

Technical Note

Prepared by: **Rachel Canham** Date: **12 November 2024**
Project: **NRS Lea Castle Appeal** WBM Ref: **5342**
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Subject: **Planning Conditions and Noise Limits - Response to Queries**

The draft planning conditions relating to noise for the Lea Castle quarry site, prepared by Worcester County Council and taking into account the comments to date by from the Inspector are set out in Appendix A at the end of this Technical Note. The draft conditions apply to both the original and revised scheme.

Following my presentation as an expert witness (noise) at the inquiry on Friday 08 November 2024, some queries have arisen from Worcestershire County Council and the Inspector. These are summarised below:

From Worcestershire County Council (received via email on 08 November 2024):

Following the comment just by Rachel Canham, can you ask her to review the noise conditions, and ask her should the new / additional receptor (8. Brown Westhead Park (bungalows)) be included (both original scheme conditions and amended scheme conditions), and if so what should the noise limit be for the original and amended scheme? I note it states 46dB LAeq, 1h noise limit for the amended scheme in the Environmental Statement Addendum, but it states "Assumed same noise limit as Brown Westhead". I assume you have sufficient confidence in this limit?

The condition currently states:

30) The noise attributable to mineral operations from the site shall not exceed the levels set out below at the receptor locations identified in the Noise Assessment Report, dated 12 September 2019 when measured in terms of an LAeq 1-hour level (free field):

- *Broom Cottage: LAeq, 1-hour 53dB;*
- *South Lodges: LAeq, 1-hour 55dB;*
- *Heathfield Knoll: LAeq, 1-hour 55dB;*
- *Brown Westhead Park: LAeq, 1-hour 46dB;*
- *The Bungalow: LAeq, 1-hour 45dB;*
- *Keeper's Cottage: LAeq, 1-hour 49dB; and*
- *Castle Barns: LAeq, 1-hour 51dB.*

Also what was the lower noise limit she suggested the Appellant is happy to accept, and is that for the original and amended scheme or just amended?

From the Inspector (verbal request at the inquiry on 08 November 2024):

To investigate a lower noise level for the school, as a means to 'mitigate and minimise adverse impacts'.

My responses to these queries are set out in this Technical Note.

Brown Westhead Park Bungalows

WBM has not undertaken any baseline noise measurements in the gardens of the bungalows or houses on Brown Westhead Park, as these are private properties. The baseline noise measurements were undertaken at a publicly accessible location at the entrance to the playing fields approximately 50m from both the nearest houses and nearest bungalows on Brown Westhead Park. Distant road traffic from Wolverley Road was a dominant noise source at this survey location and would also affect the properties. As such, the background level results at this baseline noise survey location are considered representative of these properties. A summary of the various background noise survey results at this location is provided below.

Year	Date	Brown Westhead Park Results dB
		Background L _{A90,15min}
2018	27 June	36
	03 July	37, 38
	04 July	34
2023	02 February	46, 47
2024	28 August	40, 41

For information, the background levels measured at the western edge of the playing field in February 2023 and August 2024 were in the range 39-41 dB L_{A90,15min}.

A site noise limit of 46 dB L_{Aeq,1h} was suggested for the houses on Brown Westhead Park based on the arithmetic average of the background level results from 2018. As can be seen by the table above, there is an increase in background level measured in 2023 and 2024 compared to the results measured in 2024. Therefore the limit of 46 dB L_{Aeq,1h} is considered worst case and robust for these dwellings.

With regard to the bungalows, these are closer to Wolverley Road than the houses at Brown Westhead Park and the baseline noise survey location. As such the baseline noise level affecting these properties may be slightly higher than that measured at the playing fields entrance. Use of the same site noise limit of 46 dB L_{Aeq,1h} for the bungalows would also be considered worst case and robust.

The limit of 46 dB L_{Aeq,1h} would apply for both the original and revised schemes.

The calculated site noise level for the houses is 45 dB L_{Aeq,1h} for both the original scheme and the revised scheme. The calculated site noise level for the bungalows is 43 dB L_{Aeq,1h} for the revised scheme – no separate calculations were undertaken for the bungalows for the original scheme.

