

### Summary – in relation to the 500m buffer zone

FFR are concerned about the accuracy of the information presented at the hearing day specifically on 24 January 2019. The purpose of this submission is to address those concerns

Part of the morning was spent in relation to the interactive map and FFR have already submitted an illustrative map to assist<sup>1</sup> the Planning Inspector.

Much of the afternoon was spent discussing noise. Some of the information stated was factually incorrect.

FFR consider that there are many aspects relating to 'unconventional' hydrocarbons that as yet are not fully understood.

However given the evidence to date it is clear that the best mitigation to most of the adverse effects presented by this form of industrial development is distance from the development site.

### Conclusions

FFR consider that

- there are many aspects of this type of development ( including cumulative impact) that as yet are not fully understood as it is a novel industry with little evidence
- the proposed plan makes allowance for a review which is sensible. The precautionary principle approach in the plan is essential in order to protect communities
- it has become clear, with the experience of fracking activity in the UK to date, that planning conditions are ineffective and without any meaningful sanction and therefore they do not offer protection to the community
- there are many cited examples of breaches of planning conditions and as a consequence clear guidance at the policy stage is essential
- planning control with effective and timely scrutiny of monitoring of the adverse effects are an essential prerequisite for communities who are to be affected by this novel industry. Most communities trust the 'authorities' to protect them, their health, and the wider environment from the adverse effects of this industrial development type
- given the evidence to date it is clear that the best mitigation from most of the adverse effects is distance

FFR consider the advice from independent technical experts and the available evidence make it very difficult to refute that a 500m buffer zone would give 'something approaching certainty' to communities in terms of protection from the worst of the adverse effects of this type of development.

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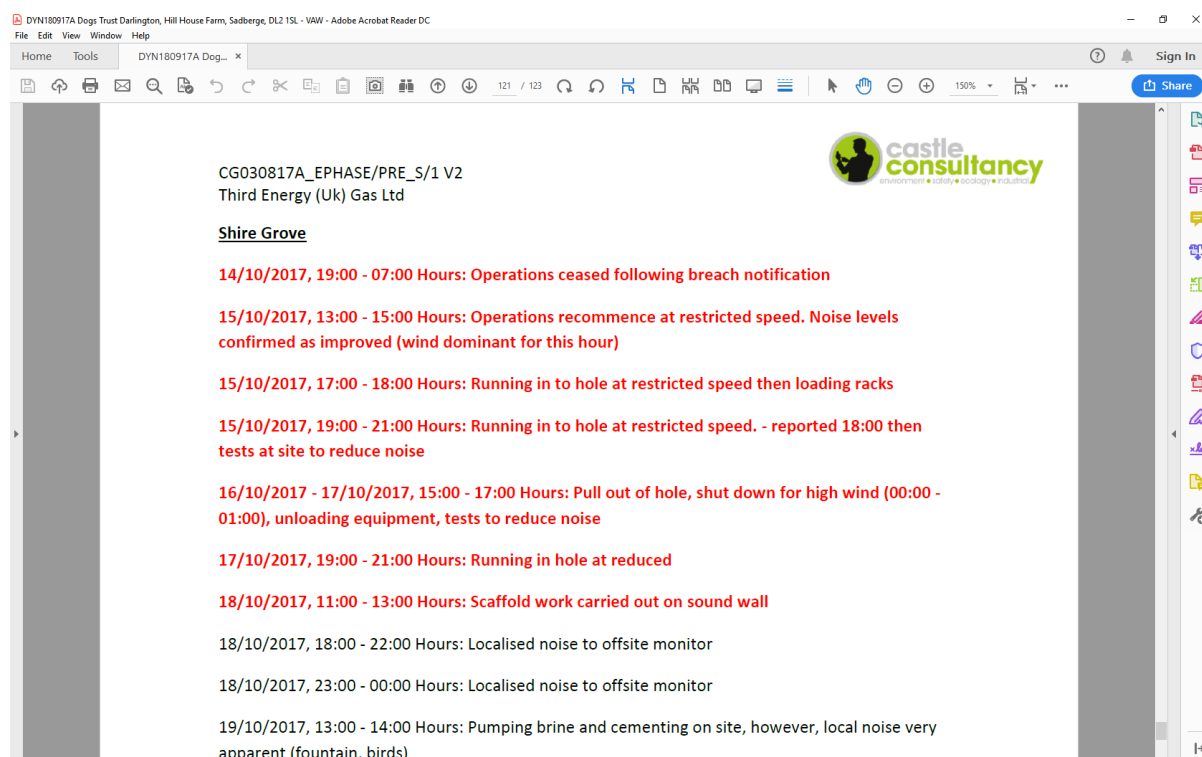
<sup>1</sup><https://www.northyorks.gov.uk/sites/default/files/fileroot/Planning%20and%20development/Minerals%20and%20waste%20planning/Examination%20Library/Evidence%20Base/Minerals/OTH11%203684%20Frack%20Free%20Ryedale%20Map%20Following%2024%20Jan%202019.pdf>

