

FRIENDS OF THE EARTH:

ADDITIONAL COMMENTS LINKED TO 500m BUFFER AROUND RESIDENTIAL PROPERTIES

(NORTH YORKSHIRE MINERALS AND WASTE JOINT LOCAL PLAN – EIP)

1) Why is a residential buffer needed?

We note that the joint North Yorkshire councils have aimed to incorporate a buffer of 500m within policy M17 throughout the consultation and EIP process, subject to certain exceptions.¹

FoE support the use of a buffer and consider that its introduction is sound and justified by the available evidence. This statement draws on FoE national and international expertise and aims to add to the evidence already submitted and further justify the policy choice made. This evidence shows that fracking gives rise to a range of localised environmental, noise, health, amenity, landscape/visual, traffic and land-use planning impacts which are difficult to predict when granting planning consent, all of which justify a policy decision to protect residential properties by using a buffer policy. This statement particularly focuses on evidence in relation to two aspects of these effects (1) noise impacts and (2) international evidence as to health impacts.

While set back distances for fracking sites are not currently a mandatory part of the English planning or other regulatory systems, FoE consider that this is largely due to a failure to acknowledge and appreciate the full implications of fracking for the environment and communities affected by it and consequently a failure of guidance to keep up with the nature and extent of the impacts fracking has so far presented at existing sites. Awareness is growing of the inadequacy of current planning guidance as highlighted by a House of Commons Select Committee Inquiry on fracking planning guidance² currently underway. Among questions the inquiry asks is *'is there a need to update and improve fracking guidance available?'* Representatives of the sector have noted that more detailed guidance is required to counteract a perception that there is a skewed bias in WMS, policy and guidance in fracking's favour³.

EiP

The Inspector's role is to ensure the Joint Plan is 'sound', in respect of being *positively prepared, justified, effective and consistent with national policy* – as per requirements of the National Planning Policy Framework (NPPF).

In terms of policies and plans being justified, para 182 of the NPPF states:

*"the plan should be the **most appropriate strategy**, when considered against reasonable alternatives, **based on proportionate evidence**" [our emphasis]*

In terms of the importance of local plan making for communities, para 151 states:

*"Local Plans are the key to delivering sustainable development that **reflects the vision and aspirations of local communities.**"*

In relation to justifying such the 500m buffer, Para 154 states that Local Plans:

“...should set out the opportunities for development and clear policies on what and will not be permitted and where. Only policies that provide a clear indication of how a decision maker should act to a development proposal should be included within the plan”

In addition, Para 17 of the NPPF presents the Core Planning Principles, that “*underpin both plan making and decision taking*”. Principle 5 includes the need for planning to:

- *take account of the different roles and character of different areas, promoting the vitality of our main urban areas, protecting the Green Belts around them, **recognising the intrinsic character and beauty of the countryside and supporting thriving rural communities within it;***

Principle 7 states:

- *contribute to **conserving and enhancing the natural environment and reducing pollution.***

Principle 12 states:

- *take account of and support local strategies to **improve health, social and cultural wellbeing for all...***

In light of the above national policy requirements, we would suggest the principle of a 500m buffer is justified, as long as policy sets out a clear approach to developers, while still enabling the industry to proceed with exploration, appraisal and production in areas outside of such a zone; or within such zones where robust justification can be provided.

Despite industry claims of potential sterilisation that would result, it’s worth reiterating that Planning Practice Guidance⁴ does not accept that sites for hydrocarbons can be easily sterilised in the traditional sense based on several factors:

*“There is normally no need to create mineral safeguarding areas specifically for extraction of hydrocarbons given the **depth of the resource, the ability to utilise directional drilling and the small surface area requirements of well pads.**”*

We suggest the same rationale can equally be applied should a 500m buffer be retained.

2) What issues in particular are relevant (in terms of proportionate evidence) to justify a 500m buffer?

i) Noise

There appear to be a range of quality issues regarding noise emission assessments undertaken to support related planning applications for shale gas extraction. Often exploration/extraction sites for shale gas are in quiet rural locations where background noise levels are very low.

In addition, local populations can experience adverse noise impacts during the drilling and coring phase, especially where 24-hour drilling is proposed, and current existing background noise levels are low.

