

Review of Environmental Impact Noise Assessment

**Proposed Mineral Extraction and Restoration
Land off Bourbles Lane
Preesall
Lancashire**

Planning Application Case Nos LCC/2023/0030

For: Residents of Preesall

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1. CONSULTANTS EXPERIENCE

Three Spires Acoustics (TSA) is an acoustic consultancy specialising in providing advice to commercial and regulatory clients on matters relating to environmental noise and regulatory compliance. Consultant membership includes the Institute of Acoustics (IOA), the Chartered Institute of Environmental Health (CIEH) and the Institute of Licensing (IOL) and several members of staff have a regulatory background. As well as the provision of services for the public and private sector the company deals with the whole range of environmental regulatory control issues and our staff have presented expert testimony at planning, licensing and statutory nuisance hearings.

1.1.1 Professional Associations

Members of The Institute of Acoustics (MIOA)

Members of The Institute of Licensing (AMIOL)

Members of the Chartered Institute of Environmental Health Officers (MCIEH)

2. INTRODUCTION

- 2.1.1 Three Spires Acoustics has been commissioned by Ms Claire Rimmer, Wyre Councillor, on behalf of local residents to undertake a review of the Noise Impact Assessment submitted as part of the Environmental Impact Assessment (EIA) to the local planning authority at Lancashire County Council for planning permission for a new sand and gravel quarry on land off Bourbles Lane near Preesall in Lancashire.
- 2.1.2 Residents have raised concerns that noise from the operation of the quarry will cause significant disturbance and loss of amenity and that the noise impact assessment has not taken into account the full extent of the proposed operations.

2.2 Site Description

- 2.2.1 The application reference LCC/2023/0030 states the application is for:

The extraction and processing of sand and gravel including the construction of new site access roads, landscaping and screening bunds, minerals washing plant and other associated infrastructure with restoration to leisure end-uses, agricultural land and biodiversity enhancement, using imported inert fill.

- 2.2.2 The planning statement provides further details which include.
- 2.2.3 *The application site will provide approximately 5 years extraction at anticipated output levels of 100,000 tonnes per annum. Total project timescales estimated to be 7 years to end of restoration phase.*
- 2.2.4 *Creation of new site access on the B5270 (Lancaster Road), located just to west of the A588 junction. This new access road will be designed to ensure all HGV vehicles leaving the quarry will turn left from the site to gain access on to the A588 only and then the local and national highway network.*
- 2.2.5 An Environmental Statement (ES) has been submitted to report the findings of an Environmental Impact Assessment (EIA) undertaken to assess the environmental impact of the proposed quarry development and restoration, in accordance with the requirements of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations), and provides information that will be used by the Planning Authority and others to inform the process of determining the planning application.
- 2.2.6 Vibrok provided a Noise Assessment report reference R23.11291/2/AP, dated 20th March 2023 and this was submitted as Appendix 9 of the EIA. Vibrok are an environmental consultancy specialising in the assessment and measurement of noise, vibration and dust. The authors of the report are suitably qualified and experienced, and I consider the report has been undertaken in a competent manner. However, I also consider that there are areas of the assessment which require clarification and potentially further evaluation and I discuss these at Section 4 and 5 of this document.

2.2.7 With regard to noise the outcome of the EIA states.

(12.41) The noise assessment report has concluded that the potential effects of the development in terms of noise impact are at an acceptable level and are not significant.

(12.42) The impact magnitude of the short-term and normal operational noise at the various receptors is therefore assessed as low. The receptors are mostly high sensitivity residential properties, and therefore the impact effects are assessed as minor adverse but are based on conservative worst-case values.

(12.43) A variety of best practice noise control measures are detailed in the report and will be implemented to minimise noise impacts:

- *Strict adherence to stated operating hours.*
- *All plant and equipment to comply with statutory noise emission requirements.*
- *Audible reversing warning systems on mobile plant and vehicles should be of minimum noise impact.*
- *All machinery regularly inspected and maintained; silencers fitted where appropriate.*
- *Drop height of materials minimised.*
- *Start up plant and vehicles sequentially, warm up/idle away from residential properties.*
- *Avoid unnecessary horn usage, sharp braking and engine revving.*
- *Switch off equipment not required or throttle down to minimum. Covers, panels and enclosures to be kept closed when equipment in use.*
- *Plant that produces directional noise to be oriented away from noise sensitive receptors where practicable.*
- *Site access road and haul roads to be kept clear and well maintained, avoiding steep gradients.*
- *Operatives to be trained in techniques to minimise site noise and supervised to ensure best working practices are implemented.*

2.2.8 Plans of the wider location and a site plan (taken directly from the planning portal) are presented in Figures 1 and 2 below.

Land off Bourbles Lane - Review Environmental Noise Impact Assessment

Figure 1. Proposed Bourbles Lane Quarry Site Location Map

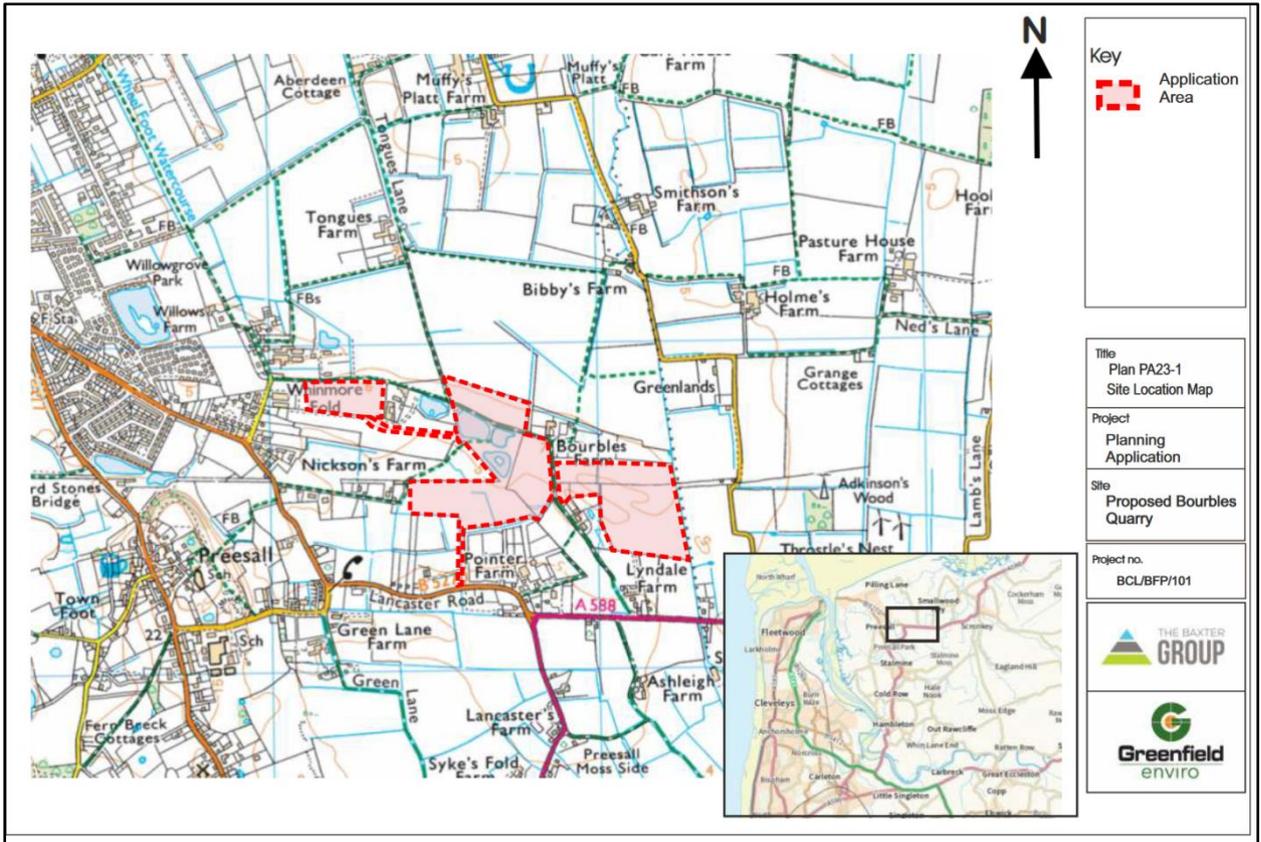
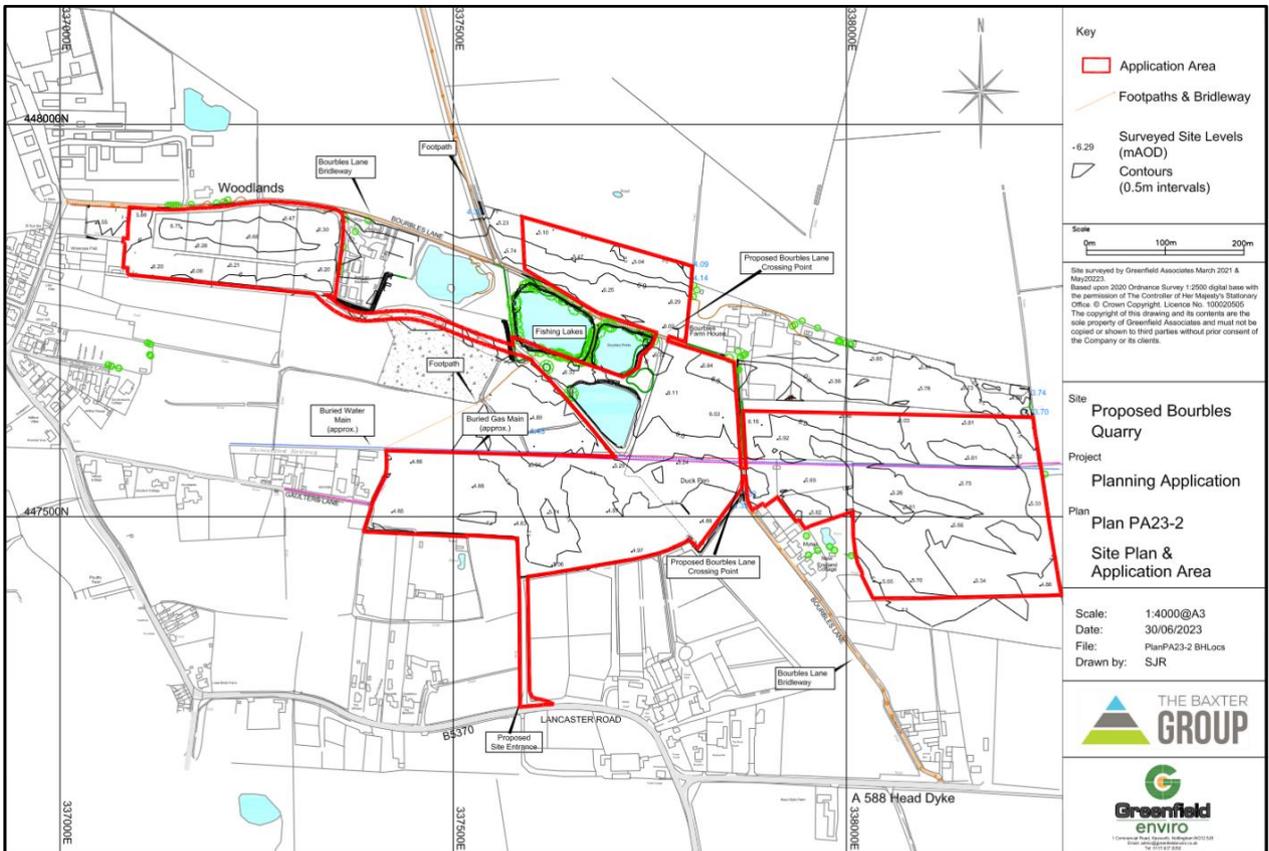