## 1. Noise at KM8 in late 2017

1.1 Following the hearing day Thursday 24 January 2019 FFR provide evidence of breaches at KM8, for the Inspector to consider. The industry stated that there were two breaches: 1. Caused by loose insulating panels, 2. another breach - cause not stated. This is not the case and even when challenged<sup>2</sup> the industry still said there were only two breaches. FFR is committed to ensure that the Inspector has access to all of the facts relating to breaches at KM8 and to ensure our communities are adequately protected.

1.2 At KM8 noise exceedences were noted in the Castle Consultancy (Third Energys own consultant) report on the noise monitoring results, along with weather records and site event records. It is clear there were many breaches and possibly Mr Linn of Third Energy can not remember all of them except the two he recalled at the hearing. However on the 14<sup>th</sup>/15<sup>th</sup> October 2017 operations were actually stopped overnight. The reason for the cessation of operations was breaching the noise limit (see p119/121 of the Castle Consultancy<sup>3</sup> report). The wind at the time was not strong enough to 'nullify' the exceedance therefore this recorded noise level was accurate.

1.2 A screen print of the top part of page 121 is added below at Figure 1 for convenience.



**Figure 1 - Screenprint of Castle Consultancy report - PHASE: Pre-Stimulation Workover Noise Monitoring Period: 14th October – 1st November 2017 Ref: EPHASE/PRE\_S/1V2 November 2017**

<sup>2</sup> Dr Thornton, Ryedale District Councillor

<sup>3</sup><https://onlineplanningregister.northyorks.gov.uk/Register/DisplayImage.aspx?doc=cmVjb3JkX251bWJlcj05NzYxP2ZpbGVuYW1lPVxcY291bnR5Lm55Y2MuaW50ZXJlYXVxcRGF0YVxcRVVtREFUQVxBcHAATWVzZGVyR292XHBSyYW5uaW5nXE5ZLTlwMTUtMDIzMy1FTlZcMjQUG9zdCBEZWNpc2lvbXOb2lzZSBnb25pdG9yaW5nXDE3MTEyOV9QcmVtdGltWxhdGlvbBoYXNlX05vaXNlTW9uaXRvcmluZ1JwdF9yZXVzX3JlZGFjdGVkLnBkZj9pbWFnZV9udW1iZXI9ODg1LjAwMDA/aW1hZ2VfdHlwZT1wbGFubmluZz9sYXN0X21vZGlmaWVvX2ZyY21fZGlzaz0wNy8xMi8yMDE3IDExOjU0OjQy>

1.3 There are multiple breaches in this report highlighted in red where the event is linked to site activity for both Alma House (marked on most plans as Alma Farm) and for the monitoring site at Shire Grove. The full report can be found from the link given in footnote 1 above.

1.4 The site operations that caused the breaches in late 2017 were in fact very limited and no fracking was carried out during these operations. Nor was there any drilling in late 2017 as the borehole had been drilled in 2013.

1.5 A helpful aerial photo is shown below from a screen print of p7 (Figure 2). This shows the difference in distance of receptors with Alma Houe or Farm being just over 300m away from KM8 and themonitoring location at Shire Grove a good 800m away.