Recent ‘fracking’ appeal decisions have considered the impact and mitigation of night time noise, and in each case a lower noise level limit has been determined by the Inspector and Secretary of State, contrary to the view of the Appellant. Both the Noise Policy Statement for England (NPSE)⁵ and WHO-Night Noise Guidelines for Europe (NNG)⁶ have been material considerations in recent ‘fracking’ appeal decisions. The former sets out a long-term government vision to promote good health and a good quality of life through the management of noise; while the latter provides the WHO Guidelines in respect of night time noise.

In addition to the above, while operators usually aim to meet thresholds set out in Planning Practice Guidance, and such operational levels are often transcribed within planning conditions, such conditioning will not necessarily prevent noise impact. While the use of planning conditions is supported within national planning policy⁷ - which we feel is essential in attempting to control noise levels – the evidence suggests that their imposition **does not** guarantee that the noise impacts of fracking development will be environmentally acceptable or satisfactorily mitigated.

An example of noise breaches occurring after permission has been granted for fracking is evident in North Yorkshire. The permission⁸ for hydraulic fracturing at the KM8 well⁹ in Kirby Misperton included conditioned noise limits that have subsequently been breached. By including noise conditions in respect of operational (day and night time limits) and the need for an acoustic barrier at the site, the authority assumed this would make the impacts acceptable. With monitoring linked to the two nearest dwellings of Alma Farm and Shire Grove (both within 500m of the site), a subsequent noise report¹⁰ submitted to North Yorkshire County Council and the Environment Agency earlier this year highlights a substantial number of noise breaches at the workover phase. Despite planning conditions meant to satisfactorily mitigate the community’s concerns, excessive noise levels have been experienced by residents of these nearest properties. The report states:

“During the workover phase:

- a) There were **39 possible noise breach periods** detected by the instruments at ‘Alma Farm’, of which we understand **28 of these periods were site related** (See Appendix E).*
- b) There were **46 possible noise breaches** detected by instruments at the location ‘5 Shire Grove’, of which we understand **15 of these periods were site related** (See Appendix E).”*

We fear that despite the modelling of noise levels in the operator’s application and the planning authority specifying conditions to make development acceptable in noise terms, fracking schemes are still causing noise impacts, especially on sensitive receptors nearest to such sites. This justifies taking a precautionary approach which can best be achieved by imposition of a 500m buffer zone. This would restrict the ability of fracking developments to be allowed nearer to residential properties and provide a further safeguard against unacceptable noise impacts on residential amenity. The use of a buffer zone in this context is in our view necessary and justified.

ii) **Health impacts**

Fracking as a process has not yet established itself in the UK. Research carried out in the US, where fracking has expanded significantly in the last 15 years, helps provides evidence of such impacts. Analysis of peer-reviewed 84% of peer-reviewed scientific literature on unconventional natural gas development and public health published between 2009 and 2015 found that 84% of the studies contain findings which indicate public health hazards, elevated risks, or adverse health outcomes.

There is also evidence of greater impacts on people’s health for those living closer to unconventional gas sites or in areas with a high density of unconventional gas infrastructure.

A Colorado School of Public Health study¹¹ found air pollutants near fracking sites linked to neurological and respiratory problems and cancer. The researchers concluded that:

Residents living $\leq \frac{1}{2}$ mile from wells are at greater risk for health effects from NGD [natural gas development] than are residents living $> \frac{1}{2}$ mile from wells. Subchronic exposures to air pollutants during well completion activities present the greatest potential for health effects. The subchronic non-cancer hazard index (HI) of 5 for residents $\leq \frac{1}{2}$ mile from wells was driven primarily by exposure to trimethylbenzenes, xylenes, and aliphatic hydrocarbons. Chronic HIs were 1 and 0.4. for residents $\leq \frac{1}{2}$ mile from wells and $> \frac{1}{2}$ mile from wells, respectively. Cumulative cancer risks were 10 in a million and 6 in a million for residents living $\leq \frac{1}{2}$ mile and $> \frac{1}{2}$ mile from wells, respectively, with benzene as the major contributor to the risk.

Thus, compared to residents living half a mile or more from an unconventional gas well, residents living less than half a mile from a well have a higher subchronic exposure to air pollution and a higher cumulative cancer risk.