Figure 2. Proposed Bourbles Lane Quarry Site Plan



3. LEGISLATIVE FRAMEWORK

3.1 National Policy

- 3.1.1 National planning guidance is now contained within the National Planning Policy Framework (NPPF) 'the Framework' (March 2012, revised September 2023) and the Noise Policy Statement for England - NPSE (March 2010). There is also specific planning guidance related to Mineral works detailed as part of the NPPG.

3.2 Noise Policy Statement for England 2010

- 3.2.1 The NPPF affirms that National Policy Statements form part of the overall framework of national planning policy and should be a material consideration in decisions on planning applications. The Noise Policy Statement for England (NPSE) came into force in 2010 and states.
- 3.2.2 Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:
- avoid significant adverse impacts on health and quality of life;
 - mitigate and minimise adverse impacts on health and quality of life and;
 - where possible, contribute to the improvement of health and quality of life.
- 3.2.3 The noise aims of the NPPF widely reflect those contained in the NPSE. The NPSE does however include some new concepts within the explanatory note in assessing noise impacts and uses established concepts from toxicology currently being applied to noise impacts including:
- NOEL – No Observed Effect Level. This is the level below which no effect can be detected. In simple terms, below this level there is no detectable effect on health and quality of life due to the noise.
 - LOAEL – Lowest Observed Adverse Effect Level. This is the level above which adverse effects on health and quality of life can be detected.
 - SOAEL – Significant Observed Adverse Effect Level. This is the level above which significant adverse effects on health and quality of life occur.
- 3.2.4 The NPSE confirms that it is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise and in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times of the day.

3.3 National Planning Policy Framework (NPPF) 2023

3.3.1 The NPPF was amended in September 2023 but keeps a similar emphasis regarding conserving and enhancing the natural environment.

3.3.2 Section 15 Conserving and enhancing the natural environment Paragraph 185:

3.3.3 Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

- mitigate and reduce to a minimum potential adverse impact resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;
- identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and
- limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.

3.3.4 Paragraph 187

3.3.5 *Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.*

3.3.6 Section 17 Facilitating the sustainable use of minerals.

3.3.7 Paragraph 209:

3.3.8 *It is essential that there is a sufficient supply of minerals to provide the infrastructure, buildings, energy and goods that the country needs. Since minerals are a finite natural resource, and can only be worked where they are found, best use needs to be made of them to secure their long-term conservation.*

3.3.9 Para 210 Planning policies should

a) provide for the extraction of mineral resources of local and national importance, but not identify new sites or extensions to existing sites for peat extraction.

b) so far as practicable, take account of the contribution that substitute or secondary and recycled materials and minerals waste would make to the supply of materials, before considering extraction of primary materials, whilst aiming to source minerals supplies indigenously.

c) safeguard mineral resources by defining Mineral Safeguarding Areas and Mineral Consultation Areas⁷⁰; and adopt appropriate policies so that known locations of specific minerals resources of local and national importance are not sterilised by non-mineral development where this should be avoided (whilst not creating a presumption that the resources defined will be worked);

d) set out policies to encourage the prior extraction of minerals, where practical and environmentally feasible, if it is necessary for non-mineral development to take place.

e) safeguard existing, planned and potential sites for: the bulk transport, handling and processing of minerals; the manufacture of concrete and concrete products; and the handling, processing and distribution of substitute, recycled and secondary aggregate material.

f) set out criteria or requirements to ensure that permitted and proposed operations do not have unacceptable adverse impacts on the natural and historic environment or human health, taking into account the cumulative effects of multiple impacts from individual sites and/or a number of sites in a locality.

g) when developing noise limits, recognise that some noisy short-term activities, which may otherwise be regarded as unacceptable, are unavoidable to facilitate minerals extraction; and

h) ensure that worked land is reclaimed at the earliest opportunity, taking account of aviation safety, and that high quality restoration and aftercare of mineral sites takes place.

When determining planning applications, great weight should be given to the benefits of mineral extraction, including to the economy⁷¹. In considering proposals for mineral extraction, minerals planning authorities should:

Para 211 When determining planning applications, great weight should be given to the benefits of mineral extraction, including to the economy. In considering proposals for mineral extraction, minerals planning authorities should

a) as far as is practical, provide for the maintenance of landbanks of non-energy minerals from outside National Parks, the Broads, Areas of Outstanding Natural Beauty and World Heritage Sites, scheduled monuments and conservation areas.

b) ensure that there are no unacceptable adverse impacts on the natural and historic environment, human health or aviation safety, and take into account the cumulative effect of multiple impacts from individual sites and/or from a number of sites in a locality.

c) ensure that any unavoidable noise, dust and particle emissions and any blasting vibrations are controlled, mitigated or removed at source⁷², and establish appropriate noise limits for extraction in proximity to noise sensitive properties.

d) not grant planning permission for peat extraction from new or extended sites;

e) provide for restoration and aftercare at the earliest opportunity, to be carried out to high environmental standards, through the application of appropriate conditions. Bonds or other financial guarantees to underpin planning conditions should only be sought in exceptional circumstances.

f) consider how to meet any demand for the extraction of building stone needed for the repair of heritage assets, taking account of the need to protect designated sites; and

g) recognise the small-scale nature and impact of building and roofing stone quarries, and the need for a flexible approach to the duration of planning permissions reflecting the intermittent or low rate of working at many sites.

3.4 National Planning Policy Guidance Noise (NPPG) 2014

3.4.1 Revised Planning Practice Guidance was released in March 2014 to support the NPPF. The Guidance stipulates that Local Planning Authorities’ plan making and decision making should take account of the acoustic environment and in doing so consider:

- Whether or not a significant adverse effect is occurring or likely to occur.
- Whether or not an adverse effect is occurring or likely to occur; and
- Whether or not a good standard of amenity can be achieved

3.4.2 The table below is in the Guidance to assist recognising “when noise could be a concern.

Table 1. NPPG 2014 Noise exposure hierarchy, based on the likely average response.

Perception	Examples of outcomes	Increasing effect level	Action
Not noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
		Lowest Observed Adverse Effect Level	
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
		Significant Observed Adverse Effect Level	

<p>Noticeable and disruptive</p>	<p>The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.</p>	<p>Significant Observed Adverse Effect</p>	<p>Avoid</p>
<p>Noticeable and very disruptive</p>	<p>Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory</p>	<p>Unacceptable Adverse Effect</p>	<p>Prevent</p>

3.5 Minerals PPG

3.5.1 The supporting ‘Minerals’ PPG is the current Government advice applicable to the control of noise from surface mineral workings in England and recognises that planning for the supply of minerals has a number of special characteristics that are not present in other development.

3.5.2 ***How should minerals operators seek to control noise emissions?***

3.5.3 *Those making mineral development proposals, including those for related similar processes such as aggregates recycling and disposal of construction waste, should carry out a noise impact assessment, which should identify all sources of noise and, for each source, take account of the noise emission, its characteristics, the proposed operating locations, procedures, schedules and duration of work for the life of the operation, and its likely impact on the surrounding neighbourhood.*

3.5.4 *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 Revision date: 06 03 2014

3.5.5 **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.

3.5.6 *Paragraph: 020 Reference ID: 27-020-20140306 Revision date: 06 03 2014*

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

3.5.8 *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 Revision date: 06 03 2014

3.5.9 **What type of operations may give rise to particularly noisy short-term activities and what noise limits may be appropriate?**

Activities such as soil-stripping, the construction and removal of baffle mounds, soil storage mounds and spoil heaps, construction of new permanent landforms and aspects of site road construction and maintenance.

Increased temporary daytime noise limits of up to 70dB(A) LAeq 1h (free field) for periods of up to 8 weeks in a year at specified noise-sensitive properties should be considered to facilitate essential site preparation and restoration work and construction of baffle mounds where it is clear that this will bring longer-term environmental benefits to the site or its environs.

3.5.10 Where work is likely to take longer than 8 weeks, a lower limit over a longer period should be considered. In some wholly exceptional cases, where there is no viable alternative, a higher limit for a very limited period may be appropriate in order to attain the environmental benefits. Within this framework, the 70 dB(A) LAeq 1h (free field) limit referred to above should be regarded as the normal maximum.

Paragraph: 022 Reference ID: 27-022-20140306 Revision date: 06 03 2014

3.6 Mineral Planning Noise Limiting Criteria

3.6.1 Planning policy therefore provides a set of noise limiting criteria which should be applied by the planning authority to the work in question. The policy also allows for some contextual flexibility around levels for shorter term works. I have detailed the limiting criteria in Table 2 below.

