

