A study of self-reported health symptoms in Washington County, Pennsylvania found that residents living less than 1 kilometre from drilling and fracking operations reported more upper respiratory tract problems and skin conditions such as rashes than those living more than 1 kilometre from drilling and fracking operations¹².

A study¹³ carried out by the University of Texas Health Science Center (*sic*) School of Public Health team assessed the links between how close pregnant women lived to unconventional natural gas development activity and various health problems for newborn babies. They found evidence of a “*moderate positive association*” between residential proximity to unconventional natural gas development and increased odds of preterm birth. For the tertile of women with the greatest number of wells within half a mile of where they lived, there was a 14% greater chance of a preterm birth.

A University of Pittsburgh study found “*a small but significant association between proximity to UGD [unconventional gas development] and decreased birth weight was noted after*

*accounting for a large number of contributing factors available from birth certificate data in Southwest Pennsylvania*¹⁴. Mothers whose homes were nearest to a high density of wells were 34 percent more likely to have babies who were 'small for gestational age' (low weight compared to expectation for that stage of pregnancy) compared to mothers whose homes had the fewest gas wells nearby.

Researchers from Johns Hopkins Bloomberg School of Public Health have conducted three analyses of health impacts related to proximity to unconventional natural gas development activity in the Geisinger health system area in Pennsylvania. They found greater impacts or risks for those who lived in areas with the most activity:

- In one study¹⁵ the researchers found that living in the most active quartile of drilling and production activity was associated with a 40 percent increase in the likelihood of a woman giving birth before 37 weeks of gestation (considered pre-term) and a 30 percent increase in the chance that an obstetrician had labeled their pregnancy "high-risk," a designation that can include factors such as elevated blood pressure or excessive weight gain during pregnancy.
- In a second study¹⁶, residents were asked whether they suffered from chronic nasal and sinus symptoms (chronic rhino sinusitis, or CRS), migraines and severe fatigue, which *"can have a debilitating impacts on people's lives"*¹⁷. The researchers found that *"those who lived closest to heavy drilling activity were 49 percent more likely to have CRS and migraines together compared to those who do not live near intense natural gas production. That same population was 88 percent more likely to suffer from CRS and heavy fatigue, 95 percent more likely to have migraines and fatigue, and 84 percent more likely to experience all three symptoms"*¹⁸.
- In the third study¹⁹, researchers looked at the incidence of asthma attacks and found that residents who lived near a higher number of, or larger, active gas wells were 1.5 to 4 times more likely to suffer from asthma attacks compared to those who live farther away, with the closest group having the highest risk. There was increased risk in all three types of exacerbations defined: mild (new oral corticosteroid medication order), moderate (emergency department encounter), or severe (hospitalization). In addition, researchers identified increased risk during all four phases of well development: pad preparation, drilling, stimulation (fracking), and production.

3) What is an appropriate buffer distance?

UK context

North Yorkshire Joint Councils has relied on the General Permitted Development Order 2015²⁰ as a justification for a 500m buffer in policy M16.

While it is correct that the GPDO distances cannot be relied upon directly, it is worth noting that UK water companies, including Anglian and Yorkshire Water²¹, employ 400m buffers linked to waste water treatment works - based on the same GPDO principle mentioned above. Yorkshire Water has previously responded to Local Plan consultations²², explicit about the

operation of a cordon sanitaire and potential odour and amenity impacts for residents; should houses be sited within these zones. This 400m distance can be modified based on the provision of evidence and/or site-specific mitigation.

Justification from Abroad (examples of buffer distances)

In their report²³ 'Potential Public Health Impacts of Natural Gas Development and Production in the Marcellus Shale in Western Maryland' (as prepared for state's Department of the Environment and Department of Health & Mental Hygiene), the Maryland Institute for Applied Environmental Health looked at what setback/buffer distances would be needed for new fracking developments. The authors reference a publication from 2013 that had found buffer distances ranging from 100 feet to 1000 feet (approximately 30 metres to 305 metres)²⁴. They note that the city of Dallas, Texas had enacted an ordinance requiring a setback of 1500 feet (**approximately 460 metres**)²⁵ concluding that "*Maryland should base setback regulations on best available science*" (paragraph 11.2.1).