Table 2. Planning Mineral Guidance Noise Limiting Criteria

Mineral operations – Time	Limiting criteria	Maximum level
07:00 to 19:00	Operations do not exceed representative background level LA90,1hr +10dB	55dB(A) LAeq, 1h (free field)
19:00 to 22:00	Operations do not exceed representative background level LA90,1hr +10dB	55dB(A) LAeq, 1h (free field)
22:00 to 07:00	noise limits should be set to reduce to a minimum any adverse impacts, without imposing unreasonable burdens on the mineral operator	42dB(A) LAeq,1h (free field)
Short Term works for periods of up to 8 weeks in a year	NA	70dB(A) LAeq 1h (free field)
Short Term works for periods of more than 8 weeks in a year	NA	lower limit over a longer period should be considered
Short Term works where there is no viable alternative	70 dB(A) LAeq 1h (free field)	a higher limit for a very limited period may be appropriate to attain the environmental benefits

4. ACOUSTIC ENVIRONMENT

4.1.1 Mineral Planning guidance is clear that the existing acoustic environment around the site of the proposed operations, should be assessed including background noise levels at nearby noise-sensitive properties.

4.2 BASELINE NOISE SURVEY

4.2.1 The Vibrock report indicates that measurements of the existing ambient and background noise levels in the vicinity of the site were obtained on Wednesday 13 October 2021. Fully attended measurements were made at locations selected to represent noise sensitive premises closest to the application site. The report states that the acoustic environment in the vicinity of the site predominantly comprised of noise from distant and local road traffic, along with occasional aircraft movements and birdsong.

4.2.2 The Vibrock background noise assessment is reproduced at Table 3 below.

Table 3. Vibrock Baseline Noise Monitoring Results

Location	Date and Start Time	Duration (T)	L _{Aeq,T} dB	L _{Amax,T} dB	L _{A10,T} dB	L _{A90,T} dB
Crossing Cottage	13/10/2021 10:46	15 min	57.2	78.9	48.6	37.8
	13/10/2021 13:19	15 min	55.4	78.1	47.3	37.6
	Average		56	79	48	38
Bourbles Farm	13/10/2021 11:09	15 min	45.3	60.0	47.4	39.2
	13/10/2021 13:43	15 min	47.1	61.0	49.1	41.3
	Average		46	61	48	40
Ourome	13/10/2021 11:33	15 min	39.4	58.0	40.8	36.4
	13/10/2021 14:06	15 min	40.2	52.8	42.9	36.8
	Average		40	58	42	37
Woodlands / Red Lea / Little Tongues Lane	13/10/2021 11:45	15 min	44.0	61.9	45.3	40.0
	13/10/2021 14:29	15 min	43.6	54.0	45.6	39.5
	Average		44	62	45	40
The Beeches	13/10/2021 12:08	15 min	54.0	75.7	54.2	41.8
	13/10/2021 14:51	15 min	55.0	76.3	52.5	42.6
	Average		55	76	53	42
Lyndale Farm	13/10/2021 12:32	15 min	55.7	64.2	59.4	48.1
	13/10/2021 15:11	15 min	56.7	69.1	59.6	46.8
	Average		56	69	59	47
Mytax / New England Cottage	13/10/2021 12:51	15 min	46.5	60.4	47.2	42.5
	13/10/2021 15:29	15 min	46.8	62.6	47.9	42.7
	Average		46	63	48	43

Note - The background sound level (L_{A90}) at each monitoring location was determined by arithmetically averaging the disaggregated L_{A90,15min} measurement data collected during the survey.

4.2.3 The baseline monitoring survey is based on 2Nos 15minute measurements at each location taken on one day in October 2021. This is considered inadequate to provide representative appraisal of the prevailing situation as required by MPG guidance.

- 4.2.4 Mineral Guidance does not include any detail on representative background noise survey times, neither does BS5228:2009+A12014 Code of practice for noise and vibration control on construction and open sites. However, BS4142:2014+A12019 Methods for rating and assessing industrial and commercial sound does provide relevant guidance on obtaining background sound levels and states.

8.1.4 The monitoring duration should reflect the range of background sound levels for the period being assessed. In practice, there is no “single” background sound level as this is a fluctuating parameter. However, the background sound level used for the assessment should be representative of the period being assessed.

NOTE 1 To obtain a representative background sound level a series of either sequential or disaggregated measurements ought to be carried out for the period(s) of interest, possibly on more than one occasion. A representative level ought to account for the range of background sound levels and ought not automatically to be assumed to be either the minimum or modal value.

- 4.2.5 Therefore, it would seem appropriate that the background assessment is undertaken for significantly longer than 2Nos 15minute periods at each or a number of representative locations, as this would assist in understanding the likely impact and effect of the operational noise.
- 4.2.6 A background noise survey was therefore carried out from Friday 22nd to Friday 29th September 2023 at location MP1 New England Cottage, 2 Bourbles Lane, Preesall, FY60PF and MP2 Woodlands, 25 Little Tongues Lane, Preesall, FY60PD, identified on the location map at Figure 3 below.

Figure 3. Noise Survey Locations



4.2.7 The sound level meters were set to record all broadband and statistical A weighted and octave band sound pressure levels including L90 and Leq. Measurements were simultaneously made of 1 second- and 1-minute time intervals. Measurements were obtained using the following instrumentation complying with the Type 1 specification of IEC 60651, IEC 61260 and IEC 61672;

- Bruel and Kjaer 2250 Integrated SLM Serial Nos 2827259 & 2764958
- Bruel and Kjaer 4231 Field Calibrator 3001533

4.2.8 The equipment was calibrated using a B&K 4231 field calibrator both before and after the survey and no significant drift was observed. Full calibration certificates are available upon request. Measurements were supplemented with timed and triggered audio recordings to enable post measurement analysis.

4.2.9 Weather conditions were monitored using a Bruel and Kjaer MM-0316-A Weather Station Kit which was installed at MP1 and measured average and maximum wind speed and wind direction and rainfall. Conditions included significant periods of wind speeds above 5m/s and theses, along with periods of prescription, have been removed from the measurement results used for assessment purposes.

4.3 Noise Survey Results

4.3.1 Table 4 details the ambient and background noise measurement results at MP1 and MP2 for the operational day time, evening and night-time situations.

Table 4. MP1 & MP2 LAeq,15minute LAeq & LA90,15minute Measurement Results

Location Time	LAeq	LAF90
MP1 07:00-19:00	49 (34-59)	43 (29-49)
MP1 19:00-22:00	46 (38-49)	37 (27-42)
MP1 22:00-07:00	35 (24-51)	29 (21-43)
MP2 07:00-19:00	47 (41-70)	43 (31-59)
MP2 19:00-22:00	50 (36-56)	45 (33-49)
MP2 22:00-07:00	47 (29-58)	36 (27-52)

- 4.3.2 The results indicate that background L90,15minute modal results for MP1 and MP2 are both 43dB. The closest Vibrok measurement location to MP1 was Mytax/New England Cottage with a background level also at 43dB LA90,15minute and for MP2 location was Red Cottage which was assessed by Vibrok with a background level of 40dB LA90,15minute which was 3dB lower than the TSA assessment.
- 4.3.3 It is evident that both sets of measurements broadly align, however its is still considered that a more comprehensive survey should be undertaken at representative locations and the survey should also include a Saturday as this is a proposed working day.

5. POTENTIAL NOISE EMISSIONS

5.1 Prediction Methodology

- 5.1.1 The prediction methodology outlined in the Vibrok report follows that detailed within Annex F of BS 5228-1:2009+A1:2014 ‘Code of practice for noise and vibration control on construction and open sites. Part 1: Noise’.
- 5.1.2 Typically, this is undertaken either using proprietary noise modelling software or spreadsheet calculations, inputting the relevant data inputs such as sound power level of each item of static or mobile plant, distance from source to receiver, on time, effect of barriers and ground effect, speed of vehicles etc, to provide a cumulative noise level at each receiver location for each stage of the quarry operations.
- 5.1.3 I have analysed the source data and compared with those within BS5228 Annex D, and these seem reasonably assigned and representative for the plant in question.
- 5.1.4 However, I would suggest that the on time for some of the highest noise generating plant should be justified with further information presented, see Table 5 below. Vibrok have also referenced operations at an example site and information should be provided to ascertain if this differs in any way to the proposed quarry operations.

Table 5. Vibrok Table 5 Noise Source Data

Table 5: Noise Source Details

Description of Plant/Activity	Sound Power Level dB(A)	Assumptions
Excavator loading Dump Truck	104	75% on-time
Dozer	106	25% on-time
Tipping Fill	107	10% on-time
Dump Trucks	103	16 movements/hour 20 mph
Water Bowser	109	2 movements/hour 20 mph

- 5.1.5 Typically results will be provided within the Appendices as noise contour maps with an indication of received noise levels at receptor locations and/or spreadsheet calculation tables

indicated for each stage of the prediction methodology in order that the local authority can scrutinise the calculation process in more detail.

- 5.1.6 I would therefore suggest that Vibrock makes these available to the local authority for such analysis to be undertaken by the LA's environmental health officer and other third-party consultants.
- 5.1.7 I would recommend that noise predictions are undertaken by phase and not just for the whole of normal operations. In this way each phase can be compared against the limit criteria and will provide a more comprehensive and transparent assessment.
- 5.1.8 With regard to the proposed "campaign basis" for site operations programming, this may result in higher on times than other types of operation that are governed by processing capacity and where material is not stockpiled. This should be discussed as necessary to determine if there are other operational methodologies which may reduce noise and potentially other environmental impacts, within the context of operational practicabilities.

5.2 Noise Impact Assessment

- 5.2.1 Vibrock state at 5.2.2 of the report *In terms of short-term operations, it is considered that some aspect of final restoration work and initial preparation works, such as soil stripping and bund formation, are likely to have the highest noise impact due to their potential occurrence at or close to the site boundary and potentially unscreened from noise-sensitive premises in the vicinity.*
- 5.2.2 The Assessment of Short-Term Operations is reproduced at Table 6 below and indicates that all predicted noise levels will be below the maximum of 70dB(A) LAeq 1hr at all locations, with five locations being within 3dB of the upper limit level. There is no indication of what operations will cause the highest noise impact and for how long these may take place for. It is considered reasonable for this information to be provided to the Local Authority and should form part of the EIA assessment process to allow proper scrutiny of the objective data by the planning authority and regulator.

