Minerals and Waste Joint Plan for North Yorkshire County Council, the City of York Council and North York Moors National Park Authority

Unconventional Oil and Gas

Additional Inspector Points

UKOOG Response

The responses made in this document are made on behalf of UKOOG, the trade body for the onshore oil and gas industry. The responses have been agreed by the four main PEDL holders that are impacted by the Minerals and Waste Joint Plan – Third Energy, INEOS, Cuadrilla and IGAS and should be read in conjunction with previous representations made to the local plan and responses made to the Inspector as part of the earlier examination.

Executive Summary

The industry in their response has demonstrated beyond doubt that it is willing and able to meet the requirements set out as part of planning practice guidance, which has been further reinforced by the Written Ministerial Statement.

The industry has shown for many years that with careful mitigation the impacts associated with the industry can be brought in line with the requirements of guidance and that this has been successfully completed many times within 500m of residential developments and other sensitive receptors.

There has been no justification put forward by the local authorities to justify a buffer zone.

A pre-determined presumption against development within 500m without providing any real clue as to how to satisfy loose and woolly requirements would unreasonably restrict an industry that has national policy and guidance support as a result of the potential contribution it would make to the diversity of energy supply in the transition to a low carbon economy.

As a result, this would effectively ensure that no member of the industry invests in the licence areas under question and therefore an effective sterilisation of the area will take place.

It is relevant to note that the planning practice guidance for minerals (PPG-M) specifically recognises that minerals extraction sites are limited in where they can be situated due to the location of the natural resource. In this respect, the PPG-M makes perfectly clear no buffer zones are required around a site, instead taking the approach of setting suggested noise thresholds for example.

Based on our review of relevant appeal decisions in relation to onshore oil and gas exploration, we conclude that PPG-M has been determined to be the applicable standard for setting noise thresholds in all of the cases reviewed.

With respect to very recent sites drilled or hydraulically fractured in 2018:

- Noise monitoring at Tinker Lane Wellsite and Preston New Road found that noise from drilling was not audible above the baseline ambient sound and that the planning noise limit was met at both sites. It has therefore been ably demonstrated that the industry can mitigate noise from drilling rigs to within the PPG-M noise thresholds.

- At Preston New Road during the recent hydraulic fracturing activities no exceedances of the planning noise limit have been identified. Inspection of noise data measured at the nearest noise sensitive receptor shows that noise levels during fracking are broadly similar in level to baseline noise levels when fracking is not taking place. This demonstrates that oil and gas developers are able to design and operate fracking spreads which comply with the PPG-M noise limits

- Continuous noise monitoring has been ongoing at Preston New Road during recent flaring activities. Analysis of the noise monitoring data shows that there is very little (if any) detectable change in noise level during flaring activity even during the quietest periods of the night (02.00 – 05.00) at a noise monitoring point closer to site than the nearest noise sensitive receptor. This robustly demonstrates that oil and gas developers are able to carry out flaring activities at noise levels significantly below the PPG-M noise thresholds, and also have little or no impact on noise sensitive receptors.

The Joint Authorities have failed to appreciate the raft of mitigation measures which are available for use at sites which are particularly noise sensitive. Our commissioned noise report provides a much more detailed analysis including mitigation measures. It has demonstrated that the PPG-M noise limits can be achieved.

The Authorities' conclusion that "the proposed 500 m distance represents a distance within which it is appropriate for policy to say it is unlikely that adequate mitigation can be provided" is therefore incorrect. Based on this report, it is considered that the opposite conclusion should be reached – i.e. that a 500 m buffer zone is unnecessary and unreasonable. Instead, it is recommended that the policies contained in the PPG-M should be applied (i.e. by setting appropriate noise limits taking account of the baseline noise environment and applying mitigation in order to meet those noise limits).

The policy in its current proposed form continues to fail to accord with national policy and guidance and therefore must be considered unsound and consequently make the plan unsound.

The role of other regulators

Paragraph 183 of the National Planning Policy Framework July 2018 (Framework) and Paragraph 112 ID: 27-120-20140306 of the Guidance are very clear about the different roles that Mineral Planning Authorities (MPAs) and regulatory bodies have and that MPAs should assume that those regulatory regimes will operate effectively.

There are four different regulators involved in the onshore oil and gas industry, including MPAs.

The four regulators each have a specific role to play - the MPA (with support from the relevant district council Environmental Health Department) with respect to local issues such as noise and transport; the Health and Safety Executive (HSE) with respect to well integrity, compliance with borehole legislation and the health and safety of the workforce and wider public, the Environment Agency (EA) with respect to air, soil and water who issue up to 9 environmental permits connected to 17 European Directives as implemented by UK law and finally the Oil and Gas Authority (OGA) who ensure that the

operator has the right operational experience and financial capacity alongside receiving the environmental risk assessment and fracturing plan before advising the Secretary of State on giving drilling consent and where appropriate hydraulic fracturing consent.

The Environment Agency (EA)

The EA's remit concerns the protection of the environment and human health through the regulation of emissions to air, water and land.

Environmental Regulation requires the following:

- A notice to be served on the Regulator under section 199 of the Water Resources Act 1991 to 'construct a borehole for the purposes of searching for or extracting minerals'

- Environmental permits for:
  - groundwater activity – where the regulator considers there is a potential risk to groundwater
  - management of extractive waste – through a waste management plan
  - Industrial Emissions Directive – when the intention is to flare more than 10 tonnes of natural gas per day (generally applies to exploration phase only)
  - Medium Combustion Plant Directive (as enacted by the 2018 amendment to the Environmental Permitting Regulations) – relating to combustion plant such as generators with lower thermal input
  - radioactive substances activity – likely to apply where low level Naturally Occurring Radioactive Material (NORM) is contained in rock cuttings or fluid returned to the surface from the well
  - a water discharge activity – where surface water (typically from rain) is to be returned to the environment

- A water abstraction licence – if the plan is to abstract more than 20m3/day for own use rather than purchasing water from a public water supply utility company

- A groundwater investigation consent – to cover drilling and test pumping where there is the potential to abstract more than 20 cubic metres per day (m3/day) of water

- A flood defence consent – if the proposed site is near a main river or a flood defence.

The EA has published technical guidance for onshore oil and gas exploratory operations, covering both 'conventional' and 'unconventional' operations.

The EA is also a statutory consultee to the planning process and is also consulted through the Environmental Impact Assessment (EIA) process, where this is a requirement.

Health and Safety Executive (HSE)

HSE monitors shale gas operations from a well integrity and site safety perspective. They ensure that safe working practices are adopted by onshore operators as required under the Health and Safety at Work Etc Act 1974, and regulations made under the Act. These specifically are:

- The Borehole Site and Operations Regulations 1995 (BSOR) - These regulations are primarily concerned with the health and safety management of the site including control of risks relating to fire and explosion, toxic gases, emergency plans and so on, together with a requirement to consult with emergency services
- The Offshore Installations and Wells (Design and Construction, etc) Regulations 1996 (DCR) - Apply to all wells drilled with a view to the extraction of petroleum regardless of whether they are onshore or offshore and are primarily concerned with well integrity through the whole life-cycle of a well.

In terms of well integrity, prior to any drilling activity, the operator must send its proposed well design to an independent well examiner. Once the design has been satisfactorily assessed by the examiner, the operator must then notify the HSE of the well design and operation plans. The HSE carries out its own detailed review of these plans, taking into account any comments or recommendations made by the independent well examiner and can make its own recommendations to the operator.

The design and construction of the well is key to subsurface environmental protection. Through the use of multiple physical barriers of casing and cement, as well as utilising natural impermeable geology layers as protection, the well will prevent the migration of hydrocarbons or well fluids into the surrounding rock formation or ground water bodies. Before hydraulic fracturing commences, the well will be tested for integrity and suitability for fracturing.

A weekly report is sent to the HSE showing progress with the well construction including the results of the integrity testing that is completed as part of the drill plan. The HSE visit well sites on both an announced and unannounced basis to review operations as it deems necessary.

The Operator is required to set up a well examination scheme and appoint a well examiner. The well examination scheme and involvement of the well examiner is for the complete lifecycle of the well, from design through to abandonment. The well examiner is an independent competent person who reviews the proposed and actual well operations to confirm they meet the Operator's policies and procedures, comply with the Offshore Installations and Wells (Design and Construction, etc.) Regulations 1996 and follow good industry practice.

The well examination scheme requires the Operator to send the following documents to the well examiner:

- The well construction programme and any material changes to it
- Regular reports on how the well is being constructed
- Reports on how the well is being monitored
- At the end of the well's life, a plan for how it will be abandoned.

Shale gas well operators will ask their well examiners to examine certain well integrity and fracturing operations in real time, especially during the early stages of a development, to provide a further level of independent assurance. Periodic site visits will be made at the discretion of the examiner, in addition to assessing documentary evidence of well integrity, to observe and verify that such operations have been executed satisfactorily in accordance with the approved programme.

Industry Response to Inspector Points

1. The main purpose of these sessions is for me to hear evidence on whether the Hydrocarbon Development Policy M17 is sound in light of the Written Ministerial Statement on Energy Policy of 17 May 2018 (WMS).

No comment required

2. The WMS says, amongst other things, that applications must be assessed on a site by site basis, having regard to their context. Plans should not set restrictions or thresholds across their plan area that limit shale development without proper justification. Policies should avoid undue sterilisation of mineral resources (including shale gas).

UKOOG agree and support the statements made in the WMS which we believe reiterates current policy and guidance. This view formed the basis of our previous submissions and is summarised by the opinion of Nathalie Lieven QC: *"The effect of the policy is therefore to prevent the delivery of the hydrocarbon development supported in national policy and as such is not sound."*

In the summary of responses to the WMS (LPA98) the joint local authorities make the following statement "The Plan does not seek to cause undue sterilisation of resources or impose a fixed separation distance from sensitive receptors or seek a ban on development within a specific set-back distance. It indicates that it is unlikely that proposals within 500m of sensitive receptors will be acceptable but does not prevent such development and contains appropriate flexibility to allow development proposals to come forward in a range of locations where site-specific circumstances indicate that development can take place in a way which gives protection to local amenity.

The joint local authorities in their justification (LPA89) list noise, light and visual impact as the three areas in which they believe that proposals would be unlikely to be "acceptable".

Levels for each of these impacts and their acceptability have been set out in planning practice guidance and are meant to be applied on a case by case basis taking into account the individual characteristics of each site as these will have an impact on the impacts of noise, light and visual impact. History has shown that onshore oil and gas operators where required have applied appropriate mitigation in order to meet planning conditions based on planning practice guidance.

