

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

Joint Plan Authorities' Supplementary Note for the Inspector with regard to Policy M17(4) Justification for reference to 500m separation distance from residential and other sensitive receptors.

Introduction

1. At the hydrocarbon session on 13th March, the Inspector requested further evidence from the Authorities to explain and justify the reference in Policy M17(4)(i) to the 500m buffer. This is set out below. It should be read in conjunction with the Authorities' response to MIQ61.
2. The Authorities are addressing a separate request to amend the reference to proposals within the buffer zone only being permitted "in exceptional circumstances". This will be covered in proposed Main Modifications. The Authorities consider that the explanation of such "exceptional circumstances" provides appropriate flexibility in the application of the policy relating to the 500m buffer zone.
3. The purpose of the buffer is not to prescribe an absolute measure but to state a qualified guide, to the effect that proposals within 500m of sensitive receptors are "unlikely" to be consistent with ensuring a high level of protection to sensitive receptors from adverse land-use impacts. The stated policy objective of policy M17(4) is to maintain "adequate separation distances" and paragraph 5.146 recognises that this will need to be determined ultimately on a "case by case basis." Proposals within 500m which can demonstrate that the appropriate protection of receptors can be achieved would be consistent with this policy objective. The 500m buffer identified in the policy must be seen in this context.
4. The Authorities consider that this approach is sound due to a combination of considerations, the main elements of which are set out below. Moreover, the PEDL coverage of the Plan area is extensive. The specific

industrial processes are relatively new to this area and have generated significant local concern. The inclusion of a specific figure provides an appropriate level of guidance to developers and reassurance to local communities, particularly residents, in circumstances where experience of hydraulic fracturing within the Plan area is limited.

5. The approach is consistent with the core planning principle in the Framework (paragraph 17) of both allowing local people to shape their surroundings and providing a practical framework within which planning applications can be determined predictably and efficiently, subject to an appropriate degree of flexibility. It is also consistent with the core principles of recognising the intrinsic character and beauty of the countryside and contributing to the conservation of the natural environment as well as reducing pollution. The Framework also makes it clear that Local Plans should ensure that permitted minerals development does not have an unacceptable impact on the environment (paragraph 143) and include policies that provide a clear indication of how a decision maker should react to a development proposal should be included in the Plan (para 154). The approach to the 500m separation distance is considered to be consistent with this policy, as well as guidance in the PPG which advises that policies relating to hydrocarbon development should set clear guidance and criteria for the assessment of hydrocarbon extraction (ID: 27 – 106 – 20140306).

Noise and Tranquillity

6. Mineral Planning Practice Guidance published on October 2014 states that

"Mineral planning authorities should aim to establish a noise limit, through a planning condition, at the noise-sensitive property that does not exceed the background noise level (LA90,1h) by more than 10dB(A) during normal working hours (0700-1900). Where it will be difficult not to exceed the background level by more than 10dB(A) without imposing unreasonable burdens on the mineral operator, the limit set should be as near that level as practicable. In any event, the total noise from the operations should not exceed 55dB(A) LAeq, 1h (free field).

For operations during the evening (1900-2200) the noise limits should not exceed the background noise level (LA90,1h) by more than 10dB(A) and should not exceed 55dB(A) LAeq, 1h (free field).

For any operations during the period 22.00 – 07.00 noise limits should be set to reduce to a minimum any adverse impacts, without imposing unreasonable burdens on the mineral operator. In any event the noise limit should not exceed 42dB(A) LAeq,1h (free field) at a noise sensitive property.

Where the site noise has a significant tonal element, it may be appropriate to set specific limits to control this aspect. Peak or impulsive noise, which may include some reversing beepers, may also require separate limits that are independent of background noise (eg Lmax in specific octave or third-octave frequency bands – and that should not be allowed to occur regularly at night.)

Care should be taken, however, to avoid any of these suggested values being implemented as fixed thresholds as specific circumstances may justify some small variation being allowed". [Reference ID: 27-021-20140306].

7. The Authorities consider that the sound levels from potential hydrocarbon developments generally should not exceed existing background sound levels by more than 10dB(A) for the daytime or evening time periods or the maximum daytime or evening limit specified within the minerals guidance note at anytime, whichever is lowest. During the night time period noise levels should not exceed 42dB(A) LAeq, 1h (free field).

8. Given the nature of North Yorkshire with a mixture of cities, towns and countryside, background sound levels are known to vary but are known to be very low in places. The CPRE 'Noise and Visual Intrusions Map' 2007¹ illustrates how tranquil the vast majority of North Yorkshire is. The experience of environmental health officers from the City of York Council, as a result of working in a number of different local authority areas within North Yorkshire over the past 15 years, is that in more rural parts of the county background sound levels of less than 35dB LA90, 1 hour during the

¹ <https://www.cpre.org.uk/resources/countryside/tranquil-places/item/1763?highlight=WyJpbnRydXNpb24iLClnaW50cnVzaW9uYjYslidpbnRydXNpb24iLCJtYXAiLCJpbnRydXNpb24gbWFwIlQ=>

daytime are common and levels of 30dB $L_{A90, 1 \text{ hour}}$ or lower are not unusual. At night time background sound levels can be even lower with levels less than 25dB $L_{A90, 1 \text{ hour}}$ not being unusual.