1.6 It should be noted that the monitoring station at Shire Grove was located in a residential garden behind a substantial hedge and there are several other interstitial tree lined boundaries between it and the KM8 site. In addition there was the 9m+ high noise attenuation barrier erected around the western, northern and eastern boundaries of the KM8 site as shown in a photo in FFR's response<sup>4</sup> shown in Figure 1 (p5). However there continued to be a high number of breaches at the monitoring location which were not discounted by Third Energy's own consultant.

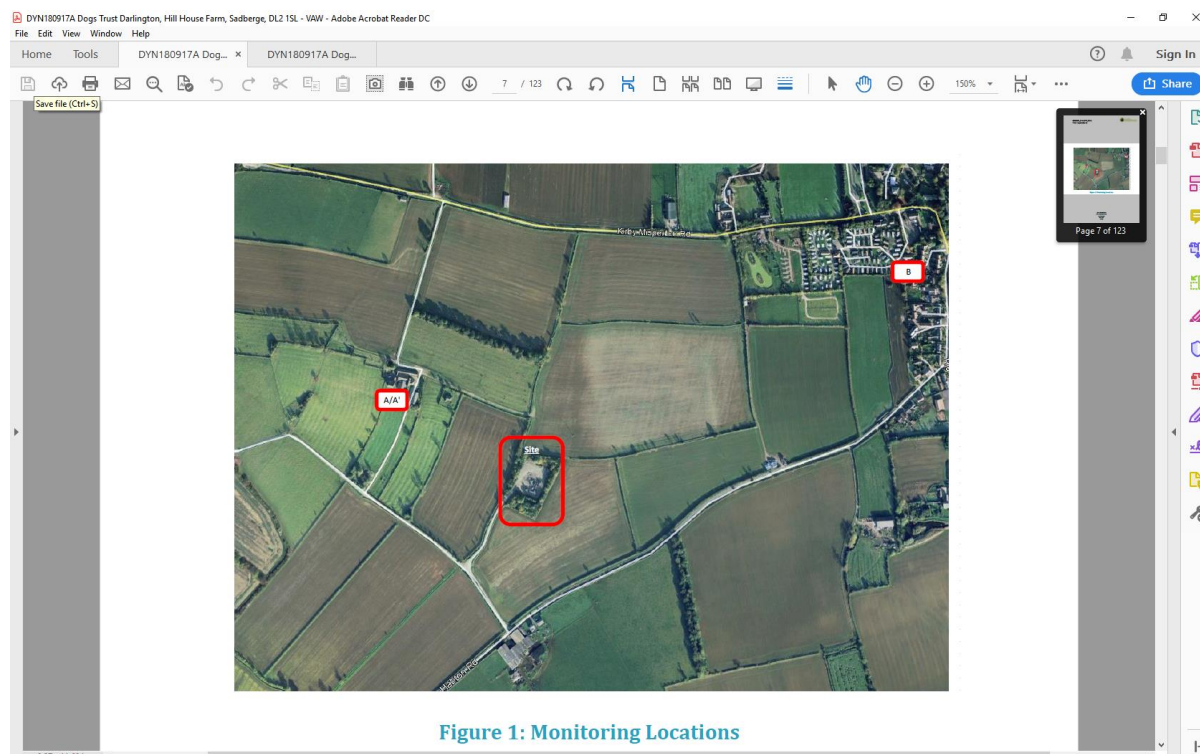


Figure 1: Monitoring Locations

Figure 2 - The monitoring sites relative to the site itself. North to the top and the prevailing wind is SW. The photo is old as it only shows the original site which was extended NW in 2013 to form the upper level

<sup>4</sup>[https://www.northyorks.gov.uk/sites/default/files/fileroot/Planning%20and%20development/Minerals%20and%20waste%20planning/Examination%20Library/Additional%20hearing%20day/Jan19\\_3684%20FrackFreeRyedale.pdf](https://www.northyorks.gov.uk/sites/default/files/fileroot/Planning%20and%20development/Minerals%20and%20waste%20planning/Examination%20Library/Additional%20hearing%20day/Jan19_3684%20FrackFreeRyedale.pdf)