The pre-determination by the local authorities makes no sense as it would require the applicant to apply planning practice guidance in order to justify a site within a specific '500m zone'. The planning system is designed to assess the suitability of development within a specific location, on a case by case basis, so in affect this is what already happens.

Pre-determination will stop potential applicants from applying within a 500m zone, as the level of uncertainty attached with a presumption of failure is too great. There is absolutely no justification for any buffer zone as appropriate limits for any proposed development can be readily applied through planning practice guidance.

500m Buffer Zone

3. It is proposed by the Mineral Planning Authorities (MPAs) that there be a main modification to the 500m buffer zone in Policy M17, 4) i) so that development in this zone *"will only be permitted where it can be demonstrated in site specific circumstances that a high level of protection will be provided".* The policy sentence that referred to only permitting development in exceptional circumstances is proposed to be removed.

We now understand that the specific statement has been modified as:

Hydrocarbon development will be permitted in locations where it will not give rise to unacceptable impact on local communities or public health. Adequate separation distances should be maintained between hydrocarbons development and residential buildings and other sensitive receptors in order to protect local communities ~~ensure a high level of protection~~ from adverse impacts from noise, light pollution, emissions to air or ground and surface water and induced seismicity, including in line with requirements of Policy D02. Proposals for surface hydrocarbon development, particularly those involving hydraulic fracturing, within 500m of residential buildings and other sensitive receptors are unlikely to be consistent with this requirement and will only be permitted where it can be robustly demonstrated in site specific circumstances that an unacceptable degree of impact can be avoided. ~~in exceptional circumstances.~~

iv) Proposals should include measures appropriate and proportionate to the development to manage waste gas emissions, including, the capture and use of the gas where practicable, to ensure there is not an unacceptable impact on communities or public health and to make practical use of any waste gas available

UKOOG notes the removal of the term exceptional circumstances, as operators we always apply the protection to the local environment as required by planning practice guidance. However, the presence of **any** buffer zone as we have previously stated would not be in keeping with current planning practice guidance nor with the recent WMS. There is no justification for a pre-determined buffer zone that can only be removed by an unknown set of parameters.

The use of terms such as "robustly demonstrated" and "unacceptable degree of impact" have been given no definition and we question whether this can be done so legally, whereas planning practise guidance sets out specific limits.

As Nathalie Lieven QC commented in her opinion:

"The purported justification for the buffer zone is the impact on residential amenity from the proposed development. However, the Council have not produced any evidence to show any specific impacts which would justify such an approach. In terms of noise, the NPPG sets out specific noise levels for hydrocarbon development, which would need to be met on each site. These levels will be set out in appropriate conditions. The level of impact of noise from the development will be greatly influenced by local conditions, such as proximity to other noise generators such as a road. A buffer zone policy fails to take into account those individual circumstances and therefore would need very strong evidence to be justified.

"On the facts of hydrocarbon development, residential amenity can and will be protected to an acceptable degree without any buffer zone requirement, through the normal imposition of appropriate conditions. Secondly, it is a matter of record that hydrocarbon developments have been approved both in North Yorkshire and elsewhere with development much closer than 500m to dwellings. With the protection of the appropriate conditions, occupiers have been fully protected. There is simply no evidence that the buffer zone policy is needed to protect from noise impacts.

"In terms of visual impact, this is again wholly related to the circumstances of a particular site, and the screening and topography between the development and the relevant dwellings. Intervening trees and buildings may well mean that there is little or no intervisiblity between site and receptor, even with a very tall drilling rig.

There are no other impacts on residential amenity raised by the Council, that could possibly justify the policy."

As stated in the opinion the policy is **not** justified given the fact that many onshore oil and gas sites across the country have been given consent and have operated within 500m of residential or other sensitive receptors including in North Yorkshire, (some of which have operated without the need for mitigation measures) as is evidenced from the table below which outlines recent consents/operational activity undertaken by the four main operators represented in this response:

Table 1 – recent consents/operational activity undertaken

Wellsite name	***Location***	**Distance to**						
Kirby Misperton A Wellsite	Kirby Misperton – North Yorkshire	265 metres	YES	<u>Drilling</u> 50dB(A) LAeq, 1h (free field) <u>Workover</u> 55dB Laeq (1 hour) <u>Frac</u> 60dB Laeq (1 hour)	<u>Drilling</u> 42dB(A) LAeq, 1h (free field) <u>Workover</u> 46dB Laeq (1 hour) <u>Frac</u> 42dB Laeq (1 hour)	C	02/03/2012	Drilling 06-Jun-13 W/O and Frac ops 14-Oct-17
Kirby Misperton B	Kirby Misperton – North Yorkshire	385 metres	YES	40dB L_{Aeq} (1hr)	40dB L_{Aeq} (5min)	C	15/09/2006	23-Jun-09
Malton A	Great Habton – North Yorkshire	165 metres	YES	45dB L_{Aeq}	45dB L_{Aeq} (5min)	C	Sep 2008	Original well 1970

Wellsite name	***Location***	**Distance to Closest Residential Receptor from edge of pad (metres)**	**Noise Condition set (Yes/No)**	**Noise Condition Values** **Day**	**Noise Condition Valve** **Night**	**Delegated (D) Committee (C) Appeal (A)**	**Date well consented**	**Date last well spudded**
Malton B	Great Habton – North Yorkshire	385 metres	YES	41dB L_{Aeq} (1hr)	41dB L_{Aeq} (5min)	C	Jul 1985	Late 1985
Marshes	Low Marishes – North Yorkshire	389 metres	YES	40dB L_{Aeq} (1hr)	40dB L_{Aeq} (5min)	A	26/04/2010	31-Jan-12
Pickering	Pickering Showground – North Yorkshire	204 metres	YES	W/Over None specified - *earlier consents gave 40dB(A) L90 and 50dB(A) L10 0700 to 1900*	W/Over 45dB Laeq (1 hour) Production 42dB Laeq (1 hour)	C	Work over 4/8/2016	Well 2009
Tinker Lane	Blyth – Nottinghamshire	630 metres	YES	55dB Laeq (1 hour)	42dB Laeq (1 hour)	C	24/05/2017	27/11/18

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Wellsite name	*Location*	Distance to Closest Residential Receptor from edge of pad (metres)	Noise Condition set (Yes/No)	Noise Condition Values Day	Noise Condition Valve Night	Delegated (D) Committee (C) Appeal (A)	Date well consented	Date last well spudded
Springs Road	Misson – Nottinghamshire	268 metres	YES	55dB Laeq (1 hour)	42dB Laeq (1 hour)	C	24/05/2017	Not spudded yet
Ellesmere Port	Portside North – Ellesmere Port	600 metres	YES	55dB Laeq (1 hour)	42dB Laeq (1 hour)	D	15/01/2010	15-Nov-14
Marsh Lane	Marsh Lane, Ince – Chester	700 metres	YES	No restriction	42dB Laeq (1 hour)	D	26/04/2010	4- Nov-2011
Preston New Road	Little Plumpton – Lancashire	280 metres	YES	55dB Laeq (1 hour)	39dB Laeq (1 hour)	A	06/10/2016	11-Jan-18
Anna's Road	Peel Lancashire	510 metres	YES	55dB Laeq (1 hour)	42dB Laeq (1 hour)	C	22/11/2010	21-Nov-12
Grange Hill	Singleton, Lancashire	450 metres	YES	55dB Laeq (1 hour)	42dB Laeq (1 hour)	C	23/05/2010	15-Apr-11

Wellsite name	***Location***	**Distance to Closest Residential Receptor from edge of pad (metres)**	**Noise Condition set (Yes/No)**	**Noise Condition Values** **Day**	**Noise Condition Valve** **Night**	**Delegated (D) Committee (C) Appeal (A)**	**Date well consented**	**Date last well spudded**
Becconsall	Banks, Lancashire	200 metres	YES	55dB Laeq (1 hour)	42dB Laeq (1 hour)	D	21/10/2010	13-Oct-11
Preese Hall	Singleton Lancashire	450 metres	YES	55dB Laeq (1 hour)	42dB Laeq (1 hour)	D	21/08/2009	16-Aug-10
Balcombe	Balcombe, West Sussex	340 metres	YES	55dB Laeq (1 hour)	42dB Laeq (1 hour)	D	23/04/2010	05-Sep-13
Elswick	Elswick, Lancashire	390 metres	*N/A*	*1994 pp – no on-line record*	*1994 pp – no on-line record*	*C*	*05/94*	*No online record*
Biscathorpe-2	Biscathorpe – Louth - Lincolnshire	500 metres	YES	42 dB LAeq, 1hr	42 dB LAeq, 1hr	C	14/05/2018	07/01/2019
North Kelsey-1	Market Rasen - Lincolnshire	720 metres	YES	37 dB LAeq, 1hr	30 dB LAeq, 1hr	C	14/05/2018	NA (Planned Well)

Wellsite name	*Location*	Distance to Closest Residential Receptor from edge of pad (metres)	Noise Condition set (Yes/No)	Noise Condition Values Day	Noise Condition Valve Night	Delegated (D) Committee (C) Appeal (A)	Date well consented	Date last well spudded
Dukes Wood-1	Kirklington – Newark - Nottinghamshire	200 metres	YES	55 dN Laeq (1hr)	34 dN Laeq (1hr)	D	10/10/2008	12/01/2010
Burton on the Wolds-1	Burton on the Wolds - Leicestershire	500 metres	YES	45dB (A) LAeq	42dB (A) LAeq	C	23/09/2013	18/10/2014
Harthill	Common Road, Harthill,	835 metres	Yes	50dB Laeq (1 hour)	42dB Laeq (1 hour)	A	07/06/2018	NA (Planned Well)
Bramley Moor (#2)	Marsh Lane	343 metres	Yes	47dB Laeq (1 hour)	42dB Laeq (1 hour)	A	16/08/2018	NA (Planned Well)
Doe Green	Farnworth Road, Warrington	200 metres					18/11/2010	04-Sep-11

UKOOG notes the proposed removal of the phrase "high level of protection" and replacement with "protects local communities".

As previously commented the industry believes that no justification or explanation has adequately been put forward to explain "high level of protection" and similarly the same goes for "protects local communities". The whole point of planning practice guidance is to do just that, and the industry seeks on a case by case basis to put mitigation in place to ensure that levels within planning practice guidance are met. Despite the further proposed changes to the policy it remains totally unacceptable and contrary to national policy and guidance.

