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ACOUSTIC CONSULTANTS

Town and Country Planning Act 1990

Section 78 Appeal

Ref: APP / E1885 / W / 22 / 3310099

Land at Lea Castle Farm, Wolverley Road, Broadwaters, Kidderminster, Worcestershire

Appeal by NRS Aggregates Limited against the refusal of planning permission by Worcestershire County Council

Proof of Evidence of Rachel Canham with regard to Noise

Author	Rachel Canham BEng MSc CEng FIOA
Date	08 October 2024
Revision	Final
WBM Ref	5342

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Contents

1 Qualifications and Credentials

1.1 My name is Rachel Canham. I am a Director of Walker Beak Mason Limited (WBM), which specialises in acoustic consultancy. My professional address is Steepleton Lodge Barn, Long Lane, East Haddon, Northamptonshire, NN6 8DU.

1.2 WBM is an independent acoustic consultancy that deals with environmental assessments, architectural and building acoustics, and planning application and appeals work. WBM is a member of the Association of Noise Consultants and is an Associate Assessor Member of the Institute of Environmental Management and Assessment.

1.3 I hold the degrees of Bachelor of Engineering in Electroacoustics from Salford University in 1993 and a Master of Science in Environmental Acoustics from London South Bank University in 1998. I became a Chartered Engineer in 2003 and a Fellow of the Institute of Acoustics in 2011. I have been practicing as an acoustic consultant since 1993 and joined WBM in 1999.

1.4 Via WBM I have worked as an acoustic consultant for many of the major mineral extraction companies in the UK on a wide range of surface mineral workings, aggregate related plant sites, waste disposal and recycling projects as well as other industrial sites. I have produced environmental noise reports for planning applications, noise impact assessments and environmental statements.

1.5 WBM has been involved with the consideration of noise for the proposed quarry at the Lea Castle site since 2018, which included undertaking baseline noise surveys, attendance at the public exhibition and preparation of the noise assessment for the environmental statement for the planning application.

1.6 The noise assessment for the proposed quarry dated September 2019 was prepared by Dr Paul Cockcroft, who has since retired. However, I attended the public exhibition about the site, providing information about noise where required. I have also undertaken further baseline noise surveys around the area in 2023 and 2024, and carried out site noise calculations for the updated site layout in 2024. I am therefore familiar with the noise aspects of the proposed development at this site.

1.7 The evidence that I have prepared and provided for this appeal is true and has been prepared and given in accordance with the guidance of my professional institution (the Code of Conduct of the Institute of Acoustics). I confirm that the opinions expressed are my true and professional opinions.

2 Scope of Evidence

2.1 My evidence deals with potential noise arising from quarrying, processing and restoration activities within the proposed quarry site at Lea Castle Farm.

2.2 My evidence will address the noise related reasons for the refusal of the planning application for the proposed quarry, and the comments received from Worcestershire County Council (WCC) and the Rule 6 party (Stop the Quarry Campaign) with regard to noise as set out in their Statements of Case (SoC).

2.3 I will refer to the previous noise assessment undertaken by WBM for the application, as detailed in Section 5 of this document, along with guidance documents related to the assessment of noise impact from mineral sites along with other relevant guidelines. I will also refer to the application details of additional permitted or allocated residential developments and comment on cumulative impact.

2.4 In summary, I have responded to the various comments on noise including the consideration of cumulative impact and shown that this does not affect the outcome of the original noise assessment.

2.5 To aid understanding, a glossary of acoustic terms is provided in Appendix A.

3 Planning Policies and Guidance for Minerals and Noise

3.1 The previous noise assessment report prepared by WBM for the proposed quarry site referred to various guidance documents regarding noise and minerals. For completeness, these are replicated below along with any updated information that has subsequently become available.

Noise Policy Statement for England

3.2 The Noise Policy Statement for England (NPSE) was published in March 2010. The aim of the document is to "…*provide clarity regarding current policies and practices to enable noise management decisions to be made within the wider context, at the most appropriate level, in a cost-effective manner and in a timely fashion*".

3.3 The long term vision of noise policy is to "*Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development*".

3.4 The long term vision is supported by three aims:

"*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*."

3.5 The Explanatory Note to the NPSE introduces the concepts of observed effect levels with regard to noise.

- NOEL (No Observed Effect Level) - this is the level below which no effect can be detected, i.e. below this level there is no detectable effect on health and quality of life due to noise.
- LOAEL (Lowest Observed Adverse Effect Level) – this is the level above which adverse effects on health and quality of life can be detected due to noise.
- SOAEL (Significant Observed Adverse Effect Level) – this is the level above which significant adverse effects on health and quality of life occur due to noise.

3.6 With regard to the first aim of the NPSE, any noise impacts that are above SOAEL should be avoided.

3.7 Where the impact lies somewhere between LOAEL and SOAEL, the second aim of the NPSE requires that all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life. However, as stated in paragraph 2.24 of the Explanatory Note to the NPSE "*This does not mean that such adverse effects cannot occur*".

National Planning Policy Framework

3.8 The National Planning Policy Framework (NPPF) set out the Government's planning policies for England. The version that was in force at the time WBM prepared the quarry noise assessment of September 2019 was dated February 2019, however this has now been superseded by the version dated December 2023. The following text refers to the latest, December 2023 version of the document. However, the content is very similar to the previous February 2019 version.

3.9 Section 15 of the NPPF (*Conserving and enhancing the natural environment*) refers specifically to noise in the following paragraphs:

"*180. Planning policies and decisions should contribute to and enhance the natural and local environment by…*

(e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability..."

"*191. 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:*

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason…"

3.10 Paragraph 191 (e) above refers to the Explanatory Note to NPSE, 2010.

3.11 Paragraph 193 refers to the integration of new development with existing businesses and facilities:

"*187. 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*"

3.12 Mineral sites are considered in Section 17 "Facilitating the sustainable use of minerals" of the NPPF:

"*216. Planning policies should …*

(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..."

"*217. 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…*

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

3.13 Paragraph 217 (c) advises that the national planning guidance on minerals sets out how these policies should be implemented, see the following section.

Planning Practice Guidance Noise (PPGN)

3.14 Technical guidance on noise is provided by Planning Practice Guidance, published by the Ministry of Housing, Communities & Local Government.

3.15 Planning Practice Guidance Noise (PPGN) was published in March 2014 and updated in July 2019. PPGN provides advice on how planning can manage potential noise impacts in new development. It makes reference to the Explanatory Note of the NPSE and the NPPF.

3.16 Paragraph 005 Reference ID: 30-005-20190722 of the PPGN provides guidance on how to establish if noise is likely to be a concern, including a table summarising the noise exposure hierarchy based on the likely average response of those affected.

Table 1: Summary of Noise Exposure Hierarchy, based on the likely average response

Response	Examples of outcomes	Increasing effect level	Action
No Observed Effect Level			
Not present	No Effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, 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 small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum

Table 1: Summary of Noise Exposure Hierarchy, based on the likely average response			
Response	**Examples of outcomes**	**Increasing effect level**	**Action**
Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, 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.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

3.17 The “Examples of Outcomes” tabulated above can be referred to in the consideration of the effects of impacts.

Planning Practice Guidance Minerals (PPGM)

3.18 Specific guidance for the assessment of noise from mineral sites is provided in the 'Minerals' section of the Planning Practice Guidance, which provides advice regarding the setting of noise limits for such operations.

3.19 Paragraphs 19 to 22 inclusive of the “Minerals” chapter of the Planning Practice Guidance, are under the heading “Noise emissions” within the section “Assessing environmental impacts from mineral extraction” (dated March 2014).

3.20 Paragraph 019 Reference ID: 27-019-20140306 states:

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

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.

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*."

3.21 Paragraph 020 Reference ID: 27-020-20140306 states:

"***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."

3.22 Paragraph 021 Reference ID: 27-021-20140306 states:

"***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 bleepers, may also require separate limits that are independent of background noise (e.g. 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."

3.23 Paragraph 022 Reference ID: 27-022-20140306 states:

"***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 eight 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.

Where work is likely to take longer than eight 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."

3.24 With regard to cumulative impact of minerals development, this is addressed in Paragraph 017 Reference ID: 27-017-20140306:

"***How should mineral planning authorities assess the cumulative impact of minerals development?***

Some parts of a mineral planning authority area may have been subjected to successive mineral development (such as aggregate extraction or surface coal mining) over a number of years. Mineral planning authorities should include appropriate policies in their minerals local plan, where appropriate, to ensure that the cumulative impact of a proposed mineral development on the community and the environment will be acceptable. The cumulative impact of mineral development is also capable of being a material consideration when determining individual planning applications."

Local Authority Guidance

WRS Noise Control Technical Guidance

3.25 At the time WBM prepared the noise assessment for the proposed quarry (September 2019), local guidance on noise was provided by Worcestershire Regulatory Services (WRS) within the "*Noise Control Technical Guidance – Development Control*" 1st Edition November 2013 Version 1.2.4.

3.26 The WRS "*Noise Control Technical Guidance*" was reviewed and found to contain no information specifically for mineral sites. Accordingly, the latest Government advice for such sites contained within planning practice guidance for minerals was used for the noise assessment undertaken by WBM in September 2019.

3.27 Since the refusal of the application, this document appears to have been superseded by the WRS document "Technical Guidance Note for Planning (March 2024), Section 5 "Noise and Vibration – Technical Guidance". As found in the previous WRS document, there is no specific guidance relating to mineral sites.

Waste Core Strategy for Worcestershire, Adopted Waste Local Plan 2012-2027

3.28 WBM did not refer to this document in the quarry noise assessment of September 2019, as the proposal is not a waste management facility. However, this document is referenced by WCC in their statement of case (CD13.28).