## 2. Noise at Preston New Road, Little Plumpton, Lancashire

2.1 In FFRs submission prior to the hearing days on 24/25 January 2019<sup>5</sup> there were 2 screen prints taken from the Cuadrilla e-portal<sup>6</sup> (see appendix 1 -figure 5 and figure 6). At PNR the industry stated that they had to set up a proxy location as a monitoring point for noise as the original monitoring site (Staining Wood Cottage) is on the roadside and therefore too close to the 'A' class road (from which the site takes access) and the noise readings were rendered useless by the level of traffic noise. FFR understand that the noise levels at the proxy location are adjusted to account for location (of the 'proxy'). Therefore the noise level shown is the 'adjusted' level as it is supposed to show 'simulated' readings for Staining Wood Cottage. The reported noise levels exceed the evening 'limits' (the grey line at 47dB) on many occasions based on the diagrams. FFR do not believe these figures were correctly represented by the industry as there being 'no breaches'. That is not what these diagrams show.

## 3. UKOOGs response for hearing days 24/25 January 2019 - table 1

3.1 UKOOG presented Table 1(pages 8-12) to show the range of distances from residential receptors. FFR have calculated the average distance of these wellsites from a residential property is 413m. The wellsites are mainly conventional sites with only a few unconventional sites (in exploration phase)

3.2 FFR consider this mirrors to a large extent a paper by S Clancy and others for Refine<sup>7</sup> which found that the average distance from a much larger sample of well sites (both oil and gas in UK) from residential buildings was 447m

3.3 However the averages include only three fracking sites. The average is made up of predominantly conventional hydrocarbon sites. FFR consider a conventional wellsite is completely different to an 'unconventional' site for reasons briefly explained in 3.4 and 3.5.

3.4 Conventional sites have much less site activity as the hydrocarbon comes from a reservoir in the deep geology. Fracking has much of the activity of a conventional site; significantly in addition there is explosive power, high pressure and large volumes of fluid. This necessitates more HGV movements, more equipment on site, more noise, and more emissions. That is the reality of this industrial process.

3.5 A 'conventional' reservoir may be exploited for many years. Elsewhere in the world evidence shows that with fracking there is a very quick tail off in the volume of gas recovered from a fracked well. This means that further drilling and fracking is required on the same site to maximise the recovery of the resource generally within a year or two. It follows that this is repeated for each borehole on the wellsite.

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<sup>5</sup>[https://www.northyorks.gov.uk/sites/default/files/fileroot/Planning%20and%20development/Minerals%20and%20waste%20planning/Examination%20Library/Additional%20hearing%20day/Jan19\\_3684%20FrackFreeRyedale.pdf](https://www.northyorks.gov.uk/sites/default/files/fileroot/Planning%20and%20development/Minerals%20and%20waste%20planning/Examination%20Library/Additional%20hearing%20day/Jan19_3684%20FrackFreeRyedale.pdf)

<sup>6</sup> <https://www.cuadrillaresourcesportal.com/dec2017.html>

<sup>7</sup> <http://www.refine.org.uk/media/sites/researchwebsites/1refine/papers/Footprint%20paper.pdf>

#### 4 The interactive map provided by UKOOG

4.1 Along with others involved in the MWJP, FFR do not know whether or not there will be any submission from UKOOG of their interactive map or its data set (to be potentially provided to the MPAs). FFR want to make comments and reserve the right to do so; however this is best done if/after more detail is forthcoming. The demonstration on 24<sup>th</sup> January 2019 was inconclusive.

4.2 FFR has already supplied a map of their own (see footnote 1 page 1 above)

#### 5 Noise and national policy

5.1 Planning Practice Guidance for Minerals is very explicit that the objective for noise levels should no more than 10dB above background levels during day and evening operations and overnight should reduce to a minimum. These should be the levels set during any planning application process, having carefully established the background noise levels over some extended period.

The PPG also states that certain maxima are to apply in any event namely 55dB day/evening and 42dB at night. These should never be regarded as a default level in the view of FFR.

The laws of physics support what we all experience every day, namely that sound levels decrease as the distance from the sound source increases. This is illustrated in appendix 1.