4. The main issue for discussion is: *Whether the 500m zone in Policy M17, 4) i) as modified is properly justified and consistent with the WMS. If not, could a smaller zone be properly justified, or should any stand-offs be determined on a site by site basis at the application stage? What is meant by "a high level of protection" in the proposed schedule of modifications or the alternative wording "protect local communities", which is now being suggested? How does this differ from the level of protection the industry would be required to demonstrate in any event?*

The WMS clarifies that Minerals Plans should be, *'consistent with Planning Practice Guidance, policies should avoid undue sterilisation of mineral resources (including shale gas)'* and that *'plans should not set restrictions or thresholds across their plan area that limit shale development without proper justification'.*

The current draft plan, and most particularly the matters relating to hydrocarbons and the proposed policy (M17) to provide a 500m buffer zone to residential and other sensitive properties is contrary to the statement of the WMS.

Our conclusion therefore is that specific reference to a 500m buffer zone should be excluded from the policy as proposed and modified as it is directly counter to the WMS and its retention in its current form would make the policy and plan unsound.

Extracts from NLQC opinion – 3rd April 2018

> *'4. In my view it is plain that the buffer zone policy in M17 does not meet the tests for soundness in para 182 of the NPPF. The four tests are that the plan should be positively prepared, justified, effective and consistent with national policy. The two main issues that arise here are the lack of evidential justification for the policy, and its plain inconsistency with national policy.*
>
> *5. The purported justification for the buffer zone is the impact on residential amenity from the proposed development. However, the Council have not produced any evidence to show any specific impacts which would justify such an approach. In terms of noise, the NPPG sets out specific noise levels for hydrocarbon development, which would need to be met on each site. These levels will be set out in appropriate conditions. The level of impact of noise from the development will be greatly influenced by local conditions, such as proximity to other noise generators such as a road. A buffer zone policy fails to take into account those individual circumstances and therefore would need very strong evidence to be justified.*

6. On the facts of hydrocarbon development, residential amenity can and will be protected to an acceptable degree without any buffer zone requirement, through the normal imposition of appropriate conditions. Secondly, it is a matter of record that hydrocarbon developments have been approved both in North Yorkshire and elsewhere with development much closer than 500m to dwellings. With the protection of the appropriate conditions occupiers have been fully protected. There is simply no evidence that the buffer zone policy is needed to protect from noise impacts.

7. In terms of visual impact, this is again wholly related to the circumstances of a particular site, and the screening and topography between the development and the relevant dwellings. Intervening trees and buildings may well mean that there is little or no intervisiblity between site and receptor, even with a very tall drilling rig.

8. There are no other impacts on residential amenity raised by the Council, that could possibly justify the policy'.

Any policy wording which starts with the presumption of a 500m buffer zone is unsound because:

- If a buffer policy applies then when an applicant makes a planning application the assumption will be that the exclusion of operations within this buffer is justified, and therefore the operator must justify the departure from the policy assumption.

- This is an extremely onerous burden, and for this policy to be sound the Council must justify with evidence why it is necessary – and in particular why the application of normal planning policy and site-specific assessment of potential impacts on a case-by-case basis will not adequately safeguard residential amenity.

The industry has committed to undertaking an EIA for all operations involving hydraulic fracturing (as defined by the infrastructure Act 2015) and as such it will be necessary to carry out an environmental assessment of any potential impacts, considering issues such as noise likely to be generated above background/existing levels, and to propose mitigation measures to bring those impacts down to acceptable levels.

However, circumstances will vary hugely on a case-by-case basis. At the hearing on 13 April 2018 we gave the following examples to demonstrate how unjustified (and therefore unsound) such a buffer zone policy is:

- **A house situated on a busy, noisy, well-lit A-road (100m from a well pad) -** If a well pad were proposed on the opposite side of such a road, it is highly unlikely that the noise of the drilling operations or the light from such operations would make a significant difference to the levels of noise and light already experienced by residents. Yet the buffer zone policy would mean that such a house would benefit from extra protection and the operator would need to justify why in these site-specific circumstances consent should be granted.

- **A house situated 510m from a well pad, in a very dark and quiet field** – In such circumstances the buffer zone policy would NOT operate to afford the same high level of protection afforded

to houses within the 500m buffer zone (like the house on the A-road described above). Such a house would, it seems, benefit from a lower standard of protection in planning policy terms.

In the absence of a buffer zone each of those properties are required to be assessed for impact individually with each of them being afforded the same level of assessment and, if required, bespoke protection.

The above examples demonstrate that it is illogical to apply an arbitrary buffer zone policy which attempts to apply a higher standard of protection to properties within a certain zone as there will be site specific factors to consider.

The Council has claimed that the 500m buffer provides clarity to potential developers about where development is likely to be authorised. However, from the above analysis it is clear that it will cause great confusion for applicants rather than clarity.

In addition, it is likely to prevent investment in oil and gas development throughout the region. No potential investor will be willing to take the risk of promoting a planning application for a site within 500m of residential housing against this buffer zone policy – regardless of whether some rather vague caveats apply within the policy.

The industry believes that the policy as proposed will have a sterilising effect. It is not the role of planning policy to allay fears or provide reassurance but to safeguard local amenity by thoughtful consideration of planning decisions made. However, this is most appropriately done on a case-by-case basis, looking at the circumstances of an individual application.

Legally, the onus is on the joint authorities to justify why the proposed policies are "sound". For the reasons set out above, it is clear that they have not done so. While the PPG states that authorities should include policies setting out the "*criteria for the location and assessment of hydrocarbon extraction"* (PPG 106), any environmental criteria set out in local plans must be *"in line with the NPPF"* and required *"so as to ensure that permitted operations do not have unacceptable impacts"* (NPPF 143). **The joint authorities have not demonstrated they have met this requirement**.

5. I would like to get a better technical understanding of what the potential impacts of hydraulic fracturing might be on nearby sensitive receptors within this 500m zone. Information should be provided on whether there are reasonable prospects of mitigation measures being used to reduce impacts to an acceptable level within this zone

Reference should be made to the response to point 13 below which looks in detail at the impacts and mitigation for a typical onshore oil and gas development.

Point 5 makes specific reference to the process of hydraulic fracturing which is a small part of the overall process undertaken at an onshore oil and gas site and is only undertaken if the geology requires stimulation **to ensure** that oil or gas flows to the surface in commercially viable quantities.

The industry believes it is important to distinguish between the differing stages of hydrocarbon development and the potential impacts as shown in the table below.

Each site will have individual characteristics but for the general purposes of this document, operations have been grouped into three broad stages of activity. It should be noted that stage 1 and 2 could be a continuous process depending on the success of stage 1. If stage 1 is not successful, the site would be restored; similarly with stage 2. Operators will ensure that communities are aware of potential variations from these principles for specific local reasons and will ensure that such variations are adequately explained.

Table 2: Stages of Development

Stage 1 – Exploration	Stage 2 - Appraisal	Stage 3 – Production
Exploration typically takes the form of an Operator seeking planning consent to drill a well which will normally consist of a vertical well and potentially a small number of lateral extensions. These wells are designed to log and take samples of rock ("core") in order to acquire the geological data from the potential hydrocarbon layers of interest. A rig and associated equipment will be deployed to drill the boreholes. As hydrocarbons are unlikely to be produced, flaring is not typical at this stage and will only be deployed if required for short term safety issues as required by the Environment Agency. A lighting plan will be approved by the local authority alongside a traffic management plan and noise monitoring procedures put in place to meet noise planning conditions. Typically, operational activity at an exploration site spans two to four months after which time the site is normally vacated.	Following data appraisal, Operators may then decide to flow test the well prior to making any further commercial decision. This may also involve at this stage undertaking one or more hydraulic fracturing procedures, depending on geology. Hydraulic fracturing will involve an additional planning consent and a full environmental impact assessment as volunteered by the industry irrespective of the formal need for such. A small workover rig will be deployed to ensure the well is ready for hydraulic fracturing. Visual impact will be less than exploration as a main rig will not be required. The main source of noise will be from the frac pumps. Lighting is unlikely to be significantly different from exploration but potentially have a smaller impact in the absence of a rig. Flaring is likely to take place under environmental permits and will be time limited. Flaring will be used to the point where it is commercially viable to move to a production phase or may be linked into local transmission lines or used to generate electricity if a connection to the grid is possible immediately. Surface operations typically tend to last 4 to 12 months, with on-site activity diminishing as the longer-term flow testing is undertaken.	Once commerciality of the development has been determined, planning consent will then be sought for a full production site and a pad or field development plan (FDP) will be submitted to the Oil and Gas Authority. The submission of the FDP by the Operator marks the start of the production phase. A production pad may differ in size from location to location depending on the specific geology and surface location but will typically contain a number of vertical wells and associated underground laterals on a site which would be approximately two hectares in size (five acres). Flaring will only be required for safety reasons as the gas will be collected either through existing grid pipelines or through permitted gas to grid technology. Noise will come from both drill rigs and frac pumps but will be for a limited period. The vast majority of the design life of the site will have limited noise impacts. At this stage associated equipment such as pipelines and gas processing facilities will be required and will be constructed subject to additional planning applications. Once drilling has been completed surface activity will diminish significantly as wells start to produce gas. There will be no rigs and no frac pumps left on site. The most visible aspect will be a series of pipes often termed a Christmas tree approximately 6.5 feet in height. Picture 1 below shows a typical gas producing site.

Picture 1: Doe Green gas production site, 4 wells drilled c2010

Hydraulic fracturing is what is termed by the industry as a well completion technique and occurs after the site has been fully constructed and the well(s) drilled to the target depth (typically over 2000m below the surface). The process involves pumping at pressure a combination of water (c95%), sand (or other approved proppant) (c4.5%) and approved chemicals (c0.5%) into the target geological formation in order to create tiny hairline fractures in the rock to allow the oil or gas to flow to the surface. The chemical approval process, which must involve chemicals non-hazardous to groundwater, is regulated extensively by the EA with respect to the handling of chemicals at the surface, injection into the target formation and the risks posed to groundwater. Furthermore, the EA regulate fracture growth inside an agreed sub surface boundary. All of these activities are covered by environmental permits, which the operator will only receive once it has met the requirements of the EA. The issue around micro-seismicity is regulated by the Oil and Gas Authority (OGA) through the hydraulic fracture plan (HFP) and also by BEIS through the infrastructure Act 2015, and hydraulic fracturing consent (HFC). Finally, the well integrity is continuously monitored by the Health and Safety Executive (HSE) and their strict regulations, such as the requirement to conduct regular testing to demonstrate sound well integrity.

The impacts that are within the regulatory oversight of the MPAs are those that are normally associated with all onshore oil and gas development (as well as other development) namely noise, light, landscape and visual impact and transport movement.

