passenger in Car/Van	% Cycle	% Bus/Coach	% Drive	% Motorcycle	% Taxi	% Train	% Metro/Light Rail/Tram	% Walk
York	5.5	12.04	7.23	48.18	1.75	0.5	1.54	0.07	14.95
North Yorkshire	6.07	2.83	3.43	56.6	0.81	0.38	1.35	0.06	14.21

Figure 15.3: Mode of transport for travel to work

Source – 2001 Census

Key messages from the baseline

- The most significant transport corridors run north to south and include the A1, A19 and East Coast mainline.
- There are no airports and relatively few stretches of in the area. However three airports lie within close range of the County, and there are major seaports nearby on the Tees and Humber

Predicted future trends

- The Joint Plan Area currently has good strategic transport links and these existing links are unlikely to change from their current form in the short term, medium term and long term. It is likely that new/improved transport links will also be established in the medium and long term for example, the HS2 high speed rail network.
- Minerals and waste developments generally involve transportation of large quantities of mineral/waste products via either road or rail and may contribute to an increase in HGV vehicle miles in the short term as the Plan Area continues to recover from the recent economic downturn. Should economic growth continue in the medium and long term, it is likely that transport usage, particularly HGV use will also continue to increase. Minerals and waste developments are likely to have localised or in some cases wider effects on transport usage and infrastructure, over which there would be less control without minerals and waste planning policies in place.

Indicators

Indicator	Baseline Data (and year)	Source
Motor vehicle traffic (vehicle miles) by local authority	See Figure 15.2	DfT
Proportion of residents who walk or cycle, at least once per month, for utility purposes (for reasons other than recreation, health, training or competition) by local authority	See Figure 15.3	DfT
Road transport energy consumption at local authority level	See Figure 7.5 (Section 7)	DfT/NAEI