Given the relatively close proximity of the houses and bungalows to each other along Brown Westhead Park, I would suggest that these are not considered as separate receptors but that the definition of the receptor is expanded to include both the bungalows and the houses to the north of Brown Westhead Park.

Castle Barns

WBM carried out measurements in 2018, 2023 and 2024 in the vicinity of Castle Barns to represent these dwellings, including an installed sound level meter in 2018. A summary of the various background noise survey results is provided below.

Year	Date	Castle Barn Results dB
		Background L _{A90,15min}
2018	27 June	39
	03 July	42, 43
	04 July	33
	Installed meter 27 June to 04 July	31-47 (average=41)
2023	02 February	40*
2024	28 August	36, 37

* This is the result at Location 7, Castle Barns. Other results in the vicinity at Location 7' (to the north of Castle Barns, by the fork in the road leading to the properties) were 41-42 dB L_{A90,15min}

A site noise limit of 51 dB L_{Aeq,1h} was suggested for the dwellings at Castle Barns based on the background level results from 2018 (using the installed sound level meter average background sound level).

As can be seen by the table above, there is a reduction in background level measured in 2023 and 2024 compared to the results measured in 2018. The average background level based on the 2023 and 2024 results is 38 dB L_{A90,15min}, although this is based on a small sample of results. A site noise limit based on these results would be 48 dB L_{Aeq,1h}.

As confirmed in paragraph 5.44 of the noise proof, the calculated site noise at Castle Barns from the revised scheme is 46 dB L_{Aeq,1h}, and the calculated site noise from the original 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.

It is proposed that a lower noise limit of **48 dB L_{Aeq,1h}** be adopted for Castle Barn.

Heathfield Knoll School

Paragraphs 19-22 of Planning Practice Guidance for Minerals (PPGM) refers to noise limits at noise-sensitive properties. Usually when undertaking noise assessments for minerals related site, WBM considers these limits to refer to residential properties.

Although not strictly applicable in this situation, guidance on external noise levels for new schools is provided in the document "*Acoustics of Schools: a design guide*" (November 2015), published by the Institute of Acoustics (IOA) and the Association of Noise Consultants (ANC). This document is designed to accompany "*BB93: acoustic design of schools – performance standards*", which is referenced in Part E of the Building Regulations.

"*Acoustics of Schools: a design guide*" is available to download from the Institute of Acoustics website. Guidance on external noise levels is provided in Chapter 2, of this document in Section 2.2 "*Recommendations for external noise levels outside school buildings*". An extract from that section is provided below:

“...the following recommendations are considered good practice for providing suitable acoustic conditions outside school buildings.

For new schools, 60 dB $L_{Aeq,30min}$ should be regarded as an upper limit for external noise at the boundary of external areas used for formal and informal outdoor teaching and recreation.

It may be possible to meet the specified indoor ambient noise levels on sites where external noise levels are as high as 70 dB $L_{Aeq,30min}$ but this will require considerable building envelope sound insulation, or screening.

Playgrounds, outdoor recreation areas and playing fields are generally considered to be of relatively low sensitivity to noise. Indeed, playing fields may be used as buffer zones to separate school buildings from busy roads where necessary. However, where used for teaching, for example sports lessons, outdoor ambient noise levels have a significant impact on communication in an environment which is already acoustically less favourable than most classrooms. Noise levels in unoccupied playgrounds, playing fields and other outdoor areas should not exceed 55 dB $L_{Aeq,30min}$ and there should be at least one area suitable for outdoor teaching activities where noise levels are below 50 dB $L_{Aeq,30min}$...”

WBM has not undertaken any baseline noise measurements on the school grounds. Instead, WBM measured at a proxy location to the north of Wolverley Road, on the publicly accessible bridleway, and around 15m from the road. A summary of the various noise survey results at this proxy location is provided below.