The only high-volume hydraulic fracturing activity that has taken place onshore in the UK in the last six years under the current regulatory regime has been in Lancashire at the Preston New Road Site run by Cuadrilla in the last quarter of 2018. As can be seen from the table in response to point 3, the site is 280m from the nearest receptor.

Currently hydraulic fracturing has taken place outside of night time hours by planning condition. However, the same review of impacts and mitigation would apply if 24/7 operations were undertaken as they were for drilling activity.

The relevant potential surface impacts at PNR were:

- Noise from the frac pumps which was controlled by planning condition and was achieved through mitigation with acoustic housing of the frac pumps.

- Associated traffic movement from the delivery of sand, chemicals and diesel and staff turnaround. Traffic planning and storage on site to allow buffering of materials and smoothing out peak traffic flows were classic mitigations.

- Air quality was monitored as the pumps and trucks used diesel and the levels were kept within environmental permits.

- Storage of chemicals and sand were required on site; however, storage units were low lying (<5 – 10 metres high).

- Lighting remained consistent with normal well operations and did not change substantially with hydraulic fracturing.

In addition to the above impacts hydraulic fracturing will involve the use of water. Where possible operators will choose sites that have access to mains water in order to avoid the need to truck water onto site. This arrangement will be through a commercial arrangement with the local water company who as part of the infrastructure act 2015 are a statutory consultee to the planning process and will be able to make representations and, if acceptable define appropriate parameters. In addition, UKOOG has memorandum of understanding with the main water trade bodies to ensure that both industries work together so there is no impact to residential water supplies. In the absence of a local water supply the operator may decide to abstract water from local boreholes. This is a process that is regulated under permit by the Environment Agency as with other industries.

The potential risk of impacts associated with any form of proposed development are entirely dependent on the local context in which a development is to be situated. There can be no 'one size fits all' approach to assessing avoidance, mitigation or compensation strategies that may be necessary at a particular site.

The natural and built environment 'receptors', vary significantly from location to location, as do the potential 'pathways', which may present an opportunity for the risk to be realised. The 'source, pathway, receptor model' is an internationally recognised analytical and assessment tool through which environmental impacts are routinely assessed, being recognised as best practice by UK regulators.

It is standard practice for an assessment of the potential impacts of a proposal to be considered through an EIA (Environmental Impact Assessment), which must be undertaken for projects that meet certain criteria, utilising techniques such as the 'source, pathway and receptor' model. In the case of Shale Gas sites, EIA is likely to be mandatory where the proposal involves high volume hydraulic fracturing. Notwithstanding any screening request under schedule 2, UKOOG members have already agreed to voluntarily conduct an EIA when hydraulic fracturing is proposed (based on the definition of hydraulic fracturing within the infrastructure Act 2015).

Transparent guidance[i] on how EIA should be applied is already provided by Government within the existing regulatory framework, ensuring that site specific mitigation measures can be identified and implemented, reducing the impacts on the natural and built environment to an acceptable level where impacts cannot be 'avoided' through alternative design or modification to operational practices.

Potential issues such as 'nuisance', from noise, dust or light; alongside traffic, air, biodiversity and visual/landscape impacts are all dependant on the local context of the development, likewise any avoidance or mitigation strategy is equally unique to a site and its surroundings.

The industry has to work minerals where they are found and therefore a geology first approach will be taken. However outside of the geology first approach, and site acquisition, site selection will clearly be key to reducing impact.

For onshore oil and gas sites, typical avoidance or mitigation strategies might include:

- Piping of mains water to site to reduce traffic movements
- Physical screening/attenuation barriers deployed during certain activities or permanently installed
- Modified equipment designs (e.g. quieter, quicker, or less visually intrusive)
- Modified civils design (e.g. equipment installed below ground or alternative materials)
- Modified working hours
- Use of alternative access routes, either permanently or at certain times of the day or night
- Reuse of materials on site to avoid unnecessary traffic
- Use of alternative modes of transport such as crew buses to limit vehicle numbers
- Liaison with neighbours such that impacts are reported as early as possible
- Operator local surveys during operations to ensure mitigation is operational (e.g. light out-spill or noise)

The potential environmental impacts associated with onshore oil and gas developments are not unique, in development terms, to any other development and compared to some will be temporary in nature.

The joint authorities identified in previous submissions that their justification for a buffer zone is based on noise, light and landscape issues. However, they did not demonstrate why their existing controls/powers in these areas were inadequate to control surface impacts from hydraulic fracturing which is a specific sub-surface well completion technique.

Answers to other points raised in this response, identify the common practice used to mitigate against these impacts on a case by case basis and which can be controlled by planning condition.

6. The MPAs should build on their *"Supplementary note about the 500m distance for hydrocarbons development"* (LPA/89) with more technical detail. I am particularly interested in noise and why the MPAs believe it is generally unlikely that noise could be mitigated to an acceptable level within this zone without creating other unacceptable impacts.

While this point is for the MPAs to provide information, the industry makes the following observations:

- The table in point 3 evidences onshore oil and gas development that proved acceptable including within North Yorkshire within 500m of residential buildings and sensitive receptors.

- Other MPAs have policies which seem to provide comfort, for example in the recently reviewed Chester West and Chester local plan the MPA has published its proposed modifications for consultation. Policy 4 relating to proposals for exploration, appraisal or production of hydrocarbons states that proposals for all stages of oil and gas development (exploration, appraisal and production) will be supported where they meet certain environmental criterion. Criterion 3 is proposed to be modified so: "*it can be ensured that any noise and/or vibration is controlled, mitigated or removed at source so that proposed noise and/or vibration levels are acceptable and will not have a significant detrimental impact on residential amenity or human health, in line with Local Plan (Part One) policy SOC 5. Where there is potential for a proposal to result in noise or vibration impacts which affect residential properties, or other sensitive receptors, the applicant must undertake a noise / vibration impact assessment. Some noisy short-term activities, which may otherwise be regarded as unacceptable, are unavoidable to facilitate minerals extraction. Proposals must, however, minimise noise levels and apply best practice in noise reduction; The proposal should not result in an unacceptable rise in background noise levels at the nearest sensitive receptors, in line with current Government guidance; and Local Plan (Part Two) policy DM 30;*"

We specifically draw to the attention of the Inspector, the section within the attached noise report that addresses the noise specific issues raised by the joint authorities in their supplementary note.

In terms of the other two issues mentioned in LPA89 Light and visual impact, the local authorities have not come up with any justification for a 500m buffer zone outside those impacts that are already covered in planning practice guidance. The joint authorities actually conclude "The Authorities accept that in the circumstances of individual cases acceptable separation distances could be achieved depending on factors including topography and mitigation measure (and KM8 was approved with sensitive receptors within 500m).

7. The MPAs should explain why technically a 500m zone was chosen as opposed to a smaller zone, and why any Plan-wide zoning is required at all rather than leaving it to a site by site assessment at the application stage.

While again this is for the MPAs to respond, the industry wishes to refer to previous comments made about the soundness of imposing any buffer zone and in particular of a review of the MPAs supplementary note as in appendix 3.

8. I note at the Kirby Misperton site, the MPA granted permission for development at distances of 300m and 210m from the wellsite to Noise Sensitive Receptors. Does this indicate that a 500m zone across the Plan area is too great? If lesser distances were acceptable at Kirby Misperton, could lesser distances be acceptable for other applications and, if so, should the Plan be more flexible?

As above, this is for the MPAs to respond; however, the industry would refer to previous comments made about the soundness of imposing any buffer zone and to the fact that many sites have successfully been consented within 500m by both planning committees and planning inspectors.

9. Could the zonal issue be overcome by inserting a need for pre-permission testing? For example, might it be helpful to consider trial runs or field tests prior to planning permission being granted?

As part of any planning application, individual operators will have to present to the local mineral planning authority a review of the relevant risks and proposed mitigations. In terms of the issues under the auspices of the joint mineral authorities that were highlighted as justification for a 500m metre buffer zone these included noise, visual impact and light pollution.

In order for any field tests to be undertaken there would be a need for some form of construction activity to take place. For example, to test the noise levels of a rig or a set of frac pumps an area of hardstanding (a pad) would need to be created alongside the appropriate membranes and bunding as identified by the EA. Without such hardstanding the rig could not be safely deployed without the risk of falling over.

Aside from the practicalities, the industry is concerned that any form of pre-application testing would still in itself need planning permission and therefore elongate the process even further than is already required. In addition, any form of test would also need the permission of the other regulators and potentially an additional set of environmental permits from the EA as well as permissions from the OGA and the HSE.

This additional step would not only increase the regulatory burden but the cost as effectively the site would still have to be developed to the necessary standards and all of the proposed site equipment would need to be on site for the test – some of which may need to be shipped from outside the UK at considerable cost (several millions) for a short test. This would involve additional traffic movement and increased disruption to local communities, something the industry is keen to avoid.

All of these impacts are already adequately modelled with mitigation as part of the overall planning process without the need for any form of pre-application testing. This modelling by its very nature would need to be completed on a site by site basis.

In addition to the modelling there is already a strict process in place for monitoring these impacts either by direct measurement or site visits.

10.The industry has produced an interactive map of the coverage of the 500m zone within the Petroleum Exploration and Development Licence areas. I invite the industry to demonstrate this map and to illustrate how the coverage changes as the zone decreases

UKOOG has produced an interactive model based on OS residential address point data and using GIS software applied a 500m zone around each residential address point. This has then been applied to google maps to allow easy reference and to allow a zoom in function. It is not possible to release the model publicly through google maps without revealing the OS data. The OS data was externally purchased and is subject to copyright restrictions and therefore a general release of the model cannot

be achieved. We are able to share the mapping data with the MPAs, for them to ensure they are happy with it, as they have OS licences. We are also able to physically demonstrate the interactive model during one of the days of the hearing.

We reiterate our comments made previously that it should not be the role of the industry to show the impacts of a local plan policy, but for the joint mineral planning authorities to show that their policies do not constitute an unacceptable and unnecessary restriction on the industry contrary to national policy and the WMS.

Given the significant resource required, it has not been possible to show anything other than the 500m policy in action.

11.The WMS refers to the Government's desire to work with the industry on innovation to create a "UK Model" with the aim of being the world's most environmentally robust onshore shale gas sector. Would the industry explain how they might respond to this challenge?

The WMS recognised the world class regulatory system in the UK. This includes well integrity standards and environmental regulations which are already established, functioning and fit for purpose, a robust monitoring system to identify issues early and a consultation process that spans planning and environmental issues.