Table 6. Vibrok Assessment of Short-Term Operations

Table 6: Assessment of Short-Term Operations

Location	Predicted Worst Case Site Noise Level dB L _{Aeq,1h} (free-field)	Difference between Site Noise and 70 dB(A) Limit
Old Nickson's Cottage	52	-18
Whinmore Fold	57	-13
Woodlands	68	-2
Red Lea	68	-2
Bourbles Farm	67	-3
Crossing Cottage	48	-22
Greenacres	47	-23
Lyndale Farm	49	-21
Mytax / New England Cottage	68	-2
Hillfield House / Pointer Farm	54	-16
The Beeches	54	-16
Ourome	68	-2

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- 5.2.3 With regard to assessment of operation al noise impacts Vibrok state; *The predictions include the beneficial effects of screening bunds which were designed into the scheme at an early stage to mitigate potential noise impacts. The screening bunds will be created using soils retained for restoration purposes. The location of the proposed screening is detailed within the quarry development plans.*
- 5.2.4 The outcome for the assessment for normal operations is reproduced at Table 7 below and concludes.

The results of the assessment demonstrate that potential noise levels from normal site operations could exceed the background level by more than 10 dB at Woodlands, Red Lea and Bourbles Farm. However, the proposed screening bunds reduce potential noise levels to within the 55 dB limit at all assessment locations and near to the LA90 + 10 dB(A) criteria.

Table 7. Vibrok Assessment of Normal Operations

Table 7: Assessment of Normal Operations

Location	Predicted Worst Case Site Noise Level dB L _{Aeq,1h} free-field	Background Noise Level	Difference between site Noise and Background Level	Difference between Site Noise and 55 dB(A) Limit
Old Nickson's Cottage	47	40	+7	-8
Whinmore Fold	48	40	+8	-7
Woodlands	54	40	+14	-1
Red Lea	54	40	+14	-1
Bourbles Farm	53	40	+13	-2
Crossing Cottage	47	38	+9	-8
Greenacres	46	47	-1	-9
Lyndale Farm	48	47	+1	-7
Mytax / New England Cottage	52	43	+9	-3
Hillfield House / Pointer Farm	51	42	+9	-4
The Beeches	50	42	+8	-5
Ourome	47	37	+10	-8

- 5.2.5 Without having access to the prediction calculation data, it is not possible to validate these results. Again, it is considered reasonable for this information to be provided to the Local Authority and should form part of the EIA assessment process to allow proper scrutiny of the objective data by the planning authority and regulator.
- 5.2.6 The area with the lowest ambient at Ourome is closest to the processing plant and phase 4 and also exposed to some of the highest short term noise activity impact. It is considered reasonable to enquiry what further controls can be included to protect this location.
- 5.2.7 It is noted, however, that the predicted noise levels are not significantly above the typical modal level and below some of the higher levels within the range when compared to the ambient noise measured at MP1 and MP2 and therefore there will be a degree of masking from prevailing ambient noise on occasion and other times when the operational noise maybe more audible.

5.3 Recommendations

- 5.3.1 It is considered that before the planning authority can properly assess the noise impact of the EIA, further information needs to be made available to them to allow for proper scrutiny in order that decision makers to have all the relevant information before coming to a judgement on the noise impact in the context of the EIA.
- 5.3.2 *The Mineral Planning guidance is clear that the noise assessment should assess operational noise to identify noise that;*
- *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. This has not been clarified within the assessment.

5.3.3 I therefore recommend that the clarification or additional information is provided related to the following areas.

- Provision of a detailed background assessment undertaken at a number of representative locations for a minimum period of 24hrs and ideally over a weekend period (Friday to Monday) as Saturday morning working is planned.
- Provision of details of the calculation predictions and/or noise modelling including assumptions and justification of input data to the local authority for validation. It is recommended that this is undertaken for each phase of the operation not just for short term noisy and normal operations.
- Where certain locations have been identified as having significantly lower background sound levels than other locations, this may lead to a greater relative noise impact and therefore details of how this can be mitigated, where practicable, through physical or administrative controls, should be made available to the LPA.
- Provision of an assessment matrix table to identify operational noise in relation to the requirements of Mineral Planning Guidance and the EIA requirements.
- The provision of details on how the validation of the predictions, once operations have commenced, will be undertaken and if the predictions have underestimated the operational situation what is the process to reduce the noise impact.
- Should there be intensification of operations for any reason what is the process for reassessment and mitigation.
- Provision of a Noise Management Plan (see example condition)
- Agreement that noisy operations will only be between 8am and 6pm, Monday to Friday and 8am to 1pm Saturday, with shoulder hrs of 7am to 8am for set up of plant and equipment.
- How will noise monitoring at representative locations relevant to each phase of the life of the site be undertaken. i.e location, duration, frequency, sharing of information etc
- Community Engagement procedures

5.3.4 I have provided a set of example noise control conditions which maybe considered by the local authority.

6. EXAMPLE NOISE CONTROL CONDITIONS

1. Quarry operations shall only be carried out between the hours of 08:00 and 18:00 on each day from Monday to Friday and between the hours of 08:00 to 13:00 on Saturdays.
2. The site may operate from 07.00 Monday to Saturday but no powered plant or machinery or power tools shall be used or operated externally before 08.00.
3. The site shall not operate at all on Sundays and Public Holidays.
4. Designated short-term “noisy” operations may include soil-stripping, the construction and removal of baffle mounds, soil storage mounds and spoil heaps, construction of new permanent landforms and aspects of site road construction and maintenance. Such designated short-term “noisy” operations shall only occur for a maximum of 8 weeks in any year from the start of the operation of the quarry site. The local authority will be infromed of a programme of works for such operations 4 weeks in advance of them taking place.
5. Deliveries and collections from the site including spoil may take place only between the hours of 08:00 and 18:00 on each day from Monday to Friday, between the hours of 08:00 to 13:00 on Saturdays and at no time on Sundays and Bank Holidays.
6. Information in writing shall be delivered to all residential premises located within 500m of the vicinity of the quarry site. This communication must advise of the nature and timing of proposed works and the number of a staffed telephone enquiry line shall be provided for residents to call if required. A list of residential addresses to which this information has been sent will be provided to the Council upon request. An onsite contact telephone number, and any change to it, shall be notified to the Council’s Commercial Environmental Health Department.
7. The applicant shall keep a record of all complaints (and action taken in response to each complaint) made to the telephone enquiry line referred to in the condition above and shall provide details of the number and type of complaints, together with any other reasonable information which the Council may request, on a weekly basis, not more than 48 hours after the end of each weekly period.
8. Noise Limit Levels for Quarry Operations

The measured or calculated level of noise from quarry operations shall not exceed an upper limit level of:

55dB(A) LAeq,1hours between the hours of 08.00 & 18.00 from Monday to Friday; and

55dB(A) LAeq,1hours between the hours of 08.00 & 13.00 on Saturdays,
 at the boundary of, but not limited to, the following representative locations:

Table 8. Preesall Quarry Noise Sensitive Receptor Locations

Ref	Name	Address
NSR1	Crossing Cottage	Green Dick's Lane, Poulton-le-Fylde
NSR2	Mytax	Bourble's Ln, Preesall, Poulton-le-Fylde
NSR3	Bourbles Farm	Bourble's Ln, Preesall, Poulton-le-Fylde
NSR4	Red Lea	Bourble's Ln, Preesall, Poulton-le-Fylde
NSR5	Woodlands	Bourble's Ln, Preesall, Poulton-le-Fylde
NSR6	Whinmore Fold	Little Tongues Lane Preesall, Poulton-le-Fylde
NSR7	Old Nickson's Cottage	Nicksons Lane, Preesall, Poulton-le-Fylde
NSR8	Ourome	Gaulters Lane, Preesall, Poulton-le-Fylde
NSR9	The Beeches	Lancaster Rd, Preesall, Poulton-le-Fylde
NSR10	Mytax / New England Cottage	Lancaster Rd, Preesall, Poulton-le-Fylde
NSR11	Lyndale Farm	Bourble's Ln, Preesall, Poulton-le-Fylde
NSR12	Green Acres	Head Dyke Lane, Preesall, Poulton-le-Fylde

The Locations specified above are identified on the map attached to the accompanying condition

- The measured or calculated level of designated short-term “noisy” operations from quarry shall not exceed an upper limit level of:

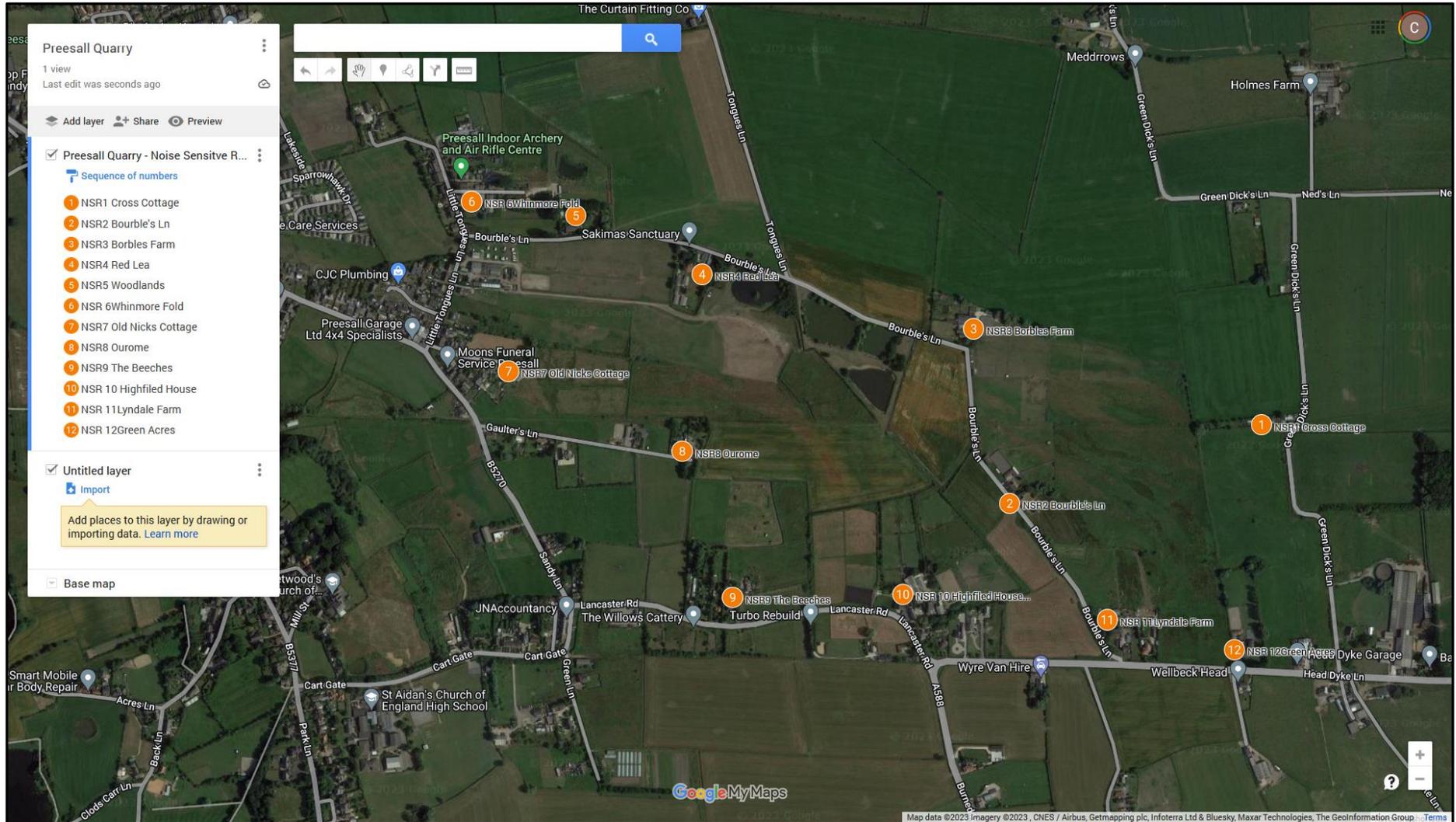
70dB(A) LAeq,1hours between the hours of 08.00 & 18.00 from Monday to Friday;
 and