On air quality, the MIAEH report recommends a setback distance of 2000 feet - approximately 610 metres - from well pads (recommendation R14). It also recommends that the state of Maryland:

"create maps using buffer zones (setback distance) to identify specific areas where fracking should be restricted (homes, churches, schools, hospitals, daycare centers, parks, recreational water bodies) and make these available for community members" (recommendation R39)

In Australia, a report²⁶ by the New South Wales Chief Scientist & Engineer recommended that, where feasible, exploration or production activities should be located away from sensitive or high-exposure areas such as churches, schools, hospitals, residential areas, surface waters, freshwater wells, flood zones, active fault areas, threatened and endangered plants and animals (including habitat), protected bird habitat, wetlands, archaeological, recreational, biological or scenic areas (page 6).²⁷

Summary

Our view is that a 500m distance is justified in light of evidence provided above, in both domestic and international contexts. It is correct that the Joint Authorities would be adopting a high level of protection but it is not without precedent (see in particular the Dallas and Maryland examples) and in the light of the precautionary principle we consider that it appropriate and justified in North Yorkshire. We would reiterate the council's position that policy wording and justification of M17 still allows the potential for sites to be located within this distance, albeit only where sufficient and robust justification is provided. This proviso should allay fears of sterilisation argued by UKOOG's counsel as a result of a 500m buffer in the last hydrocarbons session (13th March in Northallerton). In response to claims of sterilisation, it's worth reiterating that Planning Practice Guidance²⁸ does not accept that sites for hydrocarbons can be easily sterilised in the traditional sense. We therefore continue to support the councils' approach and ask the 500m set-back be retained in policy.

N.B. It should be noted that international studies cited above show statistical correlations rather than demonstrating direct cause-and-effect