The onshore oil and gas industry in the UK has consistently gone beyond regulatory requirements. For example:

- In 2013, the industry announced that it would voluntarily disclose all chemicals used in hydraulic fracturing solutions.[ii]
- In 2013, the industry also announced a community engagement charter which outlines the best practice required of the industry.
- In 2014, the industry pledged to carry out environmental impact assessments (EIAs) for all sites involving high volume hydraulic fracturing (as subsequently defined by the Infrastructure Act 2015), even if the site is below the EIA threshold.[iii]
- In 2015, a comprehensive baseline environmental monitoring guideline was agreed.[iv]

More recently (outside of emergency provision) we have agreed to introduce flareless technologies ('green completions') for our production sites.

At the same time, the UK Geo Earth Observatory, led by the British Geological Survey and the Natural Environment Research Council, will generate world-leading science to inform public debate. The Observatory (formerly known as the Energy Security and Innovation Observing System) was previously awarded government funding.[v]

The WMS in May 2018 announced a number of initiatives, some of which have been progressed and are in the process of consultation. Included in the WMS was a desire to create a UK Model based on the comment made by the Secretary of State for BEIS in the industrial Strategy ***"There is huge potential right across the country for safe and sustainable use of shale gas, to provide a clean long-term energy source and create British jobs and growth."***[vi]

At present there has been limited discussions on the work required to create a UK Model. Until informative discussions start around the parameters of a UK model, the industry is not in a position to discuss the final scope of what could be in a UK Model.

The industry expects that the UK model will build on the strong regulatory position the UK currently has, particularly with respect to environmental standards which are stronger than most of the rest of the world.

The discussions around the UK model are likely to include developing new technology in terms of innovative methane emission monitoring, onsite waste water re-use and management and the use of gas or electric engines and generators with the objective of reducing onsite emissions and 'nuisance impacts', such as traffic.

The first stage is likely to involve research and development with a number of academic institutions and partners in which the UK will wish to combine these outcomes with the regulatory system and the community benefits scheme to be used not only in the UK but across the world. There will also be discussions regarding skills and training in line with the Industrial Strategy.

There however can be no certainty at this stage on the timescale involved in either the discussions or the outcomes and so, for the purposes of this plan, the UK Model is not considered relevant.

12. Is there any potential for reducing operational impacts such as by using radically quieter machinery or by using different working practices? For example, I understand that the sound power levels of dump trucks have reduced significantly in recent years. Are there any less noisy materials on the horizon for drilling (eg the use of ceramics) or any radically new technology (changes in drilling techniques or generator technology)? What is the reason for the height of drilling rigs? Is there potential for shortening them?

The oil and gas industry, both onshore and offshore, across the world continues to innovate and introduce new technology to meet greater environmental standards or to increase economic productivity. For example, the introduction of lateral drilling 40 years ago has had a significant impact on the industry's ability to reduce physical footprints, also the introduction of 3D seismic imaging and new drilling techniques has increased recovery rates in the US.

The issues related to noise are covered in the attached noise report (appendix 1).

Drilling materials and/or equipment chosen for use on a specific site, will be selected according to the specific geology and other 'physical' characteristic of site, but it must also meet the site-specific environmental requirements to comply with regulation. For example, substances intended for use in the ground, must be approved as non-hazardous to ground water by the EA.

In terms of the specific question around ceramics. A proppant is required as part of the hydraulic fracturing process essentially to keep open the tiny fractures created. In most cases across the world sand is the dominant proppant used. However there have been cases where ceramic beads have been used. Handling of any proppant will have no noise impact at surface relative to the overall operations.

On the basis of the noise report, it can be concluded that not only has the industry been actively developing quieter technology for many years, but that there is currently significant effort within the industry to improve further.

In terms of rig height – there is a balance to be struck across a several different issues. Firstly, the rig needs to be suitable with respect to the geology being drilled, secondly the rig needs to comply with the noise limits in planning practice guidance, thirdly the rig needs to fit the physical constrains of the

site and finally needs to be commercially available. The actual height of the rig is not only a function of the length of the rig itself but also of what is physically below the rig. There will be a need to house specialised equipment such as blowout preventers or diverters below the rig floor.

All operators, given the nature of the planning process will not be able to ascertain with certainty the commercial availability of specific rigs and will therefore seek to provide the worst-case scenario in terms of noise and height, and design appropriate mitigation on that basis.

It should also be noted that there is a potential balance between the length of time a rig spends on site and nuisance it causes. Taller rigs enable wells to be drilled more quickly and will therefore be on site for a shorter period, but they may also be slightly noisier than smaller rigs, or require different sound attenuation to be provided, which may have visual impacts. For example, a recent geothermal project in Cornwall was granted permission for a 55metre rig with no noise restrictions.

We draw to the attention of the inspector evidence presented by Andy Sloan at the recent planning appeal regarding Bramleymoor Lane[vii] with respect to rig selection methodology which is extracted here:

Rig Selection Methodology

3.2 The evaluation and selection of a rig to drill the designed well is a complex decision which straddles every aspect of the well – safety and performance, engineering, permitting and commercial aspects are all considered as part of the evaluation and it is rare that a rig will be an ideal fit across the whole spectrum. Rig availability within the planned schedule is also a significant consideration, especially within the UK which has only a few rigs (relative to other parts of the world) readily available.

3.3 Initial screening criteria for the rig focuses purely on the engineering aspects. The required well design is modelled and calculations made on weights and forces that the rig must be able to provide for safe execution. This drives the size of the rig in terms of horsepower, derrick loading, top drive output and footprint.

3.4 This criteria is the most important in the first instance as the equipment must be capable of drilling the wells in the planned programme and therefore in the tendering phase, the rig specification is clearly defined and a search is undertaken of potential rigs or contractors that would meet or exceed the specification. The strategy behind choosing the rig is so it could complete a full well programme in all 3 basins (Exploratory and Test Wells). The cost saving by having a rig working consistently would outweigh the justification of changing to a smaller rig. It is also the case that a smaller rig may not decrease noise output. When a rig operates consistently great operational and Safety Health & Environmental performance is achieved.

3.5 Other rig parameters are also defined in the tender process that outline the operational criteria the rig must meet. As part of the process, information is also sought on Health and Safety performance, operational performance, noise and other environmental data, costs and availability. An evaluation matrix is constructed which weighs these aspects as required for the well programme.

3.6 As part of the evaluation process, the environmental characteristics of a drilling rig, are considered to be principally;

a. Noise output
b. Visual Impact
c. Waste handling capability
d. Transportation/Logistics considerations/constraints

3.7 Drilling rigs are not normally owned by operators and are "rented" with their own trained personnel for the duration of the work scopes. This means that the rig specification is rarely perfect and cannot always easily be modified to the operators specific requirements, just as someone could not modify a rental car with their preferred steering wheel.

3.8 Rig modifications can be very complicated and costly and it is my experience that any retro-fitting or modifications are complex. It is always the case that these bespoke modifications are at the full cost of the operator to both install and remove if not required at the end of the work programme. The quantum of these modifications can run to hundreds of thousands of pounds or more typically millions of pounds. Details of potential mitigations / modifications for noise are detailed in Appendix 1 of Mr. Fraser's Noise Proof of Evidence. It is the case that soundproofing of ground based equipment can be achieved with either full enclosures or noise barriers of various designs. For the rig itself, the top drive limits are specified at construction of the rig and to be quieter than this requires significant modifications to many rigs and sometimes with no perceptible benefit as detailed in Mr. Fraser's evidence.

3.9 It is sometimes suggested that to reduce noise impacts it is possible to operationally limit daytime working however this has a non-linear detriment effect. By only working during the day for 12 hours would result in the duration of drilling taking more than twice as long to drill the well. To limit operations to daytime drilling is estimated to add over 60% delay to the work programme for the well and would cost in the region of £2 million pounds. It is not recommended to cease drilling at night as this can introduce both safety and operational risks to the project by prolonging the period the hole is left in the open condition and the increased manual activity for tripping drill pipe in and out of the hole. The drilling fluid condition, quality of the wellbore and therefore its stability, are related to how long the hole is left open.

*3.10 It is also estimated by the INEOS team that reduction in operational parameters at night (12hrs) would increase project days by ~**34%** and cost by over £1 million.*

3.11 Partial or full enclosure of the drilling derrick or mast is both difficult to implement and costly to engineer (impacts on weight, wind loading etc) as well as potentially creating additional hazards with respect to visibility, escape routes etc. Visual amenity is also impacted. A cost estimate obtained by INEOS for complete enclosure of the derrick on a potential rig came in at over £13 million.

3.12 The rig included in the planning application is capable of drilling the proposed well and the others identified in the INEOS drilling programme across the UK. The rig used to drill the well will be specified to the Mineral Planning Authority prior to operations commencing. The rig will be equal to or better than the parameters set by this planning application.

13.Would the industry produce details of typical mitigation measures that might be employed to reduce the main impacts of development on receptors and with what potential effects? Whilst I appreciate that the application stage is the time for producing detailed assessments, it is nonetheless important at this stage to understand whether, in principle, there is potential for development to be made acceptable within this 500m zone.

Onshore oil and gas development has already been demonstrated as acceptable with 500 metres as evidenced by the large number of oil and gas exploration, appraisal and production sites that exist around the UK (and worldwide) in close proximity to residential receptors, even in quiet, rural areas and also the number of planning permissions that have been granted from local authorities, Inspectors and the Secretary of State. In many cases, operational sites are bounded by residential receptor and people walking by would be unaware of the site until they reach the site gates.

The mitigation strategy is site specific and depends on many factors including the baseline noise environment, the planning noise limits, the distance to the nearest receptors and other site-specific conditions such as screening, ground cover etc. Typically, site noise limits are defined at planning stage taking all of the above factors into account. Based on the site noise limits, it is then possible to specify noise mitigation to achieve those limits. This often involves a balance between the technical possibilities and cost to the operator, taking into account other factors such as safety and practicability. For example, whilst it is technically feasible to enclose an entire drilling rig, this might not be reasonably practical once the cost, practicality, safety implications (potential gas entrapment and potential escape routes) and other opposing factors such as visual impact are taken into account and balanced against the short duration of drilling operations (typically a few months). This balance of factors may change once the site becomes operational. For longer term operations, it is usually more practicable to install more "permanent" mitigation measures which are usually of a bespoke design for that site.