Year	Date	Heathfield Knoll School (Proxy) Results dB	
		Ambient $L_{Aeq,15min}$	Background $L_{A90,15min}$
2018	27 June	55	50
	03 July	54, 55	46, 48
	04 July	54	47
2023	02 February	57, 60	53, 55
2024	28 August	56, 57	45, 46

The ambient noise levels from all samples range from 54-60 dB $L_{Aeq,15min}$, and are indicative of noise levels at 15m from the road. Road traffic noise is the dominant noise source at this location.

The background noise levels from all samples range from 45-55 dB $L_{A90,15min}$. Based on these background level results, and following the guidance in PPGM, this has resulted in a suggested noise limit of 55 dB $L_{Aeq,1h}$ at this location.

The calculated site noise level at the school is 53 dB $L_{Aeq,1h}$ for the original scheme and 45 dB $L_{Aeq,1h}$ for the revised scheme.

For the original scheme, the suggested site noise limit of 55 dB $L_{Aeq,1h}$ would need to remain in force in order for the calculated site noise levels to comply.

Taking into account the Inspectors request to consider a lower site noise limit for the revised scheme, a suggested site noise limit of **50 dB $L_{Aeq,1h}$** is proposed in line with the guidance in “Acoustics of Schools: a design guide”.

Note that the site noise limits would apply to the northern edge of the school site. Site noise would be expected to reduce further into the site due to increased distance and also screening from intervening school buildings.

Revised Suggested Noise Limits (Condition 30)

Based on the above text, the revised noise limits for the various receptors would be as follows, with the changes highlighted in yellow:

Original Scheme

- 30) The noise attributable to mineral operations from the site shall not exceed the levels set out below at the receptor locations identified in the Noise Assessment Report, dated 12 September 2019 when measured in terms of an LAeq 1-hour level (free field):

Receptor	Noise Limit (freefield)
Broom Cottage	53 dB LAeq,1h
South Lodge	55 dB LAeq,1h
Heathfield Knoll School	55 dB LAeq,1h
Brown Westhead Park – bungalows and houses at the north end of the road	46 dB LAeq,1h
The Bungalow	45 dB LAeq,1h
Keeper's Cottage	49 dB LAeq,1h
Castle Barns	48 dB LAeq,1h

Revised Scheme

- 30) The noise attributable to mineral operations from the site shall not exceed the levels set out below at the receptor locations identified in the Noise Assessment Report, dated 12 September 2019 when measured in terms of an LAeq 1-hour level (free field):

Receptor	Noise Limit (freefield)
Broom Cottage	53 dB LAeq,1h
South Lodge	55 dB LAeq,1h
Heathfield Knoll School	50 dB LAeq,1h
Brown Westhead Park – bungalows and houses at the north end of the road	46 dB LAeq,1h
The Bungalow	45 dB LAeq,1h
Keeper's Cottage	49 dB LAeq,1h
Castle Barns	48 dB LAeq,1h

Other Changes to Conditions

With regard to draft Condition 29, part (v), it is assumed that this section specifies the noise parameters to include in the noise monitoring exercises. As such, it is not necessary to refer to the L_{A90} data measured in 2018 and set out in the 2019 report. It is suggested that part (v) of Condition 29 is amended as follows:

- v. The results of the noise level monitoring shall include LA_{90} ~~(as presented in the Noise Assessment Report, dated 12 September 2019)~~ and LA_{eq} noise levels;

Rachel Canham
Director

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Appendix A: Draft Conditions Regarding Noise

The draft conditions 29, 30 and 31 are set out below. Where changes are proposed in the text of this Technical Note, these are highlighted in yellow.