70dB(A) LAeq,1hours between the hours of 08.00 & 13.00 on Saturdays,

at the boundary of, but not limited to, the noise sensitive receptor locations detailed in Table and location map above.

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Figure 4. Preesall Quarry Noise Sensitive Receptor Locations



10. Permanent and/or periodic noise monitoring shall be undertaken at the boundary representative location/s (identified at condition XX above) relevant to each phase of the quarry operations for the duration of the said phase or during key activities identified as having potentially significant impact on these locations. An alternative position for assessment /measurement may be used such as the boundary of the quarry site, to allow ease of access, this must be shown on a map and noise propagation calculations detailed to show how the equivalent limit level, to comply with condition xx above, has been determined. Where periodic monitoring is undertaken this must be at least undertaken on quarterly basis or during periods of identified as having potentially significant impact.

All measurements will be conducted in accordance with the methods described in Annex G of British Standard BS5228: 2009 (Noise and Vibration Control on Construction and Open Sites). The results of monitoring shall be made available to the Local Authority and local residents (in a restricted form as necessary). If real time web enabled monitoring is undertaken, the results from the monitoring should be made available (in a restricted form as necessary) to both the local authority and resident via a web portal.

11. Noise Management Plan

No development shall commence until the operator has secured the implementation of a Noise Management Plan which is to be submitted to and approved in writing by the Local Planning Authority. The scheme shall make provision for noise monitoring and the noise monitoring results to be submitted to the local minerals authority on an annual basis, and shall also make provision for best practicable means to minimise noise emission, including but not limited to.

- I. Detail site management and responsibilities in relation to noise control
- II. Provide a mechanism to assess monitoring results against Development Consent noise criteria to evaluate compliance.
- III. Detail the noise predictions and significance effect levels. Detail the noise predictions for each phase of the operation of the quarry and an assessment of the significance effect must be included. (Annex F BS5288:2014+A12019).
- IV. Details of how validation of the noise predictions, once operations have commenced, will be undertaken. If the predictions have underestimated the operational situation a process to increase noise mitigation to ensure limit levels are achieved will be required.
- V. Should there be intensification of operations for any reason a process for reassessment and noise mitigation should be detailed to ensure limit levels are not exceeded.

- VI. Detail the requirement for reporting noise criteria exceedances to the relevant stakeholders.
- VII. Detail the controls to be implemented to minimise noise emissions from the site, with specific reference to those detailed within see BS5288:2014+A12019.
- VIII. Address the relevant conditions of the Development Consent
- IX. Detail of the proposed permanent and/or periodic noise monitoring, including vibration monitoring, where necessary, at representative location/s for each phase of the operation of the quarry. The location, number of monitoring stations and the measurement parameters must be agreed with the Local Planning Authority prior to the start of operations.
- X. Details of communication with residents and businesses, including details of the organisational control, lines and methods of communication, programming of works and specifically any specified noisy operations, and the dissemination of monitoring data will be made available to the local authority and residents prior to the start of operations.
- XI. Detail how the Noise Management Plan will be reviewed as the operation of the site progresses.

7. CONCLUSION

- 7.1.1 Three Spires Acoustics (TSA) has undertaken a review of an environmental noise assessment regarding for a new sand and gravel quarry on land off Bourbles Lane near Preesall in Lancashire. The noise assessment forms part of an Environmental Impact Assessment required as part of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 and has been submitted to the local planning authority at Lancashire County Council for planning permission.
- 7.1.2 It is considered that the assessment is too general in nature and does not provide the local planning authority with sufficient information to enable proper scrutiny of the potential noise impact and effects as required by the Environmental Impact Assessment process. It is also considered that that it does not fully comply with the requirements laid out in the national Mineral Planning Guidance.
- 7.1.3 I have outlined a number of key areas which require further information or clarification to be provided to the LPA and these include.
 - i. Provision of a more detailed background noise survey
 - ii. Provision of details of the calculation predictions and/or noise modelling for each phase of the operations.

- iii. Provision of details of the calculation predictions and/or noise modelling including assumptions and justification of input data to the local authority for validation.
- iv. Provision of an assessment matrix table to identify operational noise in relation to the requirements of Mineral Planning guidance and the NPSE guidelines.
- v. Provision of details on how the prediction validation will be undertaken.
- vi. Provision of a Noise Management Plan
- vii. Details of noise monitoring at representative locations relevant to each phase of the life of the site be undertaken.
- viii. Details on Community Engagement procedures

7.1.4 However, should the LPA consider that there is sufficient information available to them to make an informed decision regarding noise impact and effects from the proposal, I have drafted a set of proposed conditions for noise control, on behalf of local residents, and offer these for consideration by the planning authority.