Using the list of potential impacts provided in planning practice guidance typical mitigation measures used in different phases of development are summarised in the following table:

Table 3: Mitigation measures in various stages of development

Potential			
Noise	Noise nuisance / disturbance – effects on human and ecological receptors	Careful consideration of well pad location to ensure noise effects on nearby receptors can be appropriately reduced. Use of an enclosed flare. Restricted hours of working for some activities. Best Practice Measures (BPM) including but not limited to: • Careful selection of plant and construction methods with plant conforming to relevant national, EU or international standards and regulations with respect to noise. • Careful programming so that noisier activities are appropriately planned to minimise noise disturbance for receptors. • Plant and machinery to be fitted with silencers where required and appropriately maintained in good working order. • Compressors and generators to be sound reduced models with properly lined and sealed acoustic covers. • Plant and machinery to be switched off when not in use.	Acoustic perimeter fencing. Sound absorption in enclosures to shale shakers. Sound absorption in enclosures to generators, including louvres. Enclosures to mud pumps. Rubber bushings to reduce pipework vibration. Acoustic walls / barriers enclosing drilling and fracturing operations. Enclosure of the drill rig top drive. Additional attenuators and silencers to generators.

Potential impacts cited in PPG	Impacts	Embedded mitigation (designed in)	Additional mitigation
		• Site inductions to include instructions to all personnel on measures to reduce noise.	Reduction of drilling rate outside of normal daytime working hours. Continuous (live) noise monitoring of all operations – Minerals Planning Authority (MPA) to have direct access to live data.
Dust	Emissions to atmosphere – effects on human health	Re-use of flowback fluid wherever possible to reduce HGV movements.	Local Air Quality Management (LAQM) BPM including but not limited to: • Regular off-site and on-site inspections and record keeping. • Locate dust generating machinery / activities away from receptors as far as possible. • Speed limits on site. • Damping down surfaces during dry weather.

Potential impacts cited in PPG	Impacts	Embedded mitigation (designed in)	Additional mitigation
			• Sheeting over lorries carrying dry materials. • No burning of waste. • Turn machinery off when not in use. • Wheel washing. Undertake dust monitoring (typically depositional dust, PM10 and PM2.5) before, during and after all works. Baseline data ensures appropriate reference point for all monitoring. Regular reports issued to MPA. Complaints procedures in place to properly investigate and report on any complaints received.
Air quality	Emissions to atmosphere – effects on human health	Compliance with permits issued by the EA. Use of an enclosed flare.	N/A
Lighting	Obtrusive light levels – effects on human	Adhere to Institute of Lighting Professionals (ILP) / International Commission on Illumination (CIE) guidance.	Lighting schemes for each key phase of the works to be produced setting out the embedded mitigation more

Potential impacts cited in PPG	Impacts	Embedded mitigation (designed in)	Additional mitigation
	and ecological receptors	Use the lowest powered light sources as reasonably practicable. Directional task lighting focused on working areas to minimise light spill. No light above the horizontal plane. Use site cabins / other plant to shield light for off-site receptors. Minimise the height of lighting columns as far as practicable. Observe a curfew where reasonably practicable and for operations that are not 24/7. Monitor the site on a regular basis and respond to complaints in accordance with complaints procedures.	specifically, plus an assessment of the impacts of the lighting scheme on surrounding receptors to identify the need for any further mitigation.
Visual impact on the local and wider landscape Landscape character	Localised changes to landscape character setting and views	Ensure design is optimised as far as possible whilst ensuring appropriate operational flexibility to ensure land take is minimised as far as possible.	Ensure Biodiversity Mitigation Strategy and Landscape Management Strategy have appropriate tie ins to minimise impacts on views and landscape e.g.

Potential impacts cited in PPG	Impacts	Embedded mitigation (designed in)	Additional mitigation
			landscape bunding and other landscape enhancement measures. Lighting mitigation to follow BPM and relevant guidance (see above). Operator checks during operations
Archaeological and heritage features	Effects on known and unknown heritage assets	Avoid development wherever possible in areas where significant effects are likely to arise on known archaeological and heritage features.	Programme of archaeological investigation – likely to include archaeological watching brief (strip, map, record) to record any evidence of archaeological features during all excavation works.
Traffic	Impacts of traffic growth on driver and pedestrian delay, amenity, severance, accidents and safety, and fear and intimidation	Site selection to ensure surrounding highway network has appropriate capacity to safely accommodate the proposed development.	A Traffic Management Plan to identify appropriate measures to manage traffic throughout the lifetime of the development. The plan would include measures such as but not limited to: • Vehicle and route restrictions. • Site management requirements. • Recording of HGV schedules, movements, types and regular reporting to the MPA.

Potential impacts cited in PPG	Impacts	Embedded mitigation (designed in)	Additional mitigation
			• Driver training and education. • Monitoring of traffic routes.
Risk of contamination to land	Potential contamination of surface features including water resources and effects on human health and biodiversity	Adequate storage vessels or containers (primary), bunding or double skins (secondary) and site membrane (tertiary). Site spill kits and appropriate procedures set out in site specific emergency response plans. Compliance with permits issued by the EA. Adherence to EA pollution prevention guidelines. Soil sampling prior to construction and after decommissioning to confirm no residual contamination.	Site management plan to ensure integrity of containment Surface water management plan Containment plan for firefighting run-off (damming points on local drainage, sills, etc.) Robust emergency and spill response plan
Soil resources	Displacement and loss of soil resources	Ensure design is optimised as far as possible whilst ensuring appropriate operational flexibility to ensure land take is minimised as far as possible.	Any soil that is stripped will be stored and reinstated in accordance with Defra best practice.
Impact on best and most versatile agricultural land		Avoid development on best and most versatile agricultural land wherever possible.	Any soil that is stripped will be stored and reinstated in accordance with Defra best practice.

Potential impacts cited in PPG	Impacts	Embedded mitigation (designed in)	Additional mitigation
Flood risk		Site selection to account for flood risks zones Flood risk assessment. All water contained on site by bunding, membrane (or clay liner) and perimeter ditches. Water then dealt with in accordance with the waste management plan, surface water management plan and Hydraulic Fracture Plan which could include water from the well pad to be tankered off site (including water during drilling and fracturing where it is unable to be re-used).	Where possible, surface water to be discharged locally after on-site treatment provided there is sufficient local capacity to do so.
Land stability / subsidence	Surface vibration and associated risk to human health due to surface damage (built infrastructure)	Review available geological information. Carry out risk-based geo-mechanical assessments. Monitor background induced and natural seismicity before, during and after hydraulic fracturing. Progressive approach to fracturing including a mini-fracture stage prior to the initial main fracturing stage. Monitor the extent of fracture growth during fracturing using a buried or downhole seismic equipment.	N/A

Potential impacts cited in PPG	Impacts	Embedded mitigation (designed in)	Additional mitigation
		Implementation of the Traffic Light System via the surface seismic monitoring array.	
Internationally, nationally or locally designated wildlife sites, protected habitats and species, and ecological networks	Disturbance to species and loss of habitat	Avoid development wherever possible in on designated sites and where significant effects are likely to arise on designated areas, protected flora and fauna.	Where required, avoid undertaking works during the relevant seasonal period (e.g. no works over the winter to avoid construction impacts on wintering birds, no vegetation clearance during breeding season etc.). Biodiversity Mitigation Strategy to include but not limited to: • Pre-construction surveys and continuous surveys throughout the works as required. • Improvement / enhancement of existing habitat. • Additional compensatory habitat creation. • BPM to minimise impacts during works such as: o Clerk of Works to deliver toolbox talks.

Potential impacts cited in PPG	Impacts	Embedded mitigation (designed in)	Additional mitigation
			o Lighting to be task-based, inward facing to minimise light spill. o Security fencing to prohibit fauna entering the site. o Excavations to be covered or have egress ramps. o Noise mitigation set out in a noise management plan to minimise disturbance.
Nationally protected landscapes (National Parks, the Broads and Areas of Outstanding Natural Beauty)		The Infrastructure Act 2015 already provides protection for these designated areas with respect to surface access and hydraulic fracturing.	
Restoration and aftercare;	Various across themes	Mitigation measures across a wide range of environmental themes (as set out in this table) will be implemented during restoration and aftercare and agreed with the MPA. These will vary from site to site but will in most cases not be too dissimilar to those adopted during construction (where appropriate).	
Surface and, in some cases,	Pathways and potential contamination of	Sufficient capacity within the pad drainage design to ensure any flowback waters and incoming flows can be contained within the site.	Site management plan to ensure integrity of containment Surface water management plan

Potential impacts cited in PPG	Impacts	Embedded mitigation (designed in)	Additional mitigation
ground water issues	surface and ground water sources	Membrane installation (primary). Groundwater and surface water monitoring before, during and after all site operations. Baseline data ensures appropriate reference point for all monitoring. All water from the well pad to be tankered off site (including water during drilling and fracturing where it is unable to be re-used). Site spill kits and appropriate procedures set out in site specific emergency response plans. Compliance with permits issued by the EA. Adherence to EA pollution prevention guidelines. Soil sampling prior to construction and after decommissioning to confirm no residual contamination.	Containment plan for fire-fighting run-off (damming points on local drainage, sills, etc.) Robust emergency and spill response plan

Potential impacts cited in PPG	Impacts	Embedded mitigation (designed in)	Additional mitigation
		Wells drilled and integrity tested in accordance with regulatory requirements and industry guidance. Well design to comprise a minimum two-barrier cement-sealed design. All fluids used during drilling are risk assessed and selected to meet the conditions of hydrogeological assessment i.e. use of non-hazardous chemicals to groundwater. Well integrity report issued to regulator. Plugging and abandonment undertaken in accordance with regulatory requirements and industry best practice.	
Water abstraction	Water availability Possible pathway and potential impacts to surface water	Water is sourced from mains water wherever possible via pipeline to a take-off rate agreed with the water provider; this forms part of site selection process. Water alternatively tankered in as required. Groundwater monitoring before, during and after all site operations. Baseline data ensures appropriate reference point for all monitoring.	

14.Using typical scenarios, would the industry provide a brief technical assessment (explained in lay persons terms) of the potential range of noise impacts both with and without mitigation and at various distances from Noise Sensitive Receptors for the various stages of development and for the main noise sources. How would this test against national policy/guidance?

15.The above should include a range of typical sound power levels for typical plant and machinery and how this converts to sound pressure levels at various distances under typical conditions. Tonality, impulsivity, issues over mitigating low frequency/long wavelengths should be addressed. Besides "A" weighted sound pressure levels, I would like to know whether and in what circumstances "C" weighted sound pressure levels should be used and how this affects measurements. Cumulative effects should be covered. I am also interested in flaring, light pollution and odour. Reference should be made to typical timescales for development phases; typical working hours for these phases; and typical levels of lorry movements.

With respect to the issues identified most if not all of these issues are typically governed by planning conditions. Attached as appendix 2 is the inspector's decision for Bramleymoor Lane in August 2018, which outlines typical planning conditions and relevant discussions.