5.2 It seems entirely appropriate therefore, to ensure the protection of communities and to be consistent with the Written Ministerial Statement (HCWS202) of 16 September 2015 stating that “the very highest safety and environmental standards” would be required, that operators should expect to reach a higher standard of mitigation for noise, visual impact, light and air pollution the closer to residential receptors they wish to establish a well pad.

What may be an “unreasonable burden” at 1000m or even 750m may be an entirely reasonable burden at 500m or closer, operators should expect that MPAs will require a higher standard for all manner of mitigating measures necessary to protect the community to the highest standards as stated by WMS15.

5.3 For clarity FFR have taken expert advice on behalf of the community in relation to the national policy and guidance and its interaction with a 500m buffer zone. It is attached in a pdf appendix 1.

Appendix 1 – attached as a pdf

Minerals and waste joint plan – Noise -note by Rupert Taylor – 01 Feb 2019

## **MINERALS AND WASTE JOINT PLAN Unconventional Oil and Gas**

**1 February 2019**

This note has been prepared by Rupert Thornely-Taylor of Rupert Taylor Ltd, consultants in acoustics, noise and vibration.

He is a Fellow of, and was a founder member of, the Institute of Acoustics (who in 2016 awarded him the Rayleigh Medal for outstanding contributions to Acoustics), a Member of the Institute of Noise Control Engineering of the USA and a Member of the International Institute of Acoustics and Vibration. He has specialised exclusively in the subjects of noise, vibration and acoustics for 54 years. He has been an independent consultant in these subjects for the past fifty years, and heads the Rupert Taylor Ltd consultancy practice.

He is a past President and Honorary Member of the Association of Noise Consultants (who in 2013 awarded him their Outstanding Contribution award) and an officer of the International Institute of Acoustics and Vibration.

He is the author of the Pelican book NOISE, and editor or co-author of many other books and publications. He was a member of the External Review Group in the preparation of the World Health Organization Environmental Noise Guidelines for the European Region 2018. He serves on BSI and ISO committees and working groups. He is expert witness for the Secretary of State for Transport in the Select Committees in Parliament on the High Speed Two Bills.

He has extensive experience noise from major projects including the minerals, oil and gas industry. He was expert witness for Shell in the Corrib Onshore Pipeline project in Ireland, has advised on noise from Fracking in the United States and in major coal mining, wind farm, power transmission and construction projects involving long distance propagation of noise.

### **Matters considered**

The topics considered below include (1) the basis of assessment of noise from unconventional oil and gas sites, (2) the prediction and mitigation of noise from such sites, (3) the enforcement of limits and (4) conclusions regarding the necessity for a 500m buffer zone.

### **Basis of assessment**

Government guidance on the assessment of noise is contained in the online Planning Practice Guidance (PPG). There are two relevant pieces of guidance on noise, firstly the National Planning Policy Framework (NPPF) and the Noise Policy Statement for England (NPSE) on which the NPPF relies, and the minerals guidance within the PPG. The minerals guidance is consistent with the more general guidance on noise in the PPG, and is usually taken as being a full statement of government policy relating to noise from minerals schemes. There is no reason why it does not apply to unconventional oil and gas schemes.

The minerals guidance is that

Proposals for the control or mitigation of noise emissions should:

- consider the main characteristics of the production process and its environs, including the location of noise-sensitive properties and sensitive environmental sites;
- assess the existing acoustic environment around the site of the proposed operations, including background noise levels at nearby noise-sensitive properties;
- estimate the likely future noise from the development and its impact on the neighbourhood of the proposed operations;
- identify proposals to minimise, mitigate or remove noise emissions at source;
- monitor the resulting noise to check compliance with any proposed or imposed conditions.

Paragraph: 019 Reference ID: 27-019-20140306

### **How should mineral planning authorities determine the impact of noise?**

Mineral planning authorities should take account of the prevailing acoustic environment and in doing so consider whether or not noise from the proposed operations would:

- give rise to a significant adverse effect;
- give rise to an adverse effect; and
- enable a good standard of amenity to be achieved.

In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure would be above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation. As noise is a complex technical issue, it may be appropriate to seek experienced specialist assistance when applying this policy.