3.29 The Waste Core Strategy for Worcestershire, Adopted Waste Local Plan 2012-2027 (November 2012) provides guidance on the approach to planning for the county's waste management facilities. Noise in mentioned in Policy WCS 14: Amenity:

"*Waste management facilities will be permitted where it is demonstrated that the operation of the facility and any associated transport will not have unacceptable adverse impacts on amenity. This must consider impacts on or of:…*

iii. noise and vibrations…"

3.30 Policy WCS 14 also requires cumulative effects to be considered.

3.31 Noise is also mentioned in paragraph 7.9 of Section 7 of the document (*Safeguarding existing waste management* facilities) under the section "*New sensitive receptors*":

3.32 "*Applicants may need to assess issues such as any noise, vibrations, dust, odours or fumes that may result from the normal operation of the site. Bio-aerosols should be considered where the waste management facility handles biodegradable waste. Where impacts are likely to affect the proposed development, considered design, site layout and landscaping or screening of the proposal will normally be adequate to mitigate any impacts*."

Worcestershire Minerals Local Plan (July 2022)

3.33 This document was adopted in July 2022, after the application for the proposed quarry was submitted. Noise is mentioned in Policy MLP 28: Amenity:

"*Planning permission will be granted where it is demonstrated that the proposed mineral development, including associated transport, will not give rise to unacceptable adverse effects on amenity or health and well-being.*

A level of technical assessment appropriate to the proposed development will be required to demonstrate that, throughout its lifetime and taking into account the cumulative effects of multiple impacts from the site and/or a number of sites in the locality, the proposed development will not cause unacceptable harm to sensitive receptors from:…

c) noise and vibration"

3.34 Noise is also considered in the section "Noise and vibration", paragraphs 6.34 to 6.39 of the Worcestershire Minerals Local Plan. The paragraphs referring to noise are reproduced below:

"*6.34 The introduction of sources of noise or vibration can impact on the use, enjoyment and tranquillity of a locality, and can cause an intrusion that can adversely impact on quality of life, health and well-being.*

6.35 Potential sources of noise within typical mineral operations include extraction activities and the operation of processing plant, haulage vehicles and conveyors. Activities such as soil-stripping, the construction and removal of baffle mounds, soil storage mounds and spoil heaps, the construction of new permanent landforms, and aspects of site road construction and maintenance may also be noisy in the short term. Each source of noise might have a different characteristic and intensity, and could be capable of causing significant impacts if not properly controlled. After-uses also have the potential to introduce or alter the source, type or level of noise arising from the site.

6.37 An assessment will be required where there are likely to be impacts from noise or vibration. This should identify potential sources of noise and vibration, their general character and the location of noise-sensitive or vibration-sensitive receptors, including properties. Reference should be made to the types and levels of noise or vibration, the time of day noise or vibration will occur, whether they will be continuous or intermittent and the pattern and duration of their occurrence, as well as the prevailing acoustic environment and local factors such as topology and topography.

6.38 Where noise or vibration impacts are identified, mitigation measures should be incorporated to ensure that effects are managed to an acceptable level. This might include appropriate design, layout and phasing of operations to increase the distances between the source of noise and potential receptors or to minimise noise transmission through the use of screening by natural barriers, planting or purpose-built features. Setting noise limits at sensitive properties, controlling working hours, and/or monitoring of noise conditions at mineral workings could also safeguard against disturbance from the site.

6.39 Where noise impacts cannot be avoided it may be appropriate to allow temporary increases in daytime noise to facilitate essential site preparation or restoration works; however, clear long-term benefits would need to be demonstrated."

3.35 Paragraphs 6.38 and 6.39 of the Worcestershire Minerals Local Plan refer to the guidance provided in PPGM with regard to noise limits and the duration of temporary works.

Wyre Forest District Local Plan 2016-2036 (April 2022)

3.36 This document was adopted in April 2022 , after the application for the proposed quarry was submitted. Chapter 15 "Pollution Minerals and Waste" contains Policy SP.33 – Pollution and Land Instability. Policy SP.33 does not specifically mention noise but states "*Development proposals must be designed in order to avoid any significant adverse impact from pollution, including cumulative ones*…"

3.37 Paragraph 15.3 of the document confirms that the term "pollution" includes noise.

3.38 Policy SP.LCV1 – "Lea Castle vision" refers to the strategic allocation for Lea Castle Village. The allocation is for the whole site, centred on the former hospital site and bounded by the A449 (Wolverhampton Road), Axborough Lane, the A451 (Stourbridge Road) and the B4190 (Park Gate Road).

4 Reasons for Refusal

4.1 Planning permission for the proposed quarry was refused on 27 May 2022. The stated reasons for refusal of planning permission for the proposed quarry were:

1. Contrary to Policy 2 (Other Sand and Gravel Deposits) of the County of Hereford and Worcester Minerals Local Plan (Adopted April 1997) (Saved Policies);

2. Unacceptable impact on openness of the Green Belt;

3. Unacceptable impact on residential amenity and local schools;

4. Unacceptable impact on the local economy;

5. Loss of 2 Tree Preservation Order (TPO) trees;

6. Unsuitable bridleway next to the Wolverhampton Road (A449);

7. Unacceptable impact on highways;

8. Unacceptable general impact on environment and wildlife; and

9. Unacceptable impact on health of local population.

4.2 Noise was not specifically listed as a reason for refusal. However, noise is most relevant for reason for refusal 3 regarding impact on amenity.

Worcestershire County Council

WCC Statement of Common Ground 2024

4.3 A revised Statement of Common Ground was agreed between NRS Aggregates Limited WCC, dated September 2024.

4.4 The following is agreed with regard to noise:

"*8.9 It is agreed that a Noise Impact Assessment (**CD1.07**) was submitted in support of the planning application. Worcestershire Regulatory Services, the statutory consultees with regard to noise impacts, were satisfied that the Noise report confirms conditions to be within national guidance relating to noise and that the measured noise levels calculated were robust in isolation. Worcestershire Regulatory Services are satisfied that there are no adverse noise impacts associated with the proposed workings in isolation*."

"8.10 The revised Appeal Proposal does not result in changes to the statement on Noise agreed above."

4.5 The following is agreed with regard to cumulative impact (including noise):

"8.27 It is agreed that the additional Cumulative Impact Assessment, prepared by the Appellant under the Regulation 25 request in February 2023, has provided sufficient information to determine that the proposal, in combination with other development, would not cause amenity harm with regard to noise or dust impacts to residential dwellings or Heathfield Knoll School and First Steps Nursery, subject to the implementation of proposed mitigation measures."

"8.28 An updated Cumulative Impact Assessment has been undertaken as part of the Environmental Statement Addendum (CD15.01), and provides sufficient information to determine that the revised Appeal proposals in combination with other development, would not cause amenity harm with regard to noise or dust impacts to residential dwellings or Heathfield Knoll School and First Steps Nursery, subject to the implementation of proposed mitigation measures."

4.6 Section 9 of the Statement of Common Ground presents the matters on which parties disagree. In paragraph 9.2, WCC confirm that they will not maintain their defence of reason for refusal 3.

4.7 Section 10 of the Statement of Common Ground presents the reasons for refusal not to be defenced by the Council. The final bullet point of this section states:

"*Having regard to the additional technical evidence prepared by the Appellant under the Regulation 25 request of January 2023, the Council conclude that the Appellant has provided sufficient information to determine that the proposal, in combination with other development, would not provide cause harm with regard to noise or dust impacts to residential dwellings or Heathfield Knoll School and First Steps Nursery, subject to the implementation of proposed mitigation measures. The Council will therefore now not be defending reason for refusal 3 ("Unacceptable impact on residential amenity and local schools") within the appeal*."

WCC Statement of Case 2024 (CD13.28)

4.8 WCC prepared a Statement of Case (SoC) in 2024 for the appeal relating to the proposed quarry application at Lea Castle Farm lodged by NRS Aggregates.

4.9 Of the nine reasons for refusal, WCC proposed to defend only reason 2 (unacceptable impact on openness of the Green Belt). Reason 2 does not relate to noise.

4.10 Noise is only mentioned in paragraph 4.3 of WCC's SoC, which relates to reason 3:

"*4.3 During the programme for the original Inquiry, the Environmental Services Department of the Planning Inspectorate wrote to the Appellant to request additional submissions with regards to ecology, noise and cumulative impact under Regulation 25 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. The Appellant submitted this information in February 2023 and on review, the Council concluded that the Appellant had provided sufficient information to determine that the proposal, in combination with other developments, would not cause amenity harm with regards to noise or dust impacts to residential dwellings or Heathfield Knoll School and First Steps Nursery, subject to the implementation of proposed mitigation measures. As such, reason 3 is not defended by the Council within the appeal*."

4.11 As confirmed above, WCC considers that that application information provided demonstrates that the scheme would not cause amenity harm with regards to noise to residential buildings, the school or nursery, subject to the implementation of the proposed mitigation measures.

Rule 6 Party (Stop the Quarry Campaign)

Statement of Case 2024 (CD13.30)

4.12 The Rule 6 Party, Stop the Quarry Campaign (STQC) prepared a Statement of Case in 2024. STQC propose to defend all nine reasons for refusal.

4.13 Paragraphs 8.12 and 8.14 are the only paragraphs of the STQC SoC that mention noise:

"*Noise*

8.12 In respect of noise, Inspector Normington found,

"Consequently, operations at the proposed quarry would not cause any significant impact at the permitted and proposed residential developments."

Dust

8.13 In respect of dust, Inspector Normington found,

"the appeal proposals would not result in unacceptable levels of dust on the amenity of nearby existing or proposed sensitive land uses,"

8.14 That is not to say the effect of noise and dust would have no impact and create no harm. No weight was attached to this less than unacceptable level of harm in the decision."

4.14 There is no text in the STQC SoC 2024 that specifically refers to Reason 3 (unacceptable impact on residential amenity and local schools).