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Appendix A: Results

MP1001	Max				MP1002	Max				MP1003	Max				MP1004	Max			
Start	LAeq	LCeq	Wind	LAF90.0	Start	LAeq	LCeq	Wind	LAF90.0	Start	LAeq	LCeq	Wind	LAF90.0	Start	LAeq	LCeq	Wind	LAF90.0
					22/09/2023 23:00	35	54	4	30	23/09/2023 23:00	47	64	6	42	24/09/2023 23:00	49	69	6	40
					22/09/2023 23:15	34	54	5	30	23/09/2023 23:15	48	66	7	43	24/09/2023 23:15	49	68	5	44
					22/09/2023 23:30	31	48	4	26	23/09/2023 23:30	49	68	7	44	24/09/2023 23:30	51	68	7	44
					22/09/2023 23:45	31	48	3	27	23/09/2023 23:45	50	70	8	45	24/09/2023 23:45	52	71	7	46
					23/09/2023 00:00	29	44	3	25	24/09/2023 00:00	49	68	8	43	25/09/2023 00:00	52	70	7	47
					23/09/2023 00:15	31	49	3	28	24/09/2023 00:15	49	69	7	44	25/09/2023 00:15	48	65	6	44
					23/09/2023 00:30	32	47	3	27	24/09/2023 00:30	49	70	7	45	25/09/2023 00:30	49	68	6	42
					23/09/2023 00:45	34	53	4	29	24/09/2023 00:45	50	69	8	45	25/09/2023 00:45	49	66	5	43
					23/09/2023 01:00	34	54	4	29	24/09/2023 01:00	49	69	9	45	25/09/2023 01:00	46	63	4	42
					23/09/2023 01:15	32	52	3	27	24/09/2023 01:15	48	69	7	44	25/09/2023 01:15	47	65	6	42
					23/09/2023 01:30	29	46	3	27	24/09/2023 01:30	46	65	7	42	25/09/2023 01:30	46	62	5	42
					23/09/2023 01:45	32	47	4	28	24/09/2023 01:45	48	68	7	44	25/09/2023 01:45	47	66	5	42
					23/09/2023 02:00	33	47	3	30	24/09/2023 02:00	47	66	7	42	25/09/2023 02:00	42	59	4	37
					23/09/2023 02:15	33	51	4	30	24/09/2023 02:15	46	66	6	42	25/09/2023 02:15	41	60	4	34
					23/09/2023 02:30	32	47	3	28	24/09/2023 02:30	48	68	8	44	25/09/2023 02:30	38	56	4	32
					23/09/2023 02:45	31	47	4	26	24/09/2023 02:45	48	69	7	44	25/09/2023 02:45	38	54	4	31
					23/09/2023 03:00	29	42	2	23	24/09/2023 03:00	48	69	7	44	25/09/2023 03:00	33	48	2	28
					23/09/2023 03:15	27	42	3	23	24/09/2023 03:15	47	67	7	43	25/09/2023 03:15	35	50	3	29
					23/09/2023 03:30	24	39	2	22	24/09/2023 03:30	45	67	7	42	25/09/2023 03:30	33	49	3	30
					23/09/2023 03:45	27	45	3	23	24/09/2023 03:45	44	63	6	40	25/09/2023 03:45	36	51	4	31
					23/09/2023 04:00	28	43	2	23	24/09/2023 04:00	45	64	6	41	25/09/2023 04:00	31	48	3	30
					23/09/2023 04:15	25	41	3	22	24/09/2023 04:15	43	63	7	40	25/09/2023 04:15	40	56	5	31
					23/09/2023 04:30	26	42	2	21	24/09/2023 04:30	42	63	5	38	25/09/2023 04:30	39	57	4	34
					23/09/2023 04:45	24	38	2	22	24/09/2023 04:45	44	64	6	39	25/09/2023 04:45	42	54	3	31
					23/09/2023 05:00	25	40	3	22	24/09/2023 05:00	42	60	6	37	25/09/2023 05:00	41	52	4	33
					23/09/2023 05:15	24	39	1	21	24/09/2023 05:15	41	60	5	34	25/09/2023 05:15	41	54	4	34
					23/09/2023 05:30	28	44	1	21	24/09/2023 05:30	40	57	4	35	25/09/2023 05:30	43	58	4	36
					23/09/2023 05:45	31	44	1	23	24/09/2023 05:45	42	59	5	37	25/09/2023 05:45	43	59	5	37
					23/09/2023 06:00	37	42	1	27	24/09/2023 06:00	40	58	4	36	25/09/2023 06:00	45	56	4	35
					23/09/2023 06:15	44	47	1	31	24/09/2023 06:15	43	57	5	36	25/09/2023 06:15	48	56	3	38
					23/09/2023 06:30	47	48	1	30	24/09/2023 06:30	44	57	4	36	25/09/2023 06:30	48	55	4	39
					23/09/2023 06:45	45	48	1	30	24/09/2023 06:45	44	58	5	37	25/09/2023 06:45	51	59	4	43
					23/09/2023 07:00	42	47	2	33	24/09/2023 07:00	43	56	4	35	25/09/2023 07:00	49	59	5	42
					23/09/2023 07:15	47	48	1	32	24/09/2023 07:15	45	56	4	37	25/09/2023 07:15	51	61	5	46
					23/09/2023 07:30	43	47	1	31	24/09/2023 07:30	47	57	4	38	25/09/2023 07:30	50	60	4	45
					23/09/2023 07:45	46	50	2	34	24/09/2023 07:45	50	60	5	42	25/09/2023 07:45	52	60	4	47
					23/09/2023 08:00	50	55	2	40	24/09/2023 08:00	47	60	5	38	25/09/2023 08:00	51	61	4	45
					23/09/2023 08:15	47	53	2	38	24/09/2023 08:15	45	61	7	39	25/09/2023 08:15	51	61	4	46
					23/09/2023 08:30	48	58	2	41	24/09/2023 08:30	45	58	5	40	25/09/2023 08:30	51	64	5	47
					23/09/2023 08:45	49	56	2	41	24/09/2023 08:45	48	61	6	41	25/09/2023 08:45	52	65	6	48
					23/09/2023 09:00	46	54	2	35	24/09/2023 09:00	49	62	6	43	25/09/2023 09:00	51	63	4	45
					23/09/2023 09:15	44	55	2	35	24/09/2023 09:15	48	62	6	43	25/09/2023 09:15	49	60	4	43
					23/09/2023 09:30	44	56	2	36	24/09/2023 09:30	49	63	5	42	25/09/2023 09:30	49	63	5	45
					23/09/2023 09:45	44	56	3	37	24/09/2023 09:45	51	67	6	45	25/09/2023 09:45	50	62	4	45
					23/09/2023 10:00	43	56	2	36	24/09/2023 10:00	49	66	7	43	25/09/2023 10:00	49	60	4	42
					23/09/2023 10:15	49	60	2	36	24/09/2023 10:15	50	65	5	45	25/09/2023 10:15	49	61	4	43
					23/09/2023 10:30	41	57	4	34	24/09/2023 10:30	49	64	6	45	25/09/2023 10:30	49	62	6	44
					23/09/2023 10:45	43	57	4	34	24/09/2023 10:45	50	65	6	45	25/09/2023 10:45	50	63	4	44
					23/09/2023 11:00	40	55	3	35	24/09/2023 11:00	50	67	7	46	25/09/2023 11:00	50	67	5	45
					23/09/2023 11:15	45	56	3	33	24/09/2023 11:15	49	64	6	44	25/09/2023 11:15	48	64	5	43
					23/09/2023 11:30	44	57	4	35	24/09/2023 11:30	50	61	5	43	25/09/2023 11:30	51	66	6	47
					23/09/2023 11:45	48	59	4	36	24/09/2023 11:45	50	62	6	44	25/09/2023 11:45	58	70	6	49
					23/09/2023 12:00	43	56	2	35	24/09/2023 12:00	50	65	7	46	25/09/2023 12:00	50	67	6	45
					23/09/2023 12:15	45	59	3	35	24/09/2023 12:15	49	64	6	45	25/09/2023 12:15	51	68	5	47
					23/09/2023 12:30	44	57	3	39	24/09/2023 12:30	49	63	5	45	25/09/2023 12:30	49	65	6	44
					23/09/2023 12:45	45	57	3	40	24/09/2023 12:45	50	63	6	45	25/09/2023 12:45	49	64	5	44
					23/09/2023 13:00	44	57	4	39	24/09/2023 13:00	51	66	6	47	25/09/2023 13:00	50	63	4	45
					23/09/2023 13:15	53	64	3	40	24/09/2023 13:15	50	63	6	46	25/09/2023 13:15	49	63	6	45
					23/09/2023 13:30	46	59	5	41	24/09/2023 13:30	49	62	6	44	25/09/2023 13:30	49	63	6	45
					23/09/2023 13:45	46	57	3	39	24/09/2023 13:45	50	63	6	46	25/09/2023 13:45	50	66	6	46
					23/09/2023 14:00	46	59	5	40	24/09/2023 14:00	49	62	6	45	25/09/2023 14:00	52	70	6	48
					23/09/2023 14:15	46	59	4	40	24/09/2023 14:15	50	61	5	43	25/09/2023 14:15	50	66	5	44
					23/09/2023 14:30	45	62	4	41	24/09/2023 14:30	49	58	5	40	25/09/2023 14:30	48	61	4	44
					23/09/2023 14:45	46	63	3	40	24/09/2023 14:45	50	64	5	46	25/09/2023 14:45	48	62	5	43
					23/09/2023 15:00	49	61	4	41	24/09/2023 15:00	49	59	4	42	25/09/2023 15:00	47	60	5	43
					23/09/2023 15:15	59	64	3	42	24/09/2023 15:15	50	67	8	46	25/09/2023 15:15	49	62	4	43
					23/09/2023 15:30	54	64	3	42	24/09/2023 15:30	51	69	9	46	25/09/2023 15:30	48	60	5	44
					23/09/2023 15:45	48	58	2	42	24/09/2023 15:45	51	69	7	47	25/09/2023 15:45	47	59	3	43
					23/09/2023 16:00	48	58	3	42	24/09/2023 16:00	49	66	6	45	25/09/2023 16:00	48	60	4	43
					23/09/2023 16:15	48	56	3	41	24/09/2023 16:15	51	69	7	47	25/09/2023 16:15	47	59	3	43
					23/09/2023 16:30	48	58	3	41	24/09/2023 16:30	49	64	6	45	25/09/2023 16:30	48	5		

Land off Bourbles Lane - Review Environmental Noise Impact Assessment

MP1005				MP1006				MP1007					
Start	LAeq	LCeq	Wind S LAF90.0	Start	LAeq	LCeq	Wind	Start	LAeq	LCeq	Wind LAF90.0		
25/09/2023 23:00	34	47	2	27	26/09/2023 23:00	42	55	4	27/09/2023 23:00	51	70	6	46
25/09/2023 23:15	38	49	3	28	26/09/2023 23:15	41	56	4	27/09/2023 23:15	56	76	7	51
25/09/2023 23:30	35	49	3	28	26/09/2023 23:30	42	60	6	27/09/2023 23:30	57	75	9	51
25/09/2023 23:45	35	48	2	28	26/09/2023 23:45	41	58	5	27/09/2023 23:45	55	73	7	49
26/09/2023 00:00	39	49	3	29	27/09/2023 00:00	34	49	4	28/09/2023 00:00	54	73	8	50
26/09/2023 00:15	35	49	2	28	27/09/2023 00:15	36	52	4	28/09/2023 00:15	54	72	8	50
26/09/2023 00:30	45	56	3	29	27/09/2023 00:30	36	55	5	28/09/2023 00:30	54	73	7	49
26/09/2023 00:45	38	49	3	29	27/09/2023 00:45	35	49	3	28/09/2023 00:45	53	72	8	47
26/09/2023 01:00	36	51	4	29	27/09/2023 01:00	28	41	2	28/09/2023 01:00	52	72	9	47
26/09/2023 01:15	35	50	3	29	27/09/2023 01:15	33	46	3	28/09/2023 01:15	52	70	7	47
26/09/2023 01:30	36	53	3	31	27/09/2023 01:30	29	46	2	28/09/2023 01:30	53	72	7	48
26/09/2023 01:45	33	51	3	27	27/09/2023 01:45	26	41	3	28/09/2023 01:45	51	69	7	46
26/09/2023 02:00	35	50	3	28	27/09/2023 02:00	30	41	3	28/09/2023 02:00	54	73	7	48
26/09/2023 02:15	34	51	3	29	27/09/2023 02:15	31	43	2	28/09/2023 02:15	53	72	9	49
26/09/2023 02:30	29	51	3	27	27/09/2023 02:30	27	45	3	28/09/2023 02:30	53	72	10	46
26/09/2023 02:45	34	51	3	28	27/09/2023 02:45	37	48	4	28/09/2023 02:45	53	73	11	48
26/09/2023 03:00	32	52	4	29	27/09/2023 03:00	30	45	3	28/09/2023 03:00	50	69	7	45
26/09/2023 03:15	36	52	4	29	27/09/2023 03:15	32	46	3	28/09/2023 03:15	51	70	9	44
26/09/2023 03:30	33	51	3	29	27/09/2023 03:30	33	45	3	28/09/2023 03:30	55	74	9	48
26/09/2023 03:45	37	54	4	31	27/09/2023 03:45	33	44	2	28/09/2023 03:45	53	73	9	48
26/09/2023 04:00	38	56	5	32	27/09/2023 04:00	36	47	3	28/09/2023 04:00	52	74	9	47
26/09/2023 04:15	39	57	5	34	27/09/2023 04:15	34	47	2	28/09/2023 04:15	51	73	9	44
26/09/2023 04:30	34	53	4	31	27/09/2023 04:30	39	48	2	28/09/2023 04:30	52	74	9	47
26/09/2023 04:45	41	54	4	31	27/09/2023 04:45	43	50	2	28/09/2023 04:45	55	77	10	49
26/09/2023 05:00	42	53	3	33	27/09/2023 05:00	41	51	3	28/09/2023 05:00	52	74	12	44
26/09/2023 05:15	36	56	4	32	27/09/2023 05:15	43	51	2	28/09/2023 05:15	50	72	9	44
26/09/2023 05:30	42	53	4	32	27/09/2023 05:30	43	51	3	28/09/2023 05:30	48	68	8	43
26/09/2023 05:45	44	55	4	33	27/09/2023 05:45	44	50	3	28/09/2023 05:45	47	68	7	42
26/09/2023 06:00	44	56	4	35	27/09/2023 06:00	42	50	3	28/09/2023 06:00	46	66	7	40
26/09/2023 06:15	48	58	4	38	27/09/2023 06:15	45	53	3	28/09/2023 06:15	48	69	11	42
26/09/2023 06:30	48	56	3	39	27/09/2023 06:30	48	53	2	28/09/2023 06:30	49	68	7	45
26/09/2023 06:45	47	61	5	40	27/09/2023 06:45	48	56	2	28/09/2023 06:45	49	70	8	43
26/09/2023 07:00	49	60	5	43	27/09/2023 07:00	49	57	4	28/09/2023 07:00	46	59	5	40
26/09/2023 07:15	50	61	5	45	27/09/2023 07:15	50	57	4	28/09/2023 07:15	49	65	7	45
26/09/2023 07:30	51	62	5	46	27/09/2023 07:30	51	59	4	28/09/2023 07:30	50	65	7	46
26/09/2023 07:45	51	63	5	46	27/09/2023 07:45	51	59	5	28/09/2023 07:45	51	64	5	47
26/09/2023 08:00	51	60	5	45	27/09/2023 08:00	52	60	4	28/09/2023 08:00	52	68	8	48
26/09/2023 08:15	51	62	5	46	27/09/2023 08:15	52	61	4	28/09/2023 08:15	50	65	7	46
26/09/2023 08:30	50	63	5	44	27/09/2023 08:30	51	61	5	28/09/2023 08:30	49	61	6	43
26/09/2023 08:45	50	62	6	45	27/09/2023 08:45	51	61	5	28/09/2023 08:45	49	64	6	46
26/09/2023 09:00	51	63	5	46	27/09/2023 09:00	49	59	5	28/09/2023 09:00	49	63	6	45
26/09/2023 09:15	49	62	6	45	27/09/2023 09:15	50	61	5	28/09/2023 09:15	49	63	6	44
26/09/2023 09:30	49	61	4	43	27/09/2023 09:30	49	61	6	28/09/2023 09:30	49	64	7	45
26/09/2023 09:45	49	61	5	42	27/09/2023 09:45	50	63	6	28/09/2023 09:45	49	63	5	45
26/09/2023 10:00	50	65	6	45	27/09/2023 10:00	49	63	5	28/09/2023 10:00	49	64	5	45
26/09/2023 10:15	49	67	7	44	27/09/2023 10:15	50	65	6	28/09/2023 10:15	48	60	4	43
26/09/2023 10:30	50	68	6	47	27/09/2023 10:30	51	64	7	28/09/2023 10:30	50	63	6	44
26/09/2023 10:45	49	65	6	45	27/09/2023 10:45	50	65	6	28/09/2023 10:45	49	63	6	45
26/09/2023 11:00	50	64	6	45	27/09/2023 11:00	51	65	7	28/09/2023 11:00	48	62	5	44
26/09/2023 11:15	50	64	7	45	27/09/2023 11:15	52	69	8	28/09/2023 11:15	48	61	4	44
26/09/2023 11:30	49	62	5	44	27/09/2023 11:30	52	66	7	28/09/2023 11:30	50	63	5	46
26/09/2023 11:45	49	60	5	43	27/09/2023 11:45	51	65	6	28/09/2023 11:45	49	62	4	43
26/09/2023 12:00	48	62	6	42	27/09/2023 12:00	51	65	6	28/09/2023 12:00	49	59	4	42
26/09/2023 12:15	49	64	6	44	27/09/2023 12:15	52	64	6	28/09/2023 12:15	49	59	4	44
26/09/2023 12:30	49	64	6	43	27/09/2023 12:30	51	62	5	28/09/2023 12:30	49	59	4	44
26/09/2023 12:45	49	65	6	43	27/09/2023 12:45	53	63	6	28/09/2023 12:45	49	60	4	44
26/09/2023 13:00	50	66	6	45	27/09/2023 13:00	51	65	7	28/09/2023 13:00	50	59	3	44
26/09/2023 13:15	49	63	6	44	27/09/2023 13:15	51	64	5	28/09/2023 13:15	49	59	4	42
26/09/2023 13:30	50	65	5	45	27/09/2023 13:30	52	64	6	28/09/2023 13:30	49	59	4	43
26/09/2023 13:45	48	62	4	44	27/09/2023 13:45	51	67	6	28/09/2023 13:45	49	58	4	43
26/09/2023 14:00	49	65	5	44	27/09/2023 14:00	50	66	6	28/09/2023 14:00	49	61	5	44
26/09/2023 14:15	48	61	5	43	27/09/2023 14:15	52	68	7	28/09/2023 14:15	49	59	4	43
26/09/2023 14:30	48	63	5	44	27/09/2023 14:30	52	67	7	28/09/2023 14:30	50	61	4	45
26/09/2023 14:45	51	67	6	46	27/09/2023 14:45	51	65	6	28/09/2023 14:45	50	58	3	44
26/09/2023 15:00	50	66	7	45	27/09/2023 15:00	52	67	7	28/09/2023 15:00	51	59	4	45
26/09/2023 15:15	50	67	6	47	27/09/2023 15:15	53	70	8	28/09/2023 15:15	51	61	5	46
26/09/2023 15:30	51	68	6	48	27/09/2023 15:30	53	73	9	28/09/2023 15:30	51	62	5	47
26/09/2023 15:45	52	69	6	49	27/09/2023 15:45	52	69	8	28/09/2023 15:45	50	59	4	44
26/09/2023 16:00	51	67	7	46	27/09/2023 16:00	54	73	8	28/09/2023 16:00	51	61	4	47
26/09/2023 16:15	52	70	6	48	27/09/2023 16:15	56	76	11	28/09/2023 16:15	50	58	3	44
26/09/2023 16:30	50	66	5	47	27/09/2023 16:30	57	78	12	28/09/2023 16:30	51	60	5	46
26/09/2023 16:45	49	64	6	45	27/09/2023 16:45	57	78	10	28/09/2023 16:45	49	58	3	43
26/09/2023 17:00	49	61	5	45	27/09/2023 17:00	56	76	10	28/09/2023 17:00	51	59	4	46
26/09/2023 17:15	47	59	4	42	27/09/2023 17:15	57	77	10	28/09/2023 17:15	50	60	5	44
26/09/2023 17:30	49	66	7	45	27/09/2023 17:30	56	77	12	28/09/2023 17:30	51	60	5	46
26/09/2023 17:45	49	62	6	44	27/09/2023 17:45	56	77	11	28/09/2023 17:45	52	62	5	46
26/09/2023 18:00	47	59	5	43	27/09/2023 18:00	57	78	10	28/09/2023 18:00	50	58	5	43
26/09/2023 18:15	48	57	4	43	27/09/2023 18:15	56	77	9	28/09/2023 18:15	50	58	4	43
26/09/2023 18:30	48	57	4	42	27/09/2023 18:30	56	78	10	28/09/2023 18:30	49	59	4	42
26/09/2023 18:45	45	55	4	40	27/09/2023 18:45	56	77	10	28/09/2023 18:45	48	60	5	42
26/09/2023 19:00	46	57	4	40	27/09/2023 19:00	58	79	10	28/09/2023 19:00	48	58	4	42
26/09/2023 19:15	47	57	4	41	27/09/2023 19:15	55	76	11	28/09/2023 19:15	47	58	4	40
26/09/2023 19:30	46	57	4	38	27/09/2023 19:30	52	73	8					
26/09/2023 19:45	45	54	3	36	27/09/2023 19:45	51	71	7					
26/09/2023 20:00	46	57	5	38	27/09/2023 20:00	52	73	10					
26/09/2023 20:15	45	59	5	39	27/09/2023 20:15	53	73	9					
26/09/2													

Land off Bourbles Lane - Review Environmental Noise Impact Assessment

MP2001				MP2002				MP2003				MP2004			
Start	LAeq	LCeq	LAF90.0	Start	LAeq	LCeq	LAF90.0	Start	LAeq	LCeq	LAF90.0	Start	LAeq	LCeq	LAF90.0
				22/09/2023 23:00	50	57	46	23/09/2023 23:00	56	61	53	24/09/2023 23:00	59	69	53
				22/09/2023 23:15	51	60	46	23/09/2023 23:15	56	59	52	24/09/2023 23:15	58	65	52
				22/09/2023 23:30	48	56	45	23/09/2023 23:30	58	61	55	24/09/2023 23:30	58	65	52
				22/09/2023 23:45	47	56	44	23/09/2023 23:45	56	59	53	24/09/2023 23:45	59	67	53
				23/09/2023 00:00	47	56	44	24/09/2023 00:00	57	60	52	25/09/2023 00:00	57	67	51
				23/09/2023 00:15	47	56	45	24/09/2023 00:15	59	62	55	25/09/2023 00:15	57	65	51
				23/09/2023 00:30	46	54	43	24/09/2023 00:30	59	62	55	25/09/2023 00:30	60	67	52
				23/09/2023 00:45	50	57	43	24/09/2023 00:45	60	62	56	25/09/2023 00:45	58	67	52
				23/09/2023 01:00	50	59	45	24/09/2023 01:00	58	62	54	25/09/2023 01:00	59	67	53
				23/09/2023 01:15	47	55	43	24/09/2023 01:15	57	60	53	25/09/2023 01:15	58	66	53
				23/09/2023 01:30	49	57	45	24/09/2023 01:30	57	60	53	25/09/2023 01:30	58	67	52
				23/09/2023 01:45	52	61	48	24/09/2023 01:45	58	61	54	25/09/2023 01:45	57	67	52
				23/09/2023 02:00	51	61	49	24/09/2023 02:00	57	60	53	25/09/2023 02:00	53	61	47
				23/09/2023 02:15	50	60	47	24/09/2023 02:15	56	60	52	25/09/2023 02:15	50	58	45
				23/09/2023 02:30	49	59	46	24/09/2023 02:30	58	62	54	25/09/2023 02:30	49	57	44
				23/09/2023 02:45	49	58	44	24/09/2023 02:45	59	63	54	25/09/2023 02:45	49	56	45
				23/09/2023 03:00	46	55	40	24/09/2023 03:00	58	62	55	25/09/2023 03:00	42	51	36
				23/09/2023 03:15	42	49	38	24/09/2023 03:15	56	60	54	25/09/2023 03:15	40	49	37
				23/09/2023 03:30	41	48	36	24/09/2023 03:30	54	58	51	25/09/2023 03:30	39	48	36
				23/09/2023 03:45	40	46	36	24/09/2023 03:45	53	57	50	25/09/2023 03:45	42	51	39
				23/09/2023 04:00	44	51	39	24/09/2023 04:00	54	58	51	25/09/2023 04:00	45	53	40
				23/09/2023 04:15	40	48	37	24/09/2023 04:15	54	58	51	25/09/2023 04:15	46	53	42
				23/09/2023 04:30	40	49	35	24/09/2023 04:30	54	59	50	25/09/2023 04:30	47	55	44
				23/09/2023 04:45	41	49	36	24/09/2023 04:45	56	62	51	25/09/2023 04:45	43	53	36
				23/09/2023 05:00	39	47	31	24/09/2023 05:00	52	57	49	25/09/2023 05:00	44	51	35
				23/09/2023 05:15	37	44	31	24/09/2023 05:15	50	54	46	25/09/2023 05:15	48	54	45
				23/09/2023 05:30	35	46	32	24/09/2023 05:30	50	54	47	25/09/2023 05:30	50	58	46
				23/09/2023 05:45	34	48	30	24/09/2023 05:45	50	54	47	25/09/2023 05:45	51	61	48
				23/09/2023 06:00	42	45	34	24/09/2023 06:00	50	54	47	25/09/2023 06:00	48	58	43
				23/09/2023 06:15	43	47	35	24/09/2023 06:15	48	52	45	25/09/2023 06:15	50	60	45
				23/09/2023 06:30	47	48	34	24/09/2023 06:30	50	53	45	25/09/2023 06:30	47	53	43
				23/09/2023 06:45	44	48	35	24/09/2023 06:45	56	57	46	25/09/2023 06:45	48	54	44
				23/09/2023 07:00	45	48	35	24/09/2023 07:00	48	52	43	25/09/2023 07:00	48	54	41
				23/09/2023 07:15	46	49	33	24/09/2023 07:15	49	53	44	25/09/2023 07:15	46	55	42
				23/09/2023 07:30	45	47	31	24/09/2023 07:30	49	53	46	25/09/2023 07:30	48	57	45
				23/09/2023 07:45	44	51	31	24/09/2023 07:45	50	55	47	25/09/2023 07:45	48	57	45
				23/09/2023 08:00	42	48	32	24/09/2023 08:00	50	54	46	25/09/2023 08:00	47	56	43
				23/09/2023 08:15	42	48	35	24/09/2023 08:15	51	56	47	25/09/2023 08:15	51	59	45
				23/09/2023 08:30	52	58	38	24/09/2023 08:30	53	56	48	25/09/2023 08:30	56	63	51
				23/09/2023 08:45	46	57	38	24/09/2023 08:45	52	56	47	25/09/2023 08:45	55	63	52
				23/09/2023 09:00	48	54	38	24/09/2023 09:00	52	59	49	25/09/2023 09:00	55	65	52
				23/09/2023 09:15	46	61	38	24/09/2023 09:15	55	65	49	25/09/2023 09:15	52	61	47
				23/09/2023 09:30	47	65	41	24/09/2023 09:30	53	58	49	25/09/2023 09:30	54	65	49
				23/09/2023 09:45	47	63	38	24/09/2023 09:45	55	60	51	25/09/2023 09:45	53	62	48
				23/09/2023 10:00	45	55	37	24/09/2023 10:00	55	59	51	25/09/2023 10:00	52	62	47
				23/09/2023 10:15	47	56	40	24/09/2023 10:15	54	58	50	25/09/2023 10:15	54	64	48
				23/09/2023 10:30	45	54	40	24/09/2023 10:30	54	58	49	25/09/2023 10:30	52	64	46
				23/09/2023 10:45	47	57	42	24/09/2023 10:45	55	61	51	25/09/2023 10:45	56	64	49
				23/09/2023 11:00	49	54	38	24/09/2023 11:00	56	61	51	25/09/2023 11:00	55	64	48
				23/09/2023 11:15	47	56	37	24/09/2023 11:15	55	59	51	25/09/2023 11:15	56	65	50
				23/09/2023 11:30	47	56	36	24/09/2023 11:30	54	58	50	25/09/2023 11:30	58	66	51
				23/09/2023 11:45	50	59	34	24/09/2023 11:45	55	60	51	25/09/2023 11:45	57	67	50
				23/09/2023 12:00	43	53	33	24/09/2023 12:00	57	61	53	25/09/2023 12:00	58	66	52
				23/09/2023 12:15	43	54	33	24/09/2023 12:15	55	60	51	25/09/2023 12:15	57	65	50
				23/09/2023 12:30	44	53	35	24/09/2023 12:30	54	58	50	25/09/2023 12:30	55	62	50
				23/09/2023 12:45	43	54	37	24/09/2023 12:45	55	60	51	25/09/2023 12:45	52	61	46
				23/09/2023 13:00	44	54	38	24/09/2023 13:00	55	61	51	25/09/2023 13:00	53	60	46
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				23/09/2023 13:30	46	56	39	24/09/2023 13:30	55	60	50	25/09/2023 13:30	55	65	48
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				23/09/2023 14:45	46	55	41	24/09/2023 14:45	55	60	50	25/09/2023 14:45	56	67	53
				23/09/2023 15:00	56	61	42	24/09/2023 15:00	50	55	45	25/09/2023 15:00	54	67	47
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				23/09/2023 15:30	52	60	43	24/09/2023 15:30	59	63	55	25/09/2023 15:30	54	66	51
				23/09/2023 15:45	47	56	40	24/09/2023 15:45	58	63	55	25/09/2023 15:45	52	66	49
				23/09/2023 16:00	49	55	42	24/09/2023 16:00	59	64	53	25/09/2023 16:00	49	60	43
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				23/09/2023 16:30	49	56	44	24/09/2023 16:30	56	61	52	25/09/2023 16:30	51	63	46
				23/09/2023 16:45	49	57	45	24/09/2023 16:45	56	60	50	25/09/2023 16:45	55	65	50
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				23/09/2023 17:30	44	52	37	24/09/2023 17:30	63	73	58	25/09/2023 17:30	66	73	46
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				23/09/2023 18:00	41	51	38	24/09/2023 18:00	64	71	57	25/09/2023 18:00	50	64	42
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				23/09/2023 18:45	48	52	39	24/09/2023 18:45	60	65	55	25/09/2023 18:45	43	52	40
				23/09/2023 19:00	54	58	36	24/09/2023 19:00	56	61	52	25/09/2023 19:00	45	54	40
				23/09/2023 19:15	41	51	35	24/09/2023 19:15	61	66	56	25/09/2023 19:15	42	52	38
				23/09/2											

Land off Bourbles Lane - Review Environmental Noise Impact Assessment

MP2005				MP2006				MP2007				MP2008			
Start	LAeq	LCeq	LAF90.0												
25/09/2023 23:00	36	46	32	26/09/2023 23:00	47	57	42	27/09/2023 23:00	62	72	55	28/09/2023 23:00	40	49	37
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26/09/2023 17:30	50	58	46	27/09/2023 17:30	64	70	60	28/09/2023 17:30	50	55	45				
26/09/2023 17															

Appendix B: Photographs of Equipment



Appendix C: Glossary of Terms

'A' weighting (dB(A)): A frequency dependent correction which weights sound to correlate with the sensitivity of the human ear to sounds of different frequencies.

Ambient Noise: A measure of the typical noise (excluding any unusual events) present at a site, or in a room. This is usually described in terms of $LA_{eq,T}$.

Audible: Sound that can be heard or is perceptible by the human ear.

Background Noise: A measure of the underlying noise (excluding any unusual events) which is present at a site before a new noise source is introduced. This is usually described in terms of the LA_{90} level: the sound pressure level exceeded for 90% of the time.

Decibel (dB): A unit used for many acoustic quantities to indicate the level of sound with respect to a reference level.

External Amenity Space: An outdoor area near to a residential building which is designed and intended primarily for leisure and recreational use by the occupants of the dwelling. This will include gardens, patios, balconies, roof gardens and terraces.

Hertz: The tonal quality of a sound is described and measured in terms of the frequency content and is commonly expressed as octave or third octave bands, the latter being the division of the octave bands into three for finer analysis, across the frequency spectrum. The smaller the octave band or third octave band centre frequency number defined in terms of Hz, the lower the sound. For example 63 Hz is lower than 500 Hz and is perceived as a deeper sound. The attenuation due to air absorption and natural barriers increases with frequency i.e. low frequencies are always the most difficult to control

Inaudible: Sound that cannot be heard or is imperceptible to the human ear.

$LA_{90,T}$: Sound pressure level exceeded for 90% of the measurement period "T" or 'background level'.

$LA_{eq,T}$: Equivalent continuous sound pressure level measured over the time period "T"

L_{Amax} : The maximum RMS A weighted sound pressure level

Music Noise Level (MNL): The Leq of music noise measured at a particular location.

Noise: Unwanted sound.

Noise assessment: A basic evaluation of an acoustic environment by a suitably qualified person to assist in the determination of a planning application..

Noise impact: the noise level of the source under consideration, and/or any change in noise levels due to the scheme, and/or the relationship between the noise level of the source under consideration and a descriptor of the existing noise climate; at a receptor or group of receptors.

Noise effect: the consequence of the noise impact e.g. annoyance, sleep disturbance, speech interference, disruption of learning/teaching, health consequences, fauna displacement etc. Noise

impact and noise effect are related to each other and the noise effect is related to the magnitude of the noise impact as well as other factors e.g. sensitivity of the receptor, duration of the noise, how frequently it occurs, the time of day or night it occurs, whether the noise is temporary, reversible or permanent etc.

Noise level (Lp): the logarithmic measure of the RMS sound pressure of a sound relative to a reference value that represents the threshold of hearing. It is measured in decibels (dB) e.g. $L_p = 20 \lg (p/p_0)$ dB re 20 μ Pa for air.

Noise sensitive premises / developments: Principally comprising residential premises, hospitals, schools and hotels. Other premises and sites may be deemed to be noise sensitive depending upon circumstances.

Typical sound pressure levels