9. Based on the above figures, it is reasonable to take 30-32 dB(A) $L_{A90, 1 \text{ hour}}$ as a working measure of background noise for the purposes of developing policy, and given that hydrocarbon extraction operations can operate 24 hours a day, this would allow noise levels at receptors located 500m away from any site to be up to 42dBA, this being in line with maximum night time noise levels detailed within the mineral guidance note. This approach itself involves a degree of flexibility given that some background noise levels would fall below this level during the evening and at night.

10. Sound levels associated with hydrocarbon extraction operations can be high. Sound level data for a mobile service rig, which was submitted with the Kirby Misperton site planning application in North Yorkshire, was found to have a sound power level of 109.8dBA (See Appendix 11.1 APPS/14327 Source Noise Details associated with the KM8 Environmental Statement – LPA/77). Environmental health officers are also aware of further sound level data for a drilling site in the USA, which found noise levels from operations to be similarly high, with sound levels of 65dB(A) $L_{eq, 15 \text{ minutes}}$ at a distance 107 metres for drilling operations (Cameron Radtke, noise characterization of oil and gas operations, Colorado State University, 2016 – LPA/78). This sound level equates to a sound power levels of 114dBA. The reasons for the differences in the sound levels between the rigs at the two site locations above is not known but factors such as the size of the operations and equipment will have an influence on the overall sound level.

11. If a sound power level of 109.8 dBA is assumed, then sound levels at a distance of 500 metres away from the drill rig would reduce to 47.8dBA if

no noise mitigation measures were provided. This predicted sound level is calculated based on the noise source acting as a point source with hemispherical sound propagation and according to the following well-established acoustical formula:

$$\text{Sound Pressure Level} = \text{Sound Power Level} - 20 \log(\text{distance}) - 8$$

12.Noise mitigation measures, such as acoustic barriers, would help to further reduce sound levels at a receiver. According to acoustic principles barriers generally have a sound reduction of 5 to 10dB, with higher reductions possible in certain circumstances. Taking this into account, predicted noise levels at 500 metres from any hydrocarbon site, would be in the region of 40dB(A) Leq. It should be noted however that whilst such a barrier would help reduce sound levels it would also be likely to contribute to a significant detrimental visual impact (see further below).

13.This assessment is based only on noise from the operation of one drill rig at a time. In practice sound levels are likely to be higher than those predicted above, as a result of multiple rigs potentially operating at the same time and also as a result of other noise sources which are likely to occur during hydrocarbon extraction, including noise from pumps and other plant and equipment on site such as generators, and potentially also noise from traffic movements associated with the large scale heavy goods movements to and from the site.

14.Thus the authorities consider that for the purposes of preparing policy which seeks to provide appropriate controls over the potential impacts of future hydrocarbons development involving hydraulic fracturing, the proposed 500m distance represents a distance within which it is appropriate for policy to say it is unlikely that adequate mitigation can be provided. As stated above, this does not prevent any developer from

demonstrating in the circumstances of a particular case that adequate protection to residential amenity can be provided, and the Authorities acknowledge that the KM8 application was approved notwithstanding that properties were located within the 500m distance. However given the early stages of development involving hydraulic fracturing in the Plan area, it is unclear whether that proposal can be regarded as a typical example of proposals that will come forward; and it is possible that it does not necessarily reflect the nature of potential further applications in the future. To provide a degree of predictability for future cases, it is considered that inclusion of the 500m distance is sound, with an appropriate degree of flexibility to allow developers in individual cases to rebut the indication in the policy that impacts are unlikely to be acceptable.

Visual Impact and Light Pollution

15. The Authorities consider that hydraulic fracturing operations are likely to cause significant visual impact from distances within 500m of sensitive receptors, in particular, residential occupiers.
16. It is important to appreciate the likely extent of surface development which would be proposed for hydraulic fracturing operations. The drilling for hydraulic fracturing utilises a wide range of equipment within the different phases of the process, as explained further in a separate note dealing with the distinctions between conventional and unconventional hydrocarbons development (LPA/87).
17. The size of the well pad is likely to be at the very least double the size of a conventional well pad in order to accommodate the associated plant, equipment, vehicle manoeuvres etc. By way of example, the well pad (including the access track) at the Preston New Road (PNR) site is cited as being 2.65 hectares. The sites could involve a significant extent of plant, machinery and equipment, including drill rigs or cranes up to 60m in

height. The operation would also involve substantial numbers of HGV/tanker vehicle movements including some abnormal heavy loads.