4.15 There is some general text within the STQC SoC 2024 that refers to all reasons for refusal:

"*8.37 STQC agrees with the reasons for refusal and sets out the arguments for this below. For the Inquiry we will deliver proofs of these points and in some cases expert witnesses to these proofs. STQC nor local residents have been given any justification for the Council's withdrawl [sic] of reasons for refusal.*

8.38 STQC believe that the expert reports and technical work carried out for this planning application were generally flawed, a light touch and biased. Further, STQC believe there was a lack of diligence and short sightedness on behalf of the some of the statutory consultees. STQC believes that these experts did not give proper consideration to matters and did not use the techniques available to them in reaching their conclusions. Their representations at the planning meeting did not stand up to scrutiny and they had not shown the diligence their jobs demand."

4.16 No further details are provided in the STQC SoC.

5 Noise Assessments

Previous Noise Assessment, Original Scheme

5.1 The previous noise assessment for this the original scheme at this site was completed by Dr Paul Cockcroft of WBM in September 2019. Dr Cockcroft retired in 2022 and is no longer working in acoustic consultancy.

5.2 In summary, the previous assessment determined baseline noise levels at the nearest noise receptors to the proposed quarry, which were measured in 2018. Sample noise measurements were undertaken on three separate days at all locations and installed sound level meters measured noise levels over a week at two locations.

5.3 The results of the baseline noise surveys were used to set limits for site noise for the original scheme from normal, day to day operations, which are 10 dB above the background noise levels ($L_{A90,T}$), with an upper limit of 55 dB $L_{Aeq,1h}$. The site noise limits are based on guidance set out in PPGM.

5.4 Site noise calculations were undertaken to each receptor for a reasonable worst case scenario, i.e. with all mobile plant items operating at the closest practical position of the proposed operating areas to each receiver location. The calculations assumed that all plant on site operates simultaneously in the closest likely working areas to each receiver location for both extraction and infilling. For most dwellings, the activity in the phases for extraction and infilling would not take place simultaneously at the closest part of the site (in practice, these two activities would be taking place in different phases of the development). The actual quarry site noise levels would generally be lower than the calculated worst case values.

5.5 A summary of the previous measured baseline noise levels, suggested site noise limits and 'reasonable worst case' calculated site noise levels, is presented in Table 2.

Table 2: Summary of Previous Noise Assessment Baseline and Site Noise Levels

Receptor	Baseline Noise Levels (June / July 2018)		Suggested Site Noise Limit dB $L_{Aeq,1h}$	Calculated Site Noise Level (Original Scheme) dB $L_{Aeq,1h}$
	Average Ambient dB $L_{Aeq,T}$	Average Background dB $L_{A90,T}$		
1. Broom Cottage	51 (54)*	41 (43)*	53	51
2. South Lodge	55	47	55	54
3. Heathfield Knoll	55	48	55	53
4. Brown Westhead Park	54	36	46	45
5. McDonalds Bungalow	43	35	45	45
6. Keeper's Cottage	49	39	49	46
7. Castle Barns	45 (47)*	39 (41)*	51	48

* Values in brackets were determined from the results from installed sound level meters. All other results are from sample measurements.

5.6 The calculated site noise levels for the original scheme were all at or below the PPGM site noise limits for normal, day to day operations.

5.7 The calculated levels from temporary operations, e.g. overburden stripping, bund formation and the final restoration processes, were also calculated and found to be at or below the site noise limit of 70 dB $L_{Aeq,1h}$ which also complies with limits for such activities set out in PPGM. Note that temporary operations are permitted a higher noise limit, but are restricted in terms of duration and should not exceed a total of eight weeks duration at any noise sensitive properties in any twelve month period.

5.8 The noise assessment was undertaken for the nearest noise sensitive properties to the proposed quarry.

Updated Noise Assessment, Revised Scheme

5.9 WBM carried out a noise assessment of a revised scheme for the site in July 2024, which is presented in the updated ES. The assessment was undertaken for the nearest residential properties to the site, as included in the previous assessment.

5.10 Since the original ES, an additional 4 dwellings (bungalows) have been constructed on Brown Westhead Park to the west of the Site under a planning permission granted in 2020 (ref: 20/0217/FULL). These properties are to the south of the houses on Brown Westhead Park included in the original assessment. The noise from the revised scheme was assessed for the existing properties including the bungalows.

5.11 Other residential development has occurred and is under construction in the area, at much further distances from the site than the nearest receptors. These were not included in the updated assessment of July 2024, but have been considered within this proof in Section 6.

5.12 The revised scheme includes changes to the proposed soils placement scheme and to the processing plant. The most significant change with regard to noise is the reduction in noise output from the processing plant from 109 dB L_{WA} to 103 L_{WA} as a result of new equipment being proposed. The new equipment is also at a lower height than that originally proposed.

5.13 Quarry plant and infrastructure has evolved since the proposed development was first conceived. Whilst this change does not affect the appeal proposal per se, it does enable a change to the proposed mitigation, and particularly to the height of the bunds and the duration over which they are required to be in place.

5.14 As a result of the lower noise output from the processing plant, the new plant would not require the same level of bund placement. Where retained, bunding in the vicinity of the plant site has generally been reduced in height to 3 metres apart from Bunds 7 and 8.

5.15 Bund 7 is in the vicinity of the McDonald's Bungalow. This bund was originally proposed at a height of 6 metres. The height has been reduced to 4 metres between the property and the working area in order to provide mitigation from site activity in Phase 1 (extraction or infilling). This bund will be removed once Phase 1 is completed.

5.16 Bund 8 is located is located along the central western boundary of the site at a height of 5 metres, to provide mitigation to the dwellings to the west of the site. The bund will be in place in full for the duration of Phase 1 and part of the bund will remain in place for Phases 2 and 3.

5.17 The revised scheme does not result in any changes to the duration of the mineral extraction operations, its cessation or the final restoration of the site. Similarly, it does not result in any changes to the proposed extent of extraction or the methods of working.

5.18 The use of quieter mobile plant has been taken into account including the use of a quieter dozer (reduced from 108 dB L_{WA} to 106 dB L_{WA}) and loading shovel (reduced from 106 dB L_{WA} to 104 dB L_{WA}). These are reasonable adjustments and data can be provided showing models with measured sound power levels at or below these values.

5.19 During the proposed operations for Phase 1, mineral extraction will not take place at the same time as infilling and/or soils restoration works. All mineral extraction will be completed within Phase 1 before restoration commences in that phase. Phase 1 will be fully restored before mineral extraction commences in Phase 2.

5.20 For the other phases, there is to be simultaneous activities with infilling occurring in the preceding phase.

5.21 The revised scheme would not result in any changes to the expected HGV movements to / from the Site during the duration of the development.

5.22 The implications of these changes to the processing plant, mobile plant and the bunding on the original presented noise assessment are discussed below.

5.23 As per the previous assessment, the calculations in this report are based on the methods contained in BS5228-1: 2009 + A1: 2014 “Code of practice for noise and vibration control on construction and open sites – Part 1: Noise”. The details of the calculation methods used are the same as the original assessment.

5.24 For the purposes of examining a reasonable worst case, various plant items have been assumed to operate at the closest practical position of the proposed operating areas to each receiver location. These plant items and the corresponding Sound Power Levels (L_{WA}) are presented in the updated ES. The calculations assume that all plant on site is operating simultaneously at the highest ground levels in the closest likely working areas to each receiver location for the proposed extraction or infilling for Phase 1, with combined activities in the other phases.

5.25 Site noise limits have been suggested, in line with the advice contained in PPGM, based on the baseline background levels measured in 2018, despite generally higher baseline noise levels being measured in subsequent surveys. The suggested site noise limits are the average 2018 background noise levels plus 10 dB(A), with an upper limit of 55 dB $L_{Aeq,1h}$ at the nearest noise sensitive premises for normal daytime operations on site. The site noise limits are based on the 2018 baseline survey to represent at worst case.

5.26 Site noise calculations have been undertaken for the seven previous receiver locations plus the bungalows on Brown Westhead Park, which correspond to the residential locations that are closest to the proposed extraction / infilling areas for each phase and the processing plant site. The worst case (i.e. highest) site activity noise level arising from normal operations for each receptor is presented in this assessment.

5.27 A comparison of the calculated worst-case daytime site noise levels at the receiver locations and the suggested site noise limits is shown in the following table. The calculated site noise levels and the suggested site noise limits in the table below are all in terms of dB $L_{Aeq,1h}$ and are freefield.

Table 3: Site Noise Levels from Revised Scheme

Site Noise Calculation Receiver Location	**Suggested Site Noise Limit dB $L_{Aeq,1h}$ (2018 baseline data)**	**Worst Case Site Noise Normal Operations dB $L_{Aeq,1h}$**
1. Broom Cottage	53	52
2. South Lodge	55	51
3. Heathfield Knoll	55	45
4. Brown Westhead Park (houses)	46	45
5. McDonalds Bungalow	45	45
6. Keeper's Cottage	49	44
7. Castle Barns	51	46
8. Brown Westhead Park (bungalows)	46*	43
* Assumed same noise limit at Brown Westhead Park houses		

5.28 The highest calculated daytime site noise levels for each location are presented above, including infill or extraction operations in Phase 1, and infill and extraction operations in the remaining phases, combined with the proposed processing plant site. The assessment of the potential for noise impact has assumed that all mobile plant on-site is operating simultaneously in the closest likely working areas to each receiver location for each phase. The calculated worst case site noise levels due to normal operations at the proposed site comply with the suggested site noise limits at all the chosen assessment locations.

5.29 It is considered that with the appropriate mitigation measures implemented, the revised scheme as proposed will not result in an unacceptable adverse impact on the closest receptors to the application site, or the wider area.

5.30 There are no changes to the proposed temporary operations so the findings are unchanged from the original assessment.