Noise

In response to points 14 and 15 around noise. UKOOG has commissioned a specific report which can be found attached as Appendix 1.

Flaring

The flaring of gasses from an oil and gas site is only undertaken where there are no alternative means of using the gasses, eg injecting the gas into the grid/pipeline, or using it to generate electricity; this means that the gas is considered an 'extractive waste' and must be permitted/consented by both the EA - (to address environmental impacts) and the OGA (to manage the hydrocarbon resource).

During the life of an oil and gas site, the flaring of waste gasses may be required for two reasons:

- During the exploration phase where the quality and volume of gasses are not known and/or where it is not economic or practical to install gas grid connections or electricity grid connections for what is a temporary activity. Similarly, the direct use of well gas in small electric generators can risk damage to the equipment if the flow rate is inconsistent

- During an emergency to avoid unplanned releases to the environment

An operator is required to undertake an 'options assessment', following a standardised methodology established by the EA, to demonstrate that flaring is the most appropriate method for the management of the waste gas. For example, direct cold venting of natural gas is the least preferred option and direct utilisation is the most preferred option This technique assessment is required as part of the EA permitting process.

Types of Flares (BAT – Best Available Techniques)

The type of flare selected for use at a specific location depends on a number of technical and environmental performance parameters to comply with the current regulatory definitions of BAT. Parameters considered typically include;

- the estimated volumes of waste gasses to be combusted, (worst case)
- the estimated quality of the waste gasses to be combusted, (worst case)
- the local environmental setting of sites, and
- the duration over which the flaring is likely to take place.

The type of flare will also be dependent on the phase of activity;

- During exploration;
    - A flare will be consented, by the OGA, for a defined duration as a well test, this may include both an initial flow test, followed by an extended flow test (EWT[viii]). The flare used must meet environmental performance criteria to gain the relevant extractive waste and industrial emissions permit from the EA.
- During production;
    - Flaring during production will only be undertaken to manage unplanned releases of gasses in an emergency or where short-term maintenance is required on the site. In both cases the flare used must meet BAT requirement of environmental permits.

Modern flaring technology allows for very high combustion percentages of waste gasses, BAT is considered by the EA to be 'Enclosed Flares'; see figure 1 (extracted from PNR ES[ix] page 50.)

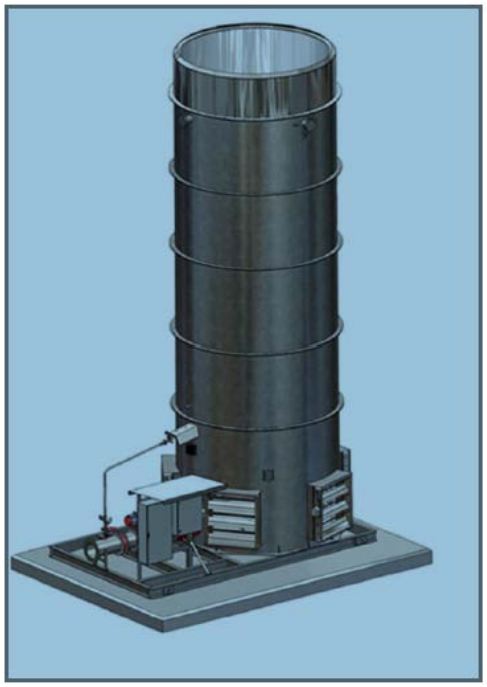


Figure 1. Indicative Enclosed Flare Stack. (Not to scale)

Typically, an enclosed flare will be around 10metres tall, as combustion of gasses occurs within the enclosed stack of the flare, flames are not visible from the ground.

The flame quality is constantly monitored to ensure high combustion is achieved and that any emissions from the stack are within permitted limits.

The design of the flare is the primary control to mitigate the noise generated by a high-pressure flare. Site selection and design, alongside the screening and shielding of the site will also play a part.

Light out spill is similarly reduced by the flare enclosure; however, it is worth acknowledging that, especially on misty evenings, a faint glow may emanate when the light of the flame is reflected and refracted by the water droplets in the atmosphere. This effect however is low intensity an unlikely to generate complaint.

Lighting

The assessment of lighting will depend on the scope of the operations being undertaken and the specific locational setting and is typically governed by a planning condition with respect to an approved lighting plan.

Drilling and hydraulic fracturing (preparation and flowback) are the main activities that could give rise to impacts because they are 24hour operations and require lighting to ensure that tasks can be carried out safely during the night. Additionally, during drilling some elevated parts of the drilling rig also require illumination and as a result there is less opportunity for the local landscape and vegetation to provide screening.

Lighting of working areas will be necessary during winter when standard working hours overlap with the hours of darkness. Low-level security lighting will be required so that site operatives and security staff can carry out their monitoring activities safely during night time hours. For security over-door low powered bulkhead luminaires will be present onsite cabins and stores throughout the duration of the project. These will be similar to domestic lights.

Potential significant effects will be mitigated by:

- Following lighting industry best practice for the arrangement of lighting on site,
- Using covers to prevent light spilling outside of the areas requiring illumination; and
- Using low powered lighting to illuminate other areas of the site that require lighting.

By implementing these measures, the lighting used by the project can be kept below lighting limits for light into windows and overall light intensity. As a consequence, the residual effects are not significant.

The mitigation measures described above will also reduce the magnitude of the project's impact on sky glow and building luminance levels from the equipment at the site and the surface of the well pad, the level of effectiveness of the mitigation will depend on the background levels of night time light sources around the site. Any cumulative impacts of other projects will need to be taken into account.

The consequences of light obtrusion are more commonly associated with the loss of dark night skies, loss of visibility of stars, perception of an unsatisfactory nocturnal environment and the harming of wildlife habitats. It has four associated characteristics:

- Skyglow - a combination of direct upward light and indirect upward light. This effect is often

seen as a glow in the night sky;

- Spill Light - i.e. this includes the spill of light from a badly aimed floodlight straying beyond the task area such as light into windows or a neighbouring property;
- Source Intensity - how bright the source appears to an observer; and
- Façade or Building Luminance - i.e. the 'brightness' of a façade or excessive lighting on a building façade

Ideally, any light should only be directed onto the task area and not beyond. In many cases, light obtrusion can be significantly reduced without detriment to lighting of the task by correctly aiming floodlights, selecting more efficient floodlight optics or simply switching off any unnecessary external lighting.

Local authorities have powers through legislation to consider obtrusive artificial light as a Statutory Nuisance. Specific legislation and guidance include the following:

- **Environmental Protection Act 1990, Clean Neighbourhoods and Environment Act 2005:** The Clean Neighbourhoods and Environment Act renders 'exterior light emitted from premises so as to be prejudicial to health or a nuisance', a statutory nuisance.

- **National Planning Policy Framework (NPPF):** National planning policy relating to the impact of external lighting proposals is contained within Section 11; Conserving and enhancing the natural environment. Specifically, any assessment should have regard to paragraph 109, which states that the planning system should contribute to and enhance the natural and local environment. In addition, this assessment should consider paragraph 125 which states: By encouraging good design, planning policies and decisions should limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.

Guidance: Typically, applicants will use a range of guidelines and design documents in their assessment:

- The Landscape Institute and Institute of Environmental Assessment: Guidelines for Landscape and Visual Impact Assessment, 3rd edition, 2013
- DEFRA: Statutory Nuisance from Insects and Artificial Light. Guidance on Sections 101 to 103 of the Clean Neighbourhoods and Environment Act 2005.
- Institute of Lighting Professionals (ILP) Guidance Note for the Reduction of Obtrusive Light (GN01):2011;
- Commission Internationale de l'Eclairage (CIE) 150: Guide on The Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations;
- CIE 126: Guidelines for Minimising Sky Glow;
- CIE 136: Guide to The Lighting Of Urban Areas;
- The Chartered Institution of Building Services Engineers (CIBSE) LG6 The Exterior Environment;

- BS EN 12464 Part 2 Outdoor Lighting;
- CIBSE Environmental Considerations for Exterior Lighting (Factfile No.7: 2003); and
- CIBSE Lighting Guide 6: Outdoor Environment.

The exact lighting arrangements for the site during the drilling stage will depend upon the drilling rig that is used, the position, orientation and type of lights and luminaries mounted on the rig and other equipment. Lighting design software will typically be used to test a typical, best practice, lighting scheme for the site against the guidance. Mitigation for the construction phase will only be required if construction occurs between the months of October and March and the use of temporary works lighting will be minimised in terms of frequency and duration wherever possible. In addition, the following measures will minimise risk of adverse effects on residents and wildlife:

- Confining lighting to the task area (using horizontal cut-off optics and zero floodlight tilt angles);
- Orientating floodlights away from any dwellings; and
- Operate a curfew and minimise the duration of any floodlighting.

Mitigation

All lighting will be installed and arranged with reference to current health and safety requirements and lighting design best-practice, to establish the feasibility of using a lower impact lighting scheme.

All task and operational lighting will be verified by a competent lighting design engineer to ensure compliance with the guidance. The impact of any obtrusive light effects on the nocturnal environment will be reduced by applying the following measures as applicable:

- Adherence to guidance.
- Use the lowest powered light sources as reasonably practicable.
- Direction task lighting to the area required; avoiding ‘wide-area’ lighting schemes.
- Preventing luminaires from emitting light above the horizontal plane.
- All lighting will be aimed to where it is required utilising precision optics which keep the light where it’s needed.
- Plant lighting will be shielded from view by the nearby dwellings and sensitive habitats.
- Low key security lighting, where appropriate, will use movement sensor controls or ‘part-night’ dimming.
- Use the site cabins etc to provide shielding of the lighting from beyond the site.
- Minimise the height of lighting columns (to approximately 6m).
- Observe a curfew when reasonably practicable.
- Monitor the site environs and respond to complaints promptly.

- The lighting should be regularly monitored, measured and visually checked from all viewpoints (Figure 15.2) and any necessary adjustments made to ensure its visibility and intensity is reduced to a minimum.