18. If viable reserves of gas are found, in all likelihood, more than one well would be consecutively drilled at one pad, such that drilling equipment would be in use on one well site for years, rather than months. There is a distinct possibility that multiples of larger structures such as 'work over' rigs, coiled tubing towers, proppant/sand silos and drill rigs would be concurrently present on a well pad increasing the attendant cumulative impacts of such development proposals.
19. Acoustic barriers would also be required, the heights and length of which will depend on noise attenuation requirements, but could involve barriers up to 8-10m in height. Noise barriers erected at the KM8 site consisted of an 'Echo barrier' atop double-stacked shipping containers. At PNR approval was given to erect a noise barrier to a height of 10 metres. The length of the solid acoustic wall would vary. It could wrap around part or all of the well site, and is therefore likely to constitute a significant additional built element in the landscape. Even to the extent that these are proposed to address noise impacts, they may cause significant adverse visual impact in their own right.
20. Topography has a strong influence on the different character types identified in the North Yorkshire and York Landscape Characterisation Project (May 2011) – LPA/83. The low lying flat topography associated with the broad vale landscapes such as the Open Carr Vale Farmland (22); Levels Farmland (23); River Floodplain (24); Settled Vale Farmland (25), and Enclosed vale farmland (26), and other low-lying, slightly undulating land, lies in the wider Plan area which is outside of the National Parks and AONBs. Although there may be small local variations, a key characteristic of these specific landscape character types is the predominantly flat landscape which has a general absence of woodland (with the exception of character 28) and a strong sense of openness due to the dominant arable land use. 'Sensitivity to Change Issues' typically include *'High visual sensitivity as a result of the predominantly open character and flat landform which facilitates long distance views across*

the landscape and promotes strong intervisibility with adjacent Landscape Character Types (LPA/83: pages 147, 151, 155).

21. CPRE Light pollution and dark skies – ‘Night Blight’² also illustrates that land within the Plan area has dark skies beyond the built up centres and main road. The dark skies, resulting from the complete absence of street or security lighting across large areas, are characteristics of parts of the rural area, that would be affected by light pollution emanating from the proposals. There would be an isolated glow from the ‘frack pads’ as well as effects arising from the lighting of drill rigs and cranes. This could be multiplied across a wide area if there were more than one operational well. These effects would compound the other visual effects that would be likely to arise from development in close proximity to sensitive receptors who occupy an area that is characterised by its dark skies.
22. Thus outside the National Park and Areas of Outstanding Natural Beauty, there is land within the wider plan area where it is considered likely that visual and lighting impacts could be significant within 500m of sensitive receptors. Such impacts would be compounded due to the potential for multiple well sites. There is a risk that the temporary nature of each individual application may in effect have a semi-permanent presence given the likelihood of sequential operations, within 500m.
23. Given the height of the drilling equipment, cranes, and coil tubing towers, it is probable that at a distance of less than 500m, topography and vegetation will not screen proposals from sensitive receptors, especially given the seasonal ineffectiveness of deciduous trees.
24. In general, it is considered that the effects of hydraulic fracturing development are likely to be significant. 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).

²The interactive map can be accessed via this link www.nightblight.cpre.org.uk/maps/

It will be developers to demonstrate that this is the case, contrary to the general position expressed through the policy.

Conclusion

25. As a matter of planning policy for the determination of future cases the authorities consider it reasonable to adopt an approach which seeks to provide a greater degree of predictability in delivering planning applications.
26. Significant concerns have been expressed by local communities about the potential effects of fracking development, potentially across a wide area of the Plan area, and it is considered appropriate to develop a policy which reassures residents and other sensitive receptors that their amenity will be adequately protected through a policy approach which sets out the Authorities' general expectations. It is considered that there is sufficient evidence to justify the adoption of a 500m separation distance is justified, subject to the qualifications inherent in the policy and the application of wider criteria relating to hydrocarbons development.
27. It is acknowledged that this aspect of policy has been established more widely than a site-specific basis (cf PPG Reference ID 27-018-20140306), however it is consistent with the objectives of that guidance as it takes into account: the nature of the minerals development in question (including its early stages and uncertain future effects in this area); the wider location and topography of this Plan area, including the dark skies and tranquillity of the area; the types of environmental effects likely to arise from the development; and the likely scope for mitigation measures that can be applied. The policy would not unduly sterilise hydrocarbons resources, because the protection of sensitive receptors and their communities from unacceptable environmental harm is a sound policy objective; and sufficient flexibility is built into the policy to ensure that where adequate protection

can be achieved, development can come forward, subject to meeting other policies in the Plan. It is considered therefore this aspect of Policy M17 is effective, properly justified, reasonable and consistent with the objectives of national policy and guidance.