Updated Baseline Noise Levels

5.31 Baseline noise measurements were undertaken in June and July 2018 at locations that were considered as being representative of the nearest existing properties to the proposed extraction / infilling area and processing plant. Baseline noise surveys were conducted in appropriate conditions over a number of days, as detailed in the original ES. The results of the 2018 baseline noise surveys were used to suggest noise limits for the proposed quarry. The baseline noise measurements in 2018 were undertaken on days with low winds / calm conditions. The results of the 2018 surveys found that road traffic was the dominant noise source affecting the receptor locations.

5.32 An updated baseline noise survey was undertaken in February 2023. The survey details and results from the February 2023 survey are presented in the updated ES of July 2024. The measurements in February 2023 were undertaken with a moderate westerly breeze, which although was within acceptable ranges of wind speeds for external noise measurements, meant that there was more noise from wind / rustling leaves and road traffic from the west. The prevailing wind direction in the UK is from the south-west. Overall, road traffic remained the significant noise source affecting all survey locations.

5.33 A second updated baseline noise survey was undertaken in August 2024. The survey details and results from August 2024 are presented in Appendix B. The measurements in August 2024 were undertaken with a light southerly breeze. Road traffic remained the significant noise source affecting all survey locations.

5.34 A summary of the 2018, 2023 and 2024 background noise level results at existing receptors, is tabulated below. The suggested noise limits are also provided, based on the 2018 baseline data, and using the guidance from Planning Practice Guidance for Minerals (i.e. L_{A90} value + 10 dB, with an upper limit of 55 dB).

Table 4: Baseline Noise Data from 2018, 2023 and 2024

Survey Location	2018 Range (Average) dB $L_{A90,T}$	Suggested Noise Limit from 2018 Results dB $L_{Aeq,1h}$	Sample Results dB $L_{A90,T}$		Average 2023/24 dB $L_{A90,T}$
			2023	2024	
1. Broom Cottage	40-43 (41)	53	48, 48	41, 43	45
	35-54* (43)*		-	-	
2. South Lodge	46-48 (47)	55	49, 54**	47, 48	48
3. Heathfield Knoll School	46-50 (48)	55	53, 55	46, 45	50
4. Brown Westhead Park	34-38 (36)	46	46, 47	40, 41	43
5. McDonalds Bungalow	31-37 (35)	45	42, 44	37, 37	40
6. Keepers Cottage	35-41 (39)	49	41 (see also 7')	35, 39	39
7. Castle Barns	33-43 (39)	51	40 (see also 7')	36, 37	38
	31-47* (41)*		-	-	
7'. Near North Lodge***	-	-	41, 42	-	

* From installed meter; all other results are from sample measurements
** Affected by local farm activity (excluded from average)
** Location 7' is near to both locations 6 & 7 (included in average)

5.35 At Receptor 1 (Broom Cottage) the 2024 results are within the range of the 2018 samples, and around 6 dB lower than those obtained in 2023. A noise limit based on the average of 2023 and 2024 results would be 2 dB higher than the suggested limit used in the noise assessment.

5.36 At Receptor 2 (South Lodge), the 2024 results are within the range of the 2018 samples, and similar to than those obtained in 2023. A noise limit based on the average of 2023 and 2024 results would be the same as the suggested noise limit used in the noise assessment (as this is at the upper value of 55 dB).

5.37 At Receptor 3 (Heathfield Knoll School) the 2024 results are at the lower end of the range obtained in 2018, and are around 8 dB lower than those obtained in 2023. A noise limit based on the average of 2023 and 2024 results would be the same as the suggested noise limit used in the noise assessment (as this is at the upper value of 55 dB).

5.38 At Receptor 4 (Brown Westhead Park) the 2024 results are around 4 dB higher than those obtained in 2018, and 6 dB lower than those obtained in 2023. A noise limit based on the average of 2023 and 2024 results would be 7 dB higher than the suggested limit used in the noise assessment.

5.39 At Receptor 5 (McDonalds Bungalow) the 2024 results are within the range of the 2018 samples and around 6 dB lower than those obtained in 2023. A noise limit based on the average of 2023 and 2024 results would be 5 dB higher than the suggested noise limit used in the noise assessment.

5.40 At Receptor 6 (Keepers Cottage) the 2024 results are within the range of the 2018 samples, and around 4 dB lower than those obtained in 2023. A noise limit based on the average of 2023 and 2024 results would be the same as the suggested noise limit used in the noise assessment.

5.41 At Receptor 7 (Castle Barns) the 2024 results are within the range of the 2018 samples, and around 4 dB lower than those obtained in 2023. A noise limit based on the average of 2023 and 2024 results would be 3 dB lower than the limit used in the noise assessment; 48 dB $L_{Aeq,1h}$ rather than 51 dB $L_{Aeq,1h}$.

5.42 At most locations, the updated baseline surveys in 2023 and 2024 have demonstrated similar or higher baseline background noise levels to those measured in 2018. This confirms that the suggested site noise limits based on the 2018 baseline surveys are a robust approach.

5.43 The exception to this is Location 7, where the average from the 2023 and 2024 surveys would result in a lower baseline background and lower site noise limit; 48 dB $L_{Aeq,1h}$ rather than 51 dB $L_{Aeq,1h}$.

5.44 The calculated site noise at Location 7 (Castle Barns) from the revised scheme is 46 dB $L_{Aeq,1h}$, and the calculated site noise from the previous scheme was 48 dB $L_{Aeq,1h}$. So even if the lower noise limit was adopted, it would still be possible to comply with the lower noise limit at Castle Barns from both the original and revised schemes.

Comparison of Site Noise Limits and Calculated Site Noise Levels

5.45 Table 5 below sets out a comparison of the suggested site noise limits, based on the 2018 and the 2023 & 2024 baseline noise survey results with the calculated site noise levels for the original scheme and the revised scheme.

5.46 The calculated site noise levels for the revised scheme are either the same or lower than for the original scheme for the majority of locations. The exception is Broom Cottage where the calculated site noise level from the revised scheme is 1 dB higher than the original scheme.

Table 5: Summary of Noise Levels

Receptor	Suggested Noise Limit dB $L_{Aeq,1h}$		Calculated Site Noise Level dB $L_{Aeq,1h}$	
	2018	2023/24	Original Scheme	Revised Scheme
1. Broom Cottage	53	55	51	52
2. South Lodge	55	55	54	51
3. Heathfield Knoll School	55	55	53	45
4. Brown Westhead Park (houses)	46	53	45	45
5. McDonalds Bungalow	45	50	45	45
6. Keepers Cottage	49	49	46	44
7. Castle Barns	51	48	48	46
8. Brown Westhead Park (bungalows)	46	53	-	43

5.47 The calculated site noise levels for both the original and revised schemes are at or below the suggested site noise limits.

6 Impact on Allocated Development

6.1 For the noise assessment prepared for the proposed quarry at Lea Castle Farm, WBM included the receptors nearest to the site that were considered to have the worst potential noise impact.

6.2 At the time that WBM prepared the noise assessment for the proposed quarry in September 2019, there were two housing developments in the vicinity that were approved by Wyre Forest District Council:

- Former Lea Castle Centre (17/0205/OUTL) approved in June 2019 – partially completed and occupied, still under construction
- Stourbridge Road (18/0163/FULL) approved in August 2018 – constructed and occupied

6.3 Both of these developments are further from the proposed quarry site than the noise sensitive receptors included in the WBM noise assessment of September 2019.

6.4 Additional residential properties/developments in the area have subsequently been permitted or have had applications submitted to Wyre Forest District Council. These include:

- Four bungalows on Brown Westhead Park (20/0217/FUL) approved in July 2020 – constructed and occupied
- Lea Castle Village (22/0404/OUT) submitted in May 2022 – pending consideration
- Single dwelling on Wolverley Road (24/0564/FUL) submitted in August 2024 – pending consideration

6.5 The impact of noise from the proposed quarry on all of these receptors has been considered.

6.6 The majority of these applications do not have associated noise assessments and hence do not have baseline noise data on which suggested site noise limits could be derived. However the additional receptor locations are either reasonably near to other baseline noise survey locations previously used by WBM, or baseline noise measurement samples have been undertaken by WBM at these locations.

6.7 The same calculation model as used for the quarry noise assessment undertaken by WBM for both the original scheme and revised scheme has been used to determine the site noise levels for these additional receptors.

6.8 There was another development (four residential dwellings at Wolverley Lodge, planning reference 22/0235/PIP, submitted in May 2022) however this application was refused in September 2023. As such this application has not been considered within this proof.

Former Lea Castle Centre (17/0205/OUTL)

6.9 This site is located to the east of the proposed quarry. This is an outline application for up to 600 dwellings, employment uses and mixed use space. The nearest proposed housing is located approximately 600 metres from the closest extraction point on the proposed quarry site and 900 metres from the plant site.

6.10 Planning permission for this development was granted in June 2019, subject to conditions, none of which relate specifically to noise.

6.11 Condition 20 required submission of a Construction Environmental Management Plan (CEMP) for the first reserved matters application for the development or the first reserved matters application for each phase of development. The CEMP is to include a Construction Method Statement with details of the noise from such activities, including acoustic screening. Noise and vibration management plans are also required.

6.12 A Construction Management Plan has been uploaded to the planning portal at Wyre Forest District Council that shows the different development parcels. However, no CEMPs, construction method statements or noise and vibration management plans appear to have been uploaded so this information including that regarding construction noise levels is not publicly available.

6.13 From a review of the site using Google Maps and also from site visits during baseline noise surveys in 2023 and 2024, housing on the site is under construction with some plots already occupied.

6.14 There was no noise report submitted with the application and as a result, no baseline noise levels reported for this site. It is envisaged that The A449 Wolverhampton Road would be the main source of environmental noise affecting the proposed residential site. The proposed houses are to be located over 300 metres from this road.

6.15 Limited sample measurements have been undertaken by WBM at the Lea Castle site in 2023 (reported in the updated ES) and 2024 (see Appendix B), with an average background noise level of 45 dB $L_{A90,T}$. Using the guidance in PPGM, this indicates that 55 dB $L_{Aeq,1h}$ would be an appropriate site noise limit at this location.

6.16 The calculated site noise level at the Former Lea Castle Centre site for normal, day to day operations is 39 dB $L_{Aeq,1h}$ for the original scheme and 40 dB $L_{Aeq,1h}$ for the revised scheme. These values are well below the suggested PPGM site noise limit of 55 dB $L_{Aeq,1h}$, and are also below the background noise levels measured at this location.

6.17 The calculated noise due to temporary operations is 41 dB $L_{Aeq,1h}$. This is also well below the PPGM noise limit of 70 dB $L_{Aeq,1h}$ for such activities.

6.18 As such, operations at the proposed quarry at Lea Castle Farm would not cause a noise impact at the proposed residential development at the Former Lea Castle Centre site.

Stourbridge Road (18/0163/FULL)

6.19 This site is located to the south-east of the proposed quarry. This is a full planning application for 91 dwellings located on land off Stourbridge Road. The nearest housing is located over 700 metres from the closest extraction point on the proposed quarry site and approximately 1 kilometre from the plant site.

6.20 A noise assessment report was submitted as part of the planning application, prepared for Miller Homes by Wardell Armstrong ("Miller Homes, Land off Stourbridge Road, Kidderminster, Noise Assessment Report"). The report included the results of noise measurements undertaken on the site in 2015, in which the baseline noise levels were found to be mainly influenced by road traffic noise. The report provided recommendations for mitigation to the dwellings to control road traffic noise levels.

6.21 There was no mention or consideration of construction noise within the noise report submitted with the application.

6.22 Planning permission was granted in August 2018, subject to conditions. Condition 18 required the noise mitigation strategy for glazing, ventilation and boundary treatments to be as set out in the noise assessment report.

6.23 Condition 14 required submission of a Construction Environmental Management Plan (CEMP) prior to commencement of the development. The CEMP does not appear to have been uploaded to the planning portal at Wyre Forest District Council so this information is not publicly available.

6.24 From a review of the site using Google Maps, the housing has been constructed and is now occupied.

6.25 The 2015 baseline noise survey information included in the noise report submitted with that application had an average daytime background noise level of 44 dB $L_{A90,T}$.

6.26 Limited sample measurements have been undertaken by WBM at the Stourbridge Road development in 2023 (reported in the updated ES) and 2024 (see Appendix B), with an average background noise level of 41 dB $L_{A90,T}$. Using the guidance in PPGM and the lower baseline background noise levels measured by WBM, this indicates that 51 dB $L_{Aeq,1h}$ would be an appropriate site noise limit at this location.

6.27 The calculated site noise levels at the development off Stourbridge Road for normal, day to day operations is 37 dB $L_{Aeq,1h}$ for the original scheme and 36 dB $L_{Aeq,1h}$ for the revised scheme. This is well below the suggested PPGM site noise limit of 51 dB $L_{Aeq,1h}$, and also below the background noise levels measured at this location.

6.28 The calculated noise due to temporary operations is 39 dB $L_{Aeq,1h}$. This is also well below the PPGM noise limit of 70 dB $L_{Aeq,1h}$ for such activities.

6.29 As such, operations at the proposed quarry at Lea Castle Farm would not cause a noise impact at these dwellings.

Four bungalows on Brown Westhead Park (20/0217/FUL)

6.30 This site is located to the west of the proposed quarry and was a full planning application for four 2-bedroom bungalows off Brown Westhead Park. Planning permission was granted in July 2020, subject to conditions, none of which relate to noise. From review of the site using Google Maps, the bungalows have been constructed and appear to be occupied.

6.31 The bungalows are near to WBM survey Location 4 (Brown Westhead Park). As such, the baseline noise conditions and site noise limit would be the same as those determined for Location 4, Brown Westhead Park.

6.32 The WBM 2018 baseline noise surveys had an average daytime background noise levels of 36 dB $L_{A90,T}$ at this location Using the guidance in PPGM, this indicates that 46 dB $L_{Aeq,1h}$ would be an appropriate site noise limit at this location.

6.33 Updated baseline noise measurements at Brown Westhead Park in 2023 and 2024 gave an average background noise level of 43 dB $L_{A90,T}$, which would give rise to a higher site noise limit than the 2018 data. However, it is proposed to use the lower noise limit for the assessment of these properties.

6.34 Site noise calculations for these properties were not included in the original quarry application documents as these had not yet been constructed. However, the calculated site noise levels were included in the updated ES in 2024.

6.35 The calculated site noise levels for the bungalows for normal, day to day operations is 45 dB $L_{Aeq,1h}$ for the original scheme and 43 dB $L_{Aeq,1h}$ for the revised scheme. This is below the suggested PPGM site noise limit of 46 dB $L_{Aeq,1h}$ at this location.

6.36 The calculated noise due to temporary operations is 63 dB $L_{Aeq,1h}$. This also complies with the PPGM noise limit of 70 dB $L_{Aeq,1h}$ for such activities.

6.37 As such, operations at the proposed quarry at Lea Castle Farm would not cause any significant adverse noise impact at these bungalows.

Four residential dwellings at Wolverley Lodge (22/0235/PIP)

6.38 This site is located over 300 metres further to the west than the four bungalows off Brown Westhead Park.

6.39 Permission in Principle was previously approved under planning reference 18/0448/PIP, but this has expired. The previous Permission in Principle was granted in February 2019, subject to the submission of various technical details and assessments. There was no requirement to submit a noise assessment.

6.40 An updated application for the dwellings was submitted in March 2022. No noise assessment was included in the submission.

6.41 The application was refused in September 2023, as such no quarry noise assessment has been undertaken for this development.

6.42 WBM has undertaken limited sample measurements near to this development site in 2023 (reported in the updated ES) and 2024 (see Appendix B), with an average value of 40 dB $L_{A90,T}$. This data is provided for information only.

Lea Castle Village (22/0404/OUT)

6.43 This site is located to the east of the proposed quarry, adjacent to the Former Lea Castle Centre site.

6.44 This is an outline application for a mixed development including up to 800 dwellings. The nearest proposed housing is located approximately 250 metres from the closest extraction point on the proposed quarry site and 600 metres from the plant site.

6.45 The planning application was submitted in May 2022 and is pending consideration. A noise assessment report was submitted as part of the planning application, prepared for Homes England by Wood Group ("Lea Castle Village, Kidderminster, Outline Planning Application, Site Suitability assessment – Noise"). The report included the result of a single noise measurement undertaken adjacent the A449 (near the junction with Wolverley Road) in 2021 with a reported result of 75 dB $L_{A10,18h}$. No other noise parameters were presented. The purpose of the survey was to measure road traffic noise. The report presented the results of road traffic noise modelling and provided an assessment of the suitability of the site for development.

6.46 It is noted that the forecast traffic flow from the proposed quarry at Lea Castle Farm was included within the assessment of road traffic noise for this site.

6.47 No background ($L_{A90,T}$) noise levels were presented in the report.

6.48 There was no mention or consideration of construction noise within the noise report submitted with the application. However noise from construction is considered within the Health Impact Assessment Checklist Matrix (dated April 2022) submitted with the application. Under Section 3 of the Planning Checklist, within the section on Construction, it is stated:

"*Noise and vibration disruption due to construction will be temporary and limited to the Wider Site and surrounding area and dependent on the rate of annual dwelling completions, likely to be for approximately 10 years. Construction activities would also move around the Wider Site as the Scheme is built out and are only likely to be in close proximity to noise sensitive receptors for short durations. A range of best practice environmental measures would be incorporated into the Proposed Scheme via the CEMP in order to minimise and manage potential construction noise effects, with which contractors will need to comply. Construction hours can also be controlled through a CEMP to decrease period of noise disturbance*."

6.49 Although there was a noise report submitted with the application, no background noise levels were presented in the report. It is envisaged that The A449 Wolverhampton Road would be the main source of environmental noise affecting the proposed residential site. Some of the proposed houses are to be located between the proposed development at Former Lea Castle Centre site and Wolverhampton Road, with some properties adjacent to this road.

6.50 It is assumed that the baseline noise levels at the proposed housing would be similar to those measured by WBM at the Lea Castle Centre site, with an average value of 45 dB $L_{A90,T}$. Using guidance in PPGM, this indicates that 55 dB $L_{Aeq,1h}$ would be an appropriate site noise limit for these properties.

6.51 The calculated site noise level at Lea Castle Village for normal, day to day operations is 46 dB $L_{Aeq,1h}$ for the original scheme and 44 dB $L_{Aeq,1h}$ for the revised scheme. This is well below the suggested PPGM site noise limit of 55 dB $L_{Aeq,1h}$ for this development.

6.52 The calculated noise due to temporary operations is 50 dB $L_{Aeq,1h}$. This is well below the PPGM noise limit of 70 dB $L_{Aeq,1h}$ for such activities.

6.53 As such, operations at the proposed quarry at Lea Castle Farm would not cause any significant adverse noise impact at the proposed residential development at the Lea Castle Village site.

Single dwelling on Wolverley Road (24/0564/FUL)

6.54 The application for the dwelling has recently been submitted in August 2024, and is located very near to Broom Cottage, albeit on the other side of Wolverley Road. No information regarding noise has been submitted with the application, which is pending consideration.

6.55 In light of the close proximity to Broom Cottage, the baseline noise levels, site noise limit and calculated site noise levels would be very similar as those determined for Location 1, Broom Cottage. The calculated site noise for temporary operations, and normal site noise from both the original scheme and revised scheme all meet the suggested site noise limits at Broom Cottage, and the same would occur for this property.

6.56 As such, operations at the proposed quarry at Lea Castle Farm would not cause any significant adverse noise impact at this property.

Summary of Impact on Allocated Development

6.57 A summary of the assumed background levels, suggested site noise limits and 'reasonable worst case' calculated site noise levels for the allocated development sites, is presented in Table 3. Note that all levels presented are freefield.

Table 6: Summary of Suggested Site Noise Limits and Calculated Site Noise Levels at Allocated Development Sites

Receptor	Background dB $L_{A90,T}$	Suggested Site Noise Limit dB $L_{Aeq,1h}$	Calculated Site Noise Level dB $L_{Aeq,1h}$	
			Original Scheme	Revised Scheme
Former Lea Castle Centre (17/0205/OUTL)	45	55	39	40
Stourbridge Road (18/0163/FULL)	41	51	37	36
Four bungalows on Brown Westhead Park (20/0217/FUL)	36	46	45	43
Lea Castle Village (22/0404/OUT)	45	55	46	44
Single dwelling on Wolverley Road (24/0564/FUL)	43 (2018) 45 (2023/24)	53	51	52

6.58 The calculated noise levels associated with temporary operations are all well below the PPGM limit of 70 dB $L_{Aeq,1h}$ for such activities.

6.59 All of the calculated site noise levels comply with the site noise limits for normal and temporary operations for these additional receptors.

7 Consideration of Cumulative Impact

Minerals Operations

7.1 With regard to cumulative impact from mineral sites, there are no other mineral sites or operations in the vicinity of the proposed quarry at Lea Castle Farm, so no cumulative assessment of such operations is necessary.

Road Traffic

7.2 When the Lea Castle Farm quarry application was made, the additional traffic generated by the allocated developments at the time, Former Lea Castle Centre (17/0205/OUTL) and Stourbridge Road (18/0163/FULL), were included in the transport assessment prepared for the quarry application.

7.3 It is noted that the forecasted traffic flow from the proposed quarry at Lea Castle Farm was included within the assessment of road traffic noise for Lea Castle Village, as set out in the noise assessment report submitted with that application.

Operational Noise

7.4 The proposed developments are mainly housing, which usually does not generate any significant levels of noise. There are areas of employment use within the proposed development at the Former Lea Castle Centre and Lea Castle Village, however the noise levels from these are likely to be restricted in order not to cause impact on the immediately adjacent residential properties within the same development. As such the cumulative impact on other receptors from the employment use within these sites is expected to be negligible.

Construction Noise

7.5 The noise from construction, in particular of the Lea Castle Village site, is likely to be the most significant noise source associated with other developments that may have an impact on the noise sensitive receptors.

7.6 The Former Lea Castle Centre is already under construction, and construction is complete on the developments at Stourbridge Road and Brown Westhead Park.

7.7 There is insufficient information available to determine the levels of construction noise from the Lea Castle Village site. The CEMP required for the Former Lea Castle Centre was not uploaded to the Wyre Valley District Council planning portal and no construction noise information was provided in the application for the Lea Castle Village site.

7.8 Construction noise is highly variable depending on the particular activity, the plant items used, the duration of the works at each location, the mode of operation etc. The only appropriate assumption that can be made is that it would be expected that construction noise would meet appropriate noise limits at the nearest noise sensitive receptors (dwellings) to the construction site.

7.9 As confirmed by the Health Impact Assessment Matrix submitted with the application for the Lea Castle Village site (see paragraph 6.48 above), any disruption from construction noise will be temporary and will generally be limited to the wider site and surrounding area. The period of construction is expected to be around 10 years. Construction activities are variable and will move around the site, and are only likely to be in close proximity to any noise sensitive receptors for relatively short durations.

7.10 There are no mandatory limits for construction noise, although there are recommendations and guidelines for limits.

7.11 BS 5228-1:2009+A1:2014 "*Code of practice for noise and vibration control on construction and open sites – Part 1: Noise*" (CD12.15) provides some example criteria for the assessment of potential significance of construction noise effects in Annex E of the standard. One of the examples provided is the "ABC" Method, which sets threshold values for construction noise during the day, evening and night-time based on the current noise levels without construction activities, based on existing ambient noise levels. Another method compares the total noise including construction activities with the pre-construction noise levels. However both approaches have the same lower construction noise limit of 65 dB $L_{Aeq,T}$ during the day between 7am and 7pm.

7.12 The Worcestershire Regulatory Services (WRS) document "Code of Best Practice for Demolition and Construction Sites" September 2020 (CD12.16) also provides recommendations for construction noise limits and includes the following text within the "Noise Limits " section:

"*Level limits of 75 dBA for a working day over a 10-hour period are recommended as a general rule in urban areas next to busy roads and in semi rural areas a level of 70dBA. WRS expects noise controls employed to meet or reduce the average noise from the site to this level. In built up environment this is not always attainable, in which case best practicable means must be applied to reduce noise and vibration as much as possible. As a guide, typical daytime levels for noisy temporary works at neighbouring premises usually lie in the range of 70 – 80 dBA*

Noise levels within neighbouring offices or residences during noisy periods must enable workers to carry out conversations, both face-to-face and on the telephone, and allow normal business to be conducted. It is considered that a noise level of 65 dBA is likely to cause annoyance and interference (dependent on the type of noise). Such noise should be restricted to hours outside the normal working day of 09.00 –17.00 hours.

In residential areas, timing of works with noise levels exceeding 65dBA should be discussed and agreed with WRS prior to commencing."

7.13 From BS 5228 and WRS guidelines, it appears that 65 dB $L_{Aeq,T}$ could be considered as a conservative daytime noise limit for construction noise. Note that this is higher than the maximum limit for normal operations usually considered for mineral sites during the day (55 dB $L_{Aeq,1h}$). The suggested site noise limit for the receptors considered in WBM's quarry noise assessment in 2019 ranged from 45-55 dB $L_{Aeq,1h}$ and the suggested site noise limits for the additional receptors considered in this proof range from 46-55 dB $L_{Aeq,1h}$. As the site noise limit for normal, day to day operations at the quarry is no more than 55 dB $L_{Aeq,1h}$ at any receptor and the site noise calculations show that the limits will be complied with, quarry site noise levels at the nearest receptors to the Lea Castle Village development will be at least 10 dB(A) below the maximum potential noise from the construction activity on the housing developments. Site noise from the quarry is therefore likely to be inaudible compared to construction noise.

7.14 The nearest existing residential areas to the Former Lea Castle Centre and Lea Castle Village sites include:

- Castle Road
- Lea Castle Drive / The Crescent
- Axborough Lane

- Park Gate Road
- Isolated farm dwellings to the south of Stourbridge Road
- Castle Barns – located between 50-175 metres to the west of Wolverhampton Road

7.15 In additional there will be new dwellings within the Former Lea Castle Centre site and the Lea Castle Village site that will be completed as ongoing construction progresses in other parts of the site.

7.16 The quarry noise assessment considered the impact of quarry site noise on Castle Barns. For this receptor, the calculated, worst case site noise level for normal quarry operations is 48 dB $L_{Aeq,1h}$ for the original scheme and 46 dB $L_{Aeq,1h}$ for the revised scheme . These noise levels are well below the possible construction noise limit of 65 dB $L_{Aeq,T.}$ This indicates that the site noise from the quarry from normal operations would be insignificant compared to the potential construction noise from the housing development. As such, the inclusion of site noise from the quarry would not change the cumulative noise impact at this receptor, as the noise environment would be controlled by construction noise.

7.17 Within this proof, the quarry site noise has also been considered at the nearest proposed dwellings within the Former Lea Castle Centre and the Lea Castle Village sites. For the dwellings in the Former Lea Castle Centre and Lea Castle Village sites, as indicated in Section 6, the calculated worst case site noise levels from normal quarry operations are 36-37 dB $L_{Aeq,1h}$ and 44-46 dB $L_{Aeq,1h}$ respectively, for the revised and original schemes. These noise levels are also well below the possible construction noise limit of 65 dB $L_{Aeq,T.}$ This indicates that the site noise from the quarry would be insignificant compared to the potential construction noise from the housing development. As above, the inclusion of site noise from the quarry would not change the cumulative noise impact at these receptors, as the noise environment would be controlled by construction noise.

7.18 As indicated above in paragraphs 7.9 and 7.10, construction noise will be variable and temporary, and only likely to be in close proximity to any noise sensitive receptors for relatively short durations. As such it is expected that the construction activity would only be up to the construction noise limit for a short period of time when works were near the particular receptor. Also as indicated above (see paragraphs 5.4 and 5.24) the calculated site noise level due to the quarry is a worst case with all plant on site operating simultaneously at the nearest parts of the quarry to the receptor, which would not happen in practice.

7.19 Taking this into account, the cumulative impact from both normal site activities from the quarry and construction operations, for both the original scheme and revised scheme, is unlikely to be significant at any receptor.

7.20 Heathfield Knoll School and the nursery are located approximately 1 kilometre from the Lea Castle Village site. At this distance, any construction noise from the Lea Castle site is highly unlikely to be significant at the school and nursery, and as such would not change the impact assessment of quarry noise affecting this receptor.

8 Comment on the Potential for Noise Impact

Impact on Allocated Development

8.1 For the noise assessment prepared for the proposed quarry at Lea Castle Farm, WBM included the receptors nearest to the site that were considered to have the potential for being subject to the greatest noise impact.

8.2 At the time that WBM prepared the noise assessment for the proposed quarry in September 2019, there were two housing developments in the vicinity that had planning approval but these developments were further from the proposed quarry site than the noise sensitive receptors included in the WBM noise assessment. Additional residential properties/developments in the area have subsequently been permitted or have had applications submitted.

8.3 The impact of noise from the proposed quarry on all of these receptors has been considered in this proof. The calculated site noise levels for the reasonable worst case normal operations (original and revised schemes) and short term temporary operations have all met appropriate noise limits based on the advice in PPGM.

8.4 As such, operations at the proposed quarry at Lea Castle Farm would not cause any significant adverse noise impact at the permitted and proposed residential developments.

Cumulative Impact on Residential Receptors

8.5 With regard to cumulative impact from mineral sites, there are no other mineral sites or operations in the vicinity of the proposed quarry at Lea Castle Farm, so no cumulative assessment of such operations is necessary.

8.6 With regard to road traffic, the additional traffic generated by the allocated developments at the time were presented in the transport assessment prepared for the quarry application.

8.7 The forecast traffic flow from the proposed quarry at Lea Castle Farm was included within the assessment of road traffic noise for Lea Castle Village as set out in the noise assessment report submitted with the application. Therefore the cumulative impact of additional traffic from the proposed quarry has already been considered in the noise assessment for the Lea Castle Farm site.

8.8 The cumulative impact with regard to construction activities on the permitted and proposed housing developments has been considered in general terms. Construction noise is highly variable depending on the particular activity, location of the works, the plant items used, the duration of the works at each location and the mode of operation. The Health Impact Assessment Matrix submitted with the application for the Lea Castle Village site confirmed that any disruption from construction noise will be temporary and will generally be limited to the wider site and surrounding area, and are only likely to be in close proximity to any noise sensitive receptors for relatively short durations. The only appropriate assumption that can be made is that it would be expected that construction noise would meet appropriate noise limits at the nearest noise sensitive receptors (dwellings) to the construction site. From BS 5228 and WRS guidelines, it appears that 65 dB $L_{Aeq,T}$ could be considered as a conservative daytime noise limit for construction noise.

8.9 The receptors that could be exposed to both noise from the quarry site and construction activity from Lea Castle Village have been identified as those at Castle Barns, and the new dwellings within the Former Lea Castle Centre and the Lea Castle Village sites. For all these sites, the calculated worst case site noise levels from normal quarry operations are well below the possible construction noise limit of 65 dB $L_{Aeq,T}$. As the site noise limit for normal, day to day operations at the quarry is no more than 55 dB $L_{Aeq,1h}$ at any receptor and the site noise calculations show that the limits will be complied with, quarry site noise levels at the nearest receptors to the Lea Castle Village development will be at least 10 dB(A) below the maximum potential noise from the construction activity on the housing developments. Site noise from normal operations at the quarry is therefore likely to be inaudible compared to construction noise.

8.10 The quarry site noise would be insignificant compared to the potential construction noise from the housing development. The inclusion of site noise from the quarry would not change the cumulative noise impact at these receptors, as the noise environment would be controlled by construction noise.

8.11 As indicated above construction noise will be variable and temporary, and only likely to be in close proximity to any noise sensitive receptors for relatively short durations. As such it is expected that the construction activity would only be up to the construction noise limit for a short period of time when works were near the particular receptor, if at all. Also as indicated above, the calculated site noise level due to the quarry is a worst case with simultaneous extraction and infilling operations occurring (after Phase 1) at the nearest parts of the quarry to the receptor, which would not happen in practice. Taking this into account, the cumulative impact from both normal site activities from the quarry and construction operations is unlikely to be significant at any residential receptor.

8.12 As such, the consideration of cumulative impact does not alter the outcome of the original noise assessment of the site.

Cumulative Impact on Heathfield Knoll School and Nursery

8.13 Heathfield Knoll School and Nursery are located on Heathfield Lane, approximately 1 kilometre from the Lea Castle Village site. At this distance, any construction noise from the Lea Castle site would be insignificant and is likely to be inaudible at the school and nursery, and as such would not change the impact assessment of quarry noise affecting this receptor.

Identifiable Noise

8.14 The guidance documents relating to noise generally require noise not to have unacceptable adverse impacts and to avoid significant adverse impact.

8.15 The Noise Exposure Hierarchy from PPGN (see Table 1 of this document) confirms that the that "No Observed Adverse Effect Level" (NOAEL) correspond to noise being heard but does not cause any change in behaviour etc.

8.16 The "Lowest Observed Adverse Effect Level" (LOAEL) corresponds to noise being heard and causing small changes in behaviour etc.

8.17 The "Significant Observed Adverse Effect Level" (SOAEL) corresponds to noise causing a material change in behaviour.

8.18 Note that where the impact lies between LOAEL and SOAEL, the NPSE advises that this does not mean that such adverse effects cannot occur.

8.19 The fact that sound may occasionally be heard does not result in significant adverse impact; occasional identifiable noise could occur for both NOAEL and LOAEL scenarios, neither of which result in significant adverse impact.

8.20 It is considered that compliance with the site noise limits specified within the PPGM should be sufficient to avoid significant adverse impact. The calculations for the reasonable worst case for normal operations at the quarry demonstrates that these limits are achieved for all receptors, and the inclusion of the cumulative impact of construction noise does not affect this outcome. In addition, the calculated site noise levels for the quarry are a worst case assuming that all plant on site operates simultaneously in the closest likely working areas to each receiver location for both extraction and infilling. In practice, these two activities would be taking place in different phases of the development and the quarry site noise levels would generally be lower the worst case calculated levels.

9 Response to Statements of Case

WCC

9.1 As set out in paragraphs 4.8 to 4.11, WCC considers that that application information provided demonstrates that the scheme would not cause amenity harm with regards to noise to residential buildings, the school or nursery, subject to the implementation of the proposed mitigation measures.

9.2 As such WCC have not raised any issues regarding noise in their Statement of Case that require responses.

Rule 6 Party

9.3 The Rule 6 party (Stop the Quarry Campaign) have raised concerns about noise but have not provided any details.

9.4 The noise assessments prepared by WBM in September 2019 and the updated ES in 2024 followed appropriate protocols by determining the baseline noise levels at the nearest receptors using robust methods, including measurements on several days.

9.5 The average background noise levels determined from the 2018 baseline noise surveys were used to determine appropriate site noise limits following current Government policy and guidelines, i.e. the advice in PPGM. Subsequent noise surveys have generally resulted in higher baseline background noise levels, indicating that site noise limits based on the 2018 baseline noise survey data is a worst case approach.

9.6 Site noise calculations were undertaken, with WBM providing feedback to NRS on the scheme with regard to the mitigation required to ensure that appropriate noise levels were met for the reasonable worst case scenarios.

9.7 The receptors considered included the nearest residential properties and also the Heathfield Knoll School and Nursery.

9.8 Within this proof I have considered cumulative impact and shown that this does not affect the outcome of the original noise assessment. This reasoning should also be sufficient to respond to the Rule 6 Party concerns regarding noise.

10 Summary and Conclusions

10.1 This proof of evidence has addressed the reasons for the refusal relating to noise of the planning application for a proposed quarry at land at Lea Castle Farm, Wolverley Road, Broadwaters, Kidderminster, Worcestershire

10.2 Summaries of relevant guidance documents relating to noise and mineral sites are presented in this document. These generally show that the aim for noise is to avoid significant adverse impacts.

10.3 A summary of the baseline noise results, suggested site noise limits and calculated site noise levels from the previous noise assessment for the original scheme undertaken by WBM in 2019 is presented in this document. These include the noise levels at the nearest noise sensitive receptors to the proposed quarry site.

10.4 The results of updated baseline noise surveys undertaken in 2023 and 2024 are also presented in this proof, along with the calculated site noise levels from the revised scheme.

10.5 The results of calculations for additional noise sensitive receptors, either permitted or allocated developments, have been included in this proof. The same calculation models as used for the quarry noise assessment undertaken by WBM in 2019 and 2024 have been used for these additional receptors. All of the calculated site noise levels comply with the suggested site noise limits for normal and temporary quarry operations for these additional receptors for both the original scheme and revised scheme. Operations at the proposed quarry at Lea Castle Farm would not cause any significant noise impact at the permitted and proposed residential developments.

10.6 Cumulative impact has been addressed, with noise from construction activities at the Lea Castle Village site considered to be the most significant noise source associated with other developments that may have an impact on the noise sensitive receptors.

10.7 If construction noise was at the possible maximum limit at a noise sensitive receptor, noise from normal operations at the quarry would be insignificant compared to the potential construction noise from the housing development. As such, the addition of site noise from the quarry to those potential construction noise levels would not change the cumulative noise impact at this receptor, as the noise environment would be controlled by construction noise.

10.8 Construction noise will be variable and temporary, and only likely to be in close proximity to any noise sensitive receptors for relatively short durations. In addition, the calculated site noise levels due to the quarry are worst cases, assuming (after Phase 1) simultaneous extraction and infilling operations occurring at the nearest parts of the quarry to the receptor, which would not happen in practice. Taking this into account, the cumulative impact from both normal site activities from the quarry and construction operations is unlikely to be significant at any receptor.

10.9 As such, the consideration of cumulative impact does not alter the outcome of the original noise assessment of the site.

10.10 With regard to cumulative impact on Heathfield Knoll School and Nursery, these are located approximately 1 kilometre from the Lea Castle Village site. At this distance, any construction noise from the Lea Castle site would be insignificant and is likely to be inaudible at the school and nursery, and as such would not change the impact assessment of quarry noise affecting this receptor.

10.11 The consideration of cumulative impact does not affect the outcome of the original noise assessment for the original scheme, nor the updated noise assessment for the revised scheme.

Rachel Canham BEng MSc CEng FIOA

Appendix A: Glossary of Acoustic Terms

General Noise and Acoustics

The following section describes some of the parameters that are used to quantify noise.

Decibels dB

Noise levels are measured in decibels. The decibel is the logarithmic ratio of the sound pressure to a reference pressure ($2x10^{-5}$ Pascals). The decibel scale gives a reasonable approximation to the human perception of relative loudness. In terms of human hearing, audible sounds range from the threshold of hearing (0 dB) to the threshold of pain (140 dB).

A-weighted Decibels dB(A)

The 'A'-weighting filter emulates human hearing response for low levels of sound. The filter network is incorporated electronically into sound level meters. Sound pressure levels measured using an 'A'-weighting filter have units of dB(A) which is a single figure value to represent the overall noise level for the entire frequency range.

A change of 3 dB(A) is the smallest change in noise level that is perceptible under normal listening conditions. A change of 10 dB(A) corresponds to a doubling or halving of loudness of the sound. The background noise level in a quiet bedroom may be around 20 –30 dB(A); normal speech conversation around 60 dB(A) at 1 m; noise from a very busy road around 70-80 dB(A) at 10m; the level near a pneumatic drill around 100 dB(A).