- ¹ A term previously labelled “exceptional circumstances” – wording which is being amended following Inspector advice regarding consistency.
- ² parliament.uk/business/committees/committees-a-z/commons-select/communities-and-local-government-committee/news-parliament-2017/fracking-inquiry-launch-17-19/ (URL is no longer available)
- ³ <https://www.planningresource.co.uk/article/1192695/warning-fracking-guidance-bias>
- ⁴ Para 108 Reference ID: 27-108-20140306
- ⁵ <https://www.gov.uk/government/publications/noise-policy-statement-for-england>
- ⁶ http://www.euro.who.int/_data/assets/pdf_file/0017/43316/E92845.pdf
- ⁷ Paragraph 203 of the National Planning Policy Framework (NPPF) requires authorities to consider whether otherwise unacceptable development could be made acceptable through the use of conditions
- ⁸ Application reference: NY/2015/0233/ENV
- ⁹ Planning App link: onlineplanningregister.northyorks.gov.uk/register/PlanAppDisp.aspx?recno=9761 ¹⁰<https://onlineplanningregister.northyorks.gov.uk/register/DisplayImage.aspx?doc=cmVjb3JkX251bnWJlcj05NzYxP2ZpbGVuYW1lPVxcY291bnR5Lm55Y2MuaW50ZXJuYXxcRGF0YVxcRVVMtREFUQVxBcHAtTWZzdGVyR292XHBsYW5uaW5nXE5ZLTlwMTUtMDIzMy1FTlZcMjQgUG9zdCBEZWNPc2lvbXOb2lzZSBnb25pdG9yaW5nXDE3MTEyOV9QcmVtdGltDwxdGlvbBoYXNlX05vaXNlTW9uaXRvcmluZ1JwdF9yZXlyX3JlZGFjdGVkLnBkZj9pbWFnZV9udW1iZiX9ODg1P2ltYWdlX3R5cGU9cGxhbm5pbmc/bGFzZdF9tb2RpZmlZf9mcm9tX2Rpc2s9MDCvMTIvMjAxNyAxMTc1NDc0Mg==> (URL is no longer available)
- ¹¹ McKenzie, L. M., Witter, R. Z., Newman, L. S., & Adgate, J. L. (2012). Human health risk assessment of air emissions from development of unconventional natural gas resources. *Science of the Total Environment*, 424, 79-87. doi: 10.1016/j.scitotenv.2012.02.018
- ¹² Rabinowitz, P. M. Slizovskiy, I. B, Lamers, V., Trufan, S. J., Holford, T. R., Dziura, J. D., Peduzzi P.N., Kane M.J., Reif J.S, Weiss T.R. and Stowe, M. H. (2015). Proximity to natural gas wells and reported health status: results of a household survey in Washington County, Pennsylvania. *Environmental Health Perspectives*, 123, 21-26. doi: 10.1289/ehp.1307732
- ¹³ Whitworth, K. W., Marshall, A. K., & Symanski, E. (2017). Maternal residential proximity to unconventional gas development and perinatal outcomes among a diverse urban population in Texas. *PLOS ONE*, 12(7), e0180966. doi: 10.1371/journal.pone.0180966
- ¹⁴ Shaina, L. S., Brink, L. L, Larkin, J. D., Sadovsky, Y, Goldstein, B. C., Pitt, B. R., & Talbott, E. O. (2015). Perinatal outcomes and unconventional natural gas operations in southwest Pennsylvania. *PLoS One*, 10, e0126425. doi: 10.1371/journal.pone.0126425
- ¹⁵ Casey, J. A., Savitz, D. A., Rasmussen, S. G., Ogburn, E. L., Pollak, J., Mercer, D. G., & Schwartz, B. S. (2016). Unconventional natural gas development and birth outcomes in Pennsylvania, USA. *Epidemiology* 27(2), 163–172. doi: 10.1097/EDE.0000000000000387
- ¹⁶ Tustin, A. W., Hirsch, A. G., Rasmussen, S. G., Casey, J. A., Bandeen-Roche, K., & Schwartz, B. S. (2017). Associations between unconventional natural gas development and nasal and sinus, migraine headache, and fatigue symptoms in Pennsylvania. *Environmental Health Perspectives*, 125, 189-197. doi: 10.1289/EHP281
- ¹⁷ stateimpact.npr.org/pennsylvania/2016/08/25/new-study-points-to-association-between-gas-drilling-to-migraines-fatigue-and-chronic-sinus-symptoms/
- ¹⁸ stateimpact.npr.org/pennsylvania/2016/08/25/new-study-points-to-association-between-gas-drilling-to-migraines-fatigue-and-chronic-sinus-symptoms/
- ¹⁹ Rasmussen, S. G., Ogburn, E. L., McCormack, M., Casey, J. A., Bandeen-Roche, K. Mercer, D. G., & Schwartz, B. S. (2016). Association between unconventional natural gas development in the Marcellus Shale and asthma exacerbations. *JAMA Internal Medicine*. Advance online publication. doi: 10.1001/jamainternmed.2016.2436
- ²⁰ 400m meters - GPDO Part 6 linked to Class A and class B developments
- ²¹ See page 128 of following: <http://democracy.york.gov.uk/documents/s84566/Annex%20A%20-%20Responses%20from%20Prescribed%20Bodies.pdf>
- ²² See page 128 of following: <http://democracy.york.gov.uk/documents/s84566/Annex%20A%20-%20Responses%20from%20Prescribed%20Bodies.pdf>
- ²³ Maryland Institute for Applied Environmental Health (2014) ‘Potential Public Health Impacts of Natural Gas Development and Production in the Marcellus Shale in Western Maryland’ marcellushealth.org/uploads/2/4/0/8/24086586/final_report_08.15.2014.pdf
- ²⁴ Richardson N, Gottlieb M, Krupnick A, Wiseman H (2013) ‘The State of State Shale Gas Regulation’ http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-Rpt-StateofStateRegs_Report.pdf

²⁵ Dallas City Council (2013) DCA 123-003 Amend Gas Drilling and Production Regulations. 1047–1140 and <https://www.texastribune.org/2013/12/11/dallas-city-council-tightens-gas-drilling-ordinanc/> and <http://citysecretary.dallascityhall.com/resolutions/2013/12-11-13/13-2139.PDF> (page 5)

²⁶ New South Wales Government Chief Scientist & Engineer (2014) 'Independent Review of Coal Seam Gas Activities in NSW Information paper: On managing the interface between coal seam gas activities and other land uses (Setbacks)' http://www.chiefscientist.nsw.gov.au/data/assets/pdf_file/0007/56923/140930-Final-Setbacks-info-paper.pdf

²⁷ N.B This report is about Coal Seam Gas, known in the UK as coal bed methane, but we would argue that very similar principles would apply.

²⁸ Para [108 Reference ID: 27-108-20140306](#)