Paragraph: 020 Reference ID: 27-020-20140306

### **What are the appropriate noise standards for mineral operators for normal operations?**

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.

Paragraph: 021 Reference ID: 27-021-20140306

The numerical guidance in the last extract reproduced above is often mistakenly read in isolation, without taking account of the preceding overall guidance. A frequent error is to state noise limits for minerals activities as 55dB(A) LAeq, 1h (free field) by day and 42dB(A) LAeq,1h (free field) at night without any qualification. The full guidance is that noise at source should be minimised, mitigated or removed, should be considered in the context of the prevailing acoustic environment with regard to its giving rise to an adverse effect, and a significant adverse effect, and within reason seek to limit it to background +10 subject to the 55/42 cap.

### **The prediction and mitigation of noise from outdoor noise sources over long distances**

Noise source data are usually provided in terms of sound power level, and although simple sound power level figures may contain significant uncertainty because they do not contain information about the directivity of the source, they can be used as the starting point for noise predictions provided the magnitude of the uncertainty is stated.

Between the source and the receiver sound is attenuated by four main mechanisms, geometric spreading, ground attenuation, atmospheric attenuation and noise barrier effects. In still, isotropic air conditions, these effects can be predicted subject to the difficulty of knowing all the parameters of the ground surface properties and topography. Noise barriers, while reducing noise also prevent some or all ground attenuation from occurring. Noise barrier effects are dependent on the difference between the total length of a line from source to top of barrier and top of barrier to receiver, and a direct line through the barrier from source to receiver, known as the path difference.

Still isotropic air conditions are uncommon, and wind gradients and or temperature gradients have the effect of curving the path of noise transmission. This effect can be represented as creating virtual source and receiver positions which are raised in height relative to the actual positions. This has the effect of greatly reducing the path difference provided by a noise barrier, and reducing its effect. Over long distances complex effects occur: sound levels may decay for the first few hundred metres and then rise again as sound following a curved propagation path reaches the ground.

The consequence is that there is no single number which can be predicted to represent a noise level at a distance. Any prediction has to be associated with a range of probabilities depending on frequency of wind directions, atmospheric conditions and actual noise emissions compared with assumed levels, and measurement uncertainty. That range can be large, as much as 20 dB.

### **The enforcement of limits**

It follows that dealing with noise from large outdoor sites with receptors at a distance by the setting of single-figure noise limits either means setting them materially lower than the central prediction, or setting them in the knowledge that on some days or nights they will be exceeded.

In such circumstances, the enforcement of noise limits in planning conditions becomes far from straightforward. Continuous noise monitoring is expensive, and is rarely practicable at every receptor. If a resident makes a complaint and retrospective monitoring then takes place, the exceedance which gave rise to the complaint may no longer be occurring due to a change in conditions. Enforcement of planning conditions can be difficult in any event, and when the required evidence is randomly time-dependent it becomes even more difficult and expensive. If an enforceable breach is found, there may be no readily applicable way of reducing the noise either at source, or in its transmission path other than ceasing the relevant operation.

### **Conclusions regarding the necessity for a 500m buffer zone**

In the light of the facts set out above, it is instructive to consider the effect of a fixed-distance buffer zone. The advantage of a fixed distance buffer zone is that it is subject to minimal uncertainty. It does not remove the uncertainty about the noise levels that will arrive at the edge of the buffer zone, but its distance can be set so as to encompass 95% of the range of noise levels which will occur. It does not remove the need for numerical noise conditions, otherwise it would act as a disincentive to noise mitigation, but the amount of monitoring for enforcement purposes would be greatly reduced. The strength of the argument for a buffer zone is increased when other environmental effects are taken into account along with noise.

In unfavourable noise propagation conditions, a total source sound power level of 100 dB will result in a received noise level of about 40 dB at a distance of 500m. Total source sound power levels higher than this are likely, but even in such adverse conditions some source mitigation will remain effective.

The conclusion reached is that the case for a buffer zone of 500m is supported by substantial evidence.

A handwritten signature in black ink, appearing to read 'Rupert Thornely-Taylor', with a long, sweeping horizontal stroke at the end.

Rupert Thornely-Taylor  
1 February 2019