Below are two examples of light spill maps produced for the Preston New Road site in Lancashire:

Figure 2: Light spill map - Drilling Phase

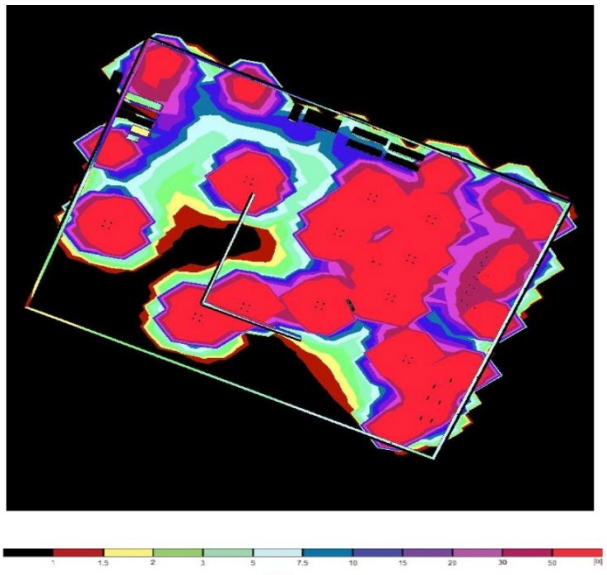
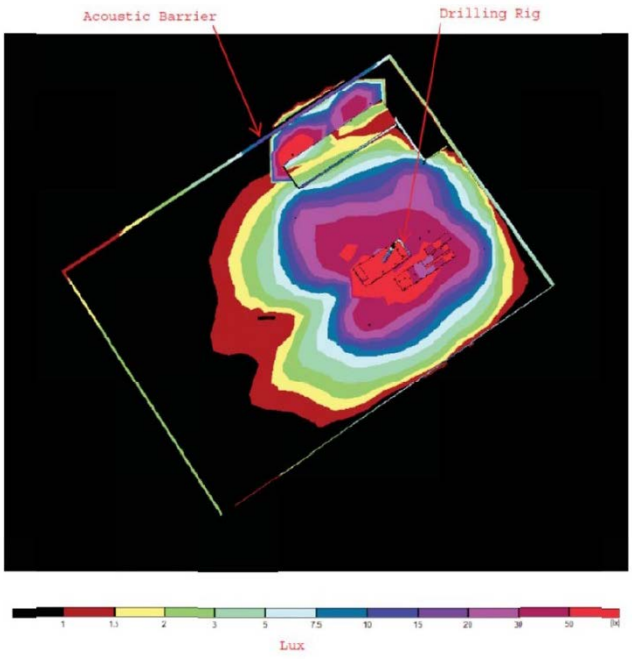


Figure 3: Light spill map - Hydraulic Fracturing and Flaring Phase



Odour

Odour impacts are dealt with by planning condition and environmental permit. Environmental permit conditions are likely to require activities to be free from odours likely to cause pollution outside the site as perceived by the EA.

Operators will develop an odour management plan to be approved by the EA and the MPA and will be reviewed before each phase of operations following a risk assessment.

The odour management plan requires:

- Identification of potential odour generating sources and activities;
- Implementation of odour mitigation measures;
- Implementation of an odour monitoring scheme;
- Procedures for the analysis and reporting of odour emissions; and
- Training of operational personnel on odour management techniques and their roles and responsibilities

The odour risk assessment will consider the following potential odour sources:

Wellbore fluids from wellhead

- Circulation of the well;
- Killing the well;
- Planned breaking of containment;
- Equipment failure; and
- Wireline operations (also lubricant in addition to wellbore fluids).

Wellbore fluids in storage tanks and pipework

- Storage (vents from tanks, open tanks);
- Planned maintenance (breaking containment); and
- Equipment failure.

Hydrochloric acid in storage and pipework

- Storage (vents from tanks);
- Planned maintenance (breaking containment); and
- Equipment failure.

Chemicals in storage

- Storage (vents, filling);
- Intermediate bulk container (or smaller plastic container);
- Planned maintenance (breaking containment); and
- Equipment failure.

Sewage in storage and piping

- Storage (doors insecure or open skips);
- Tank emptying / transfer;
- Planned maintenance (breaking containment); and
- Equipment failure.

General waste (including food waste) in storage / skips

- Storage (doors insecure or open skips);
- Waste uncontrolled (windblown); and
- Equipment failure.

To mitigate odour, planned maintenance can be brought forward ahead of operations in order to reduce the occasions when vessels would need to be entered, inventories can be reduced where possible, substances brought to site will be stored in temporary bunds, containers checked on a daily basis for signs of damage or leaks and steps can be taken to de-odourise venting or breaking containment.

Site personnel will be trained at initial induction and reminded of measures required if the need arose to break containment.

There were no odour complaints during the 2013 drilling of the KM-8 Well. This was performed using the Marriott rig 50, a HH220 rig commonly utilised for the exploration of conventional and unconventional formations. During development of the KM8 well, the borehole penetrated geological formations, which would later be recognised as having potential for hydraulic stimulation.

During the initial stages of the 2017 operations prior to hydraulic fracturing, one indirect complaint was received from an unknown resident who mentioned an 'eggy smell' which was reported to Third Energy via the EA. There was no correlation with monitoring equipment data. The weather was poor (snow), the wind blowing in the opposite direction to the site (verified) and the bins had not been emptied and it is believed that the report was referring to that issue. No claims in nuisance were made and no regulatory action was taken by environmental health officials.

It is acknowledged that, when opening separators for routine checks as needed for integrity of pressure systems, there will be some transient release of mercaptans. While under pressure, the gas can be scrubbed, and odours removed or masked, however when the vessel is open to atmosphere, as is unavoidable, there will almost certainly be gas, vapours and liquid which will result in transient odour. It is stressed that these activities relate to the production operations on the site and the gas and liquids returned from the HF stimulation are not expected to contain hydrogen sulphide.

Definition of Hydraulic Fracturing - Case of *R(OAO Andrews) v SSBEIS & SSHCLG* [CO/3256/2018]

16.I understand from the note of Marc Willers QC, who represented Mr Andrews at the permission hearing, that clarification has been given by Mr Justice Holgate on the definition of hydraulic fracturing. My understanding is that once the MPAs have recognised the statutory definition, they

are free to adopt the wider Planning Practice Guidance definition (ID: 27-129-20140306) in their local plan provided they explain their reasons for doing so.

UKOOG nor the industry were represented at the appropriate court hearing and we understand that Mr Justice Holgate has yet to produce a written opinion, as such we cannot comment on the notes of a third party.

The council have tried to widen the definition of hydraulic fracturing when again all the impacts they are trying to resolve can be resolved using current tools within PPG.

The council have used two documents to try and justify a much wider definition of hydraulic fracturing – PPG paragraph 129 and the government response in a consultation in 2016.

Unfortunately, they have misinterpreted both.

The PPG 2014 definition of hydraulic fracturing was defined under "Annex A: Shale Gas, coalbed methane and underground coal gasification"

This definition is therefore clearly for shale gas, **which has been superseded** by the Infrastructure Act 2015.

In terms of the Surface Development Restrictions for Hydraulic Fracturing - Government Response to the Consultation June 2016, the government were not trying to redefine hydraulic fracturing, as explained at the previous meeting. In the infrastructure Act associated hydraulic fracturing was deemed to be defined by involving liquid that involved more than 1,000 cubic metres of fluid at **each** stage. The government response was to clarify a potential loop hole which ensures that the definition encompasses 1,000 cubic metres of fluid at **any** stage. This new definition is what they mean by hydraulic fracturing that is not associated hydraulic fracturing.

The Government response goes on to state:

We do not consider that the restrictions need to be extended any further than this. Drilling for conventional hydrocarbon resources has been conducted safely for decades, including, for example, in National Parks and AONBs. The conventional onshore oil and gas industry is well-established and existing evidence shows that it can comply with the strict requirements that are already in place for protected areas.

The WMS clearly states Mineral Planning Authorities must recognise that Parliament has set out in statute the relevant definitions of hydrocarbons, natural gas and associated hydraulic fracturing.

The current policy wording (M16) also makes no distinction between exploration drilling (where no hydraulic fracturing is involved) and the appraisal and production stages.

In addition, during evidence to the Select Committee hearing on 'planning guidance on fracking', Claire Perry, Minister of State at the Department for Business, Energy and Industrial Strategy stated that the definition of Hydraulic Fracturing in the Infrastructure Act is the definition that should be applied. She said, '*The Infrastructure Act definition relies on the quantity of water at every stage whereas the wider definition is at any one stage. That is the difference. There is another discrepancy relating to planning guidance on this that predates the Infrastructure Act, and it is the intention of our two Departments to ensure that that is updated so there is no discrepancy between planning guidance and the Infrastructure Act'.* She further clarified that the Infrastructure Act should be relied upon and not

mineral planning guidance and that, *'the intention of the WMS was to be absolutely clear that there was a statement from Government that should be taken into account in planning considerations'.*

At the same select committee the other regulators stated they had no issue with the definition of hydraulic fracturing. It is clear, that with respect to hydraulic fracturing – it would be ambiguous and confusing to have different definitions being used by different regulators. In land use planning terms, the potential surface impacts associated with the development of conventional and unconventional geologies are already clearly handled within the current planning framework.

In summary there is no justification or evidence to introduce a new definition of hydraulic fracturing other than that which already exists for associated hydraulic fracturing under the Infrastructure Act 2015. In addition, there is no evidence or justification for a split between conventional or unconventional in the context of hydraulic fracturing. Finally, in terms of planning considerations the normal considerations of development should apply such as traffic, light and noise which are already applied through the planning system.

17.Would the MPAs please provide the text of a main modification to reflect this requirement so that it may be discussed at the forthcoming hearing sessions?

No comment required

[i] https://www.gov.uk/guidance/environmental-impact-assessment

[ii] UKOOG, Shale Gas Well Guidelines http://www.ukoog.org.uk/images/ukoog/pdfs/Shale_Gas_Well_Guidelines_Issue_4.pdf

[iii] See http://www.ukoog.org.uk/about-ukoog/press-releases/66-how-to-engage-with-shale-gas-hydraulic-fracturing-planning-and-permitting

[iv] UKOOG, Guidelines for the Establishment of Environmental Baselines for UK Onshore Oil and Gas http://www.ukoog.org.uk/images/ukoog/pdfs/Guidelines_for_the_Establishment_of_Environmental_Baselines_for_UK_Onshore_Oil_and_Gas_Issue_1_January_2015.pdf

[v] HM Treasury, Autumn Statement 2014, p.50 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/382327/44695_Accessible.pdf

[vi] https://www.parliament.uk/business/publications/written-questions-answers-statements/written-statement/Commons/2018-05-17/HCWS690

[vii] https://apps.derbyshire.gov.uk/applications-documents/planningdocuments/CM4-0517-10/Proof%20of%20Evidence%20-%20Well%20Design,%20Safety,%20Drilling%20&%20Drilling%20Noise%20-%20Andy%20Sloan.pdf

[viii] https://www.ogauthority.co.uk/onshore/well-operations/

[ix] cuadrillaresources.com/wp-content/uploads/2015/02/PNR-ES.pdf