Equivalent Continuous Sound Pressure Level $L_{Aeq,T}$

The 'A'-weighted equivalent continuous sound pressure level $L_{Aeq,T}$, is a notional steady level which has the same acoustic energy as the actual fluctuating noise over the same time period T. The $L_{Aeq,T}$ unit is dominated by higher noise levels, for example, the $L_{Aeq,T}$ average of two equal time periods at, for example, 70 dB(A) and 50 dB(A) is not 60 dB(A) but 67 dB(A).

The $L_{Aeq,}$ is the chosen unit of BS 7445-1:2003 "Description and Measurement of Environmental noise".

Maximum Sound Pressure Level L_{Amax}

The L_{Amax} value describes the overall maximum 'A'-weighted sound pressure level over the measurement interval. Maximum levels are measured with either a fast or slow time weighted, denoted as $L_{Amax,f}$ or $L_{Amax,s}$ respectively.

Statistical Parameters L_N

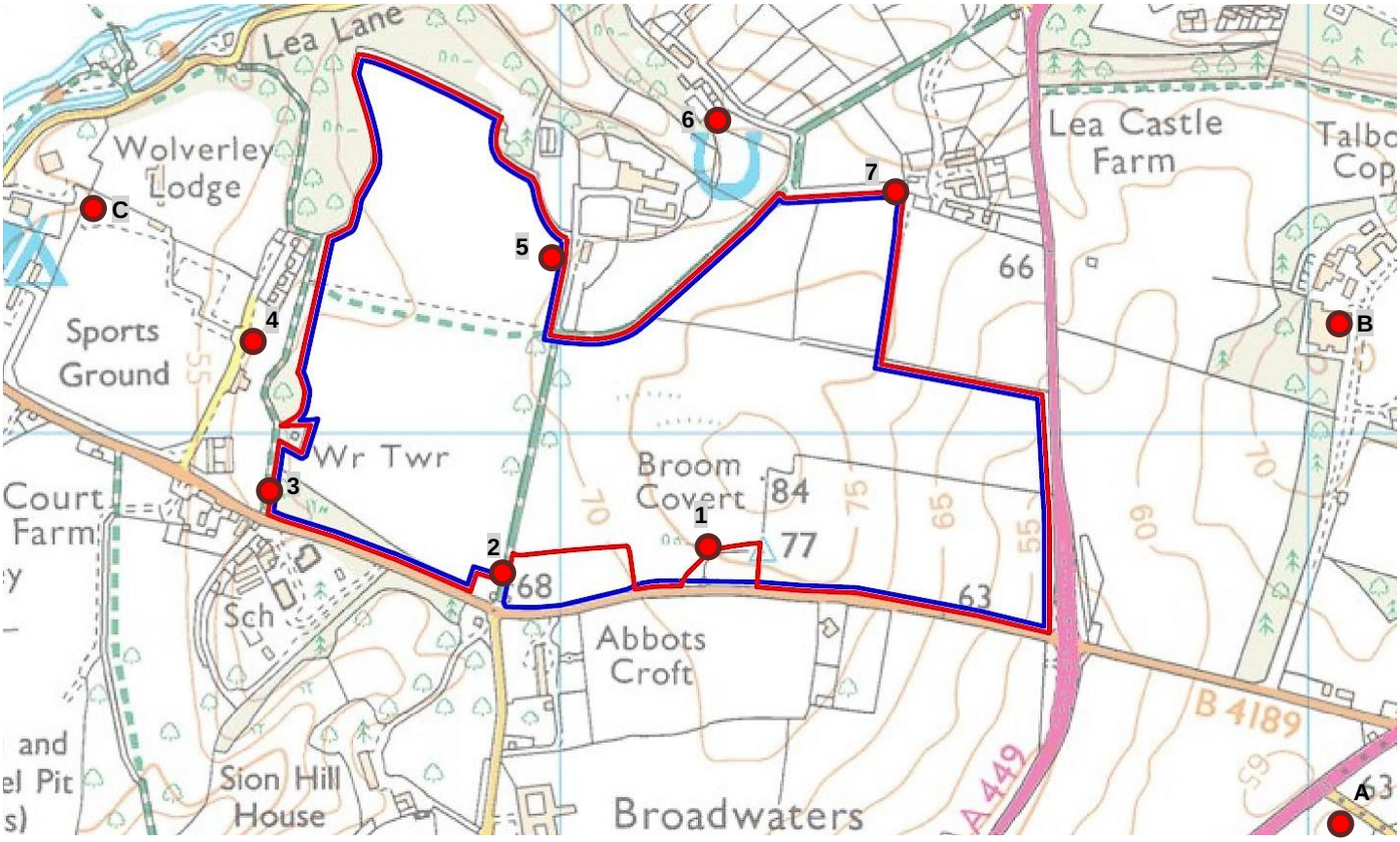
In order to cover the time variability aspects, noise can be analysed into various statistical parameters, i.e. the sound level which is exceeded for N% of the time. The most commonly used are the $L_{A10,T}$ and the $L_{A90,T}$.

$L_{A10,T}$ is the 'A'-weighted level exceeded for 10% of the time interval T and is often used to describe road traffic noise. It gives an indication of the upper level of a fluctuating noise signal. For high volumes of continuous traffic, the $L_{A10,T}$ unit is typically 2–3 dB(A) above the $L_{Aeq,T}$ value over the same period.

$L_{A90,T}$ is the 'A'-weighted level exceeded for 90% of the time interval T, and is often used to describe the underlying background noise level.

Appendix B: Baseline Noise Survey August 2024

Plan B.1: Application Boundary with Noise Survey Locations



1. Broom Cottage:	Boundary of rear garden of dwelling
2. South Lodge:	On driveway to west of property, ~ 20 m from edge of road fence
3. Heathfield Knoll School:	On bridleway opposite school, ~ 15 m from edge of road
4. Brown Westhead Park:	In road, by entrance gates
5. McDonalds Bungalow:	On track / in field to west of property
6. Keepers Cottage:	Near tree by entrance and corner of fence, opposite house
7. Castle Barns:	End of track nearest to residential properties
A. Houses off Stourbridge Rd:	North edge of development, opposite 45 Albrington Drive
B. Lea Castle Village:	Off Lea Castle Drive at edge of development
C. Houses at Wolverley Lodge:	East of proposed dwellings, within park at edge of parking area

Appendix B (continued)

Date and Locations of Survey

10:30 to 17:00 hours on Wednesday 28 August 2024 in the vicinity of Lea Castle Farm at Locations 1 to 7, A, B and C as shown in Plan B.1.

Survey carried out by

Rachel Canham

Weather Conditions

Warm (18-20^{o}C), mainly dry (rain shower at 15:30), overcast, light southerly breeze 1-2m/s

Instrumentation and Calibration

The instrumentation used (including serial number in brackets) is tabulated below. The sensitivity of the meter was verified on site immediately before and after the survey using the field calibrator. The measured calibration levels were as follows:

Instrumentation	Start Cal	End Cal
Norsonic 140 Sound Level Meter (1403136)	113.8 dB(A)	113.6 dB(A)
Norsonic 1251 Calibrator (31992)		

The meter and calibrator are tested monthly against Norsonic Calibrators, type 1253 (serial number 22906) and type 1256 (serial number 125626100) both with UKAS approved laboratory certificates of calibration. In addition, the meter and calibrator undergo traceable calibration at an external laboratory every two years.

Survey Details

Attended sample measurements of 15 minutes duration were taken at locations location 1 to 7, A, B and C. The microphone was at a height of around 1.3m above local ground level, with a windshield used throughout.

Detailed observations for each survey location are included in the tabulated results. In general, road traffic remained the dominant noise source for most locations.

Appendix B (continued)

Survey Results and Observations

Table B.1: Survey Results 28 August 2024

Location	Start Time	Results dB (T = 15 minutes)				Comments / Observations
		$L_{Aeq,T}$	$L_{Amax,f}$	$L_{A10,T}$	$L_{A90,T}$	
2	10:36	57	81	59	48	Road traffic, birdsong, insects (crickets). 10:38-10:40 refuse bin lorry at dwelling
1	11:03	53	69	56	41	Road traffic, birdsong, distant aircraft, helicopter
1	11:18	52	62	55	43	Road traffic, birdsong, distant aircraft
3	11:48	57	67	60	46	Road traffic, birdsong
3	12:04	56	77	59	45	Road traffic, birdsong, light aircraft, horses hoofs on road
5	12:30	40	65	41	37	Distant road traffic including sirens, birdsong, insects, light aircraft
7	12:53	39	58	41	36	Distant road traffic, birdsong/calls, distant shouts (horses and riders), light aircraft
6	13:15	44	69	45	35	Distant road traffic, occasional bird calls, rustling leaves, distant motorbikes on road, occasional dog bark, distant aircraft
7	13:35	41	59	42	37	Distant road traffic, birdsong, passing vehicle on track, distant aircraft
6	13:55	49	71	48	39	Distant road traffic, rustling leaves, bird calls, light aircraft
5	14:20	41	59	43	37	Distant road traffic, rustling leaves, distant sirens, bird call, small jeep in field (farmer)
2	14:42	52	66	55	47	Road traffic, birdsong
4	15:04	46	69	46	40	Some birdsong, rustling leaves, local traffic (car movements)
C	15:25	42	61	44	39	Distant road traffic, rustling leaves, creaking fence, distant aircraft. Measurement paused during rain shower.
4	15:53	50	77	51	41	Distant road traffic, rustling leaves, occasional bird calls, light aircraft, local traffic (car movements), barking dog
B	16:18	47	62	48	44	Distant road traffic, rustling leaves, bird calls
A	16:39	47	63	50	42	Road traffic, wind noise, occasional bird calls, local traffic