- 29) Notwithstanding the submitted details, no soil stripping operations shall take place until a Noise and Vibration Management Plan, to include noise level monitoring has been submitted to and approved in writing by the Mineral Planning Authority. Thereafter, the development shall be carried out in accordance with the approved details. The Plan shall provide for:
- i. Noise and vibration mitigation measures and best practice measures, which shall include but not limited to: all internal roads shall be maintained such that their surface remains free of potholes or other defects; and all mobile plant, machinery and vehicles (excluding delivery vehicles which are not owned or under the direct control of the operator, but not excluding inert waste delivery) used on the site shall incorporate white noise reversing warning devices;
 - ii. Noise level monitoring at the noise sensitive receptors identified within the Noise Assessment Report, dated 12 September 2019;
 - iii. A programme detailing frequency and duration of noise monitoring;
 - iv. Noise level monitoring shall be carried out for at least 2 separate durations during the working day with the main items of plant and machinery in operation;
 - v. The results of the noise level monitoring shall include LA90 (as presented in the Noise Assessment Report, dated 12 September 2019) and LAeq noise levels;
 - vi. Details and calibration of the equipment used for measurement and comments on other sources of noise which affect the noise climate;
 - vii. The logging of all weather conditions, approximate wind speed and direction;
 - viii. Noise level monitoring results shall be submitted to the Mineral Planning Authority within 7 days of the noise monitoring being carried out;
 - ix. If the noise level monitoring results reveal an exceedance of the relevant noise limits set out in Conditions 30) or 31) of this permission, then no further mineral extraction or infilling operations shall take place until a scheme providing for further noise mitigation has been submitted to and approved in writing by the Mineral Planning Authority, and the approved noise mitigation measures have been subsequently implemented. Further noise level monitoring shall be undertaken within 7 days of the implementation of the further noise mitigation and submitted to the Mineral Planning Authority within 7 days of the noise level monitoring being carried out. If the subsequent noise level monitoring results still reveal an exceedance of the relevant noise limits set out in Conditions 30) or 31) of this permission, then the provisions and process set out in this Condition, Part ix shall be repeated until compliance with the noise limits has been achieved;
 - x. A procedure for the logging, investigating and responding to noise complaints whether received directly from a member of the public or via the Mineral Planning Authority; and
 - xi. If, following a complaint, the Mineral Planning Authority decides that further noise level monitoring is required, written notice shall be given to the Mineral Operator specifying the required noise level monitoring. The further noise level monitoring shall be undertaken by the Mineral Operator and the results submitted in writing to the Mineral Planning Authority within 14 days of the request.

Reason: To control noise emissions and the impact of vibrations, in accordance with Policy MLP 28 of the adopted Worcestershire Minerals Local Plan, Policy WCS 14 of the adopted Worcestershire Waste Core Strategy, and Policy SP.33 of the adopted Wyre Forest District Local Plan.

Appendix A (continued)

30) The noise attributable to mineral operations from the site shall not exceed the levels set out below at the receptor locations identified in the Noise Assessment Report, dated 12 September 2019 when measured in terms of an LAeq 1-hour level (free field):

- Broom Cottage: LAeq, 1-hour 53dB;
- South Lodges: LAeq, 1-hour 55dB;
- Heathfield Knoll: LAeq, 1-hour 55dB;
- Brown Westhead Park: LAeq, 1-hour 46dB;
- The Bungalow: LAeq, 1-hour 45dB;
- Keeper's Cottage: LAeq, 1-hour 49dB; and
- Castle Barns: LAeq, 1-hour 51dB.

Reason: To control noise emissions, in accordance with Policy MLP 28 of the adopted Worcestershire Minerals Local Plan, Policy WCS 14 of the adopted Worcestershire Waste Core Strategy, and Policy SP.33 of the adopted Wyre Forest District Local Plan.

31) During the removal of soils and superficial deposits and the creation of any screen bunds or restoration works, the noise limit at the receptor locations identified in the Noise Assessment Report, dated 12 September 2019 shall be permitted to exceed the limits set out in Condition 30 for a period of up to 8 weeks in any calendar year but during that period shall not exceed 70dB LAeq 1-hour (free field). Prior written notice of at least 5 working days, being Mondays to Fridays inclusive, shall be given to the Mineral Planning Authority of the commencement and the duration of such operations.

Reason: To control noise emissions, in accordance with Policy MLP 28 of the adopted Worcestershire Minerals Local Plan, Policy WCS 14 of the adopted Worcestershire Waste Core Strategy, and Policy SP.33 of the adopted Wyre Forest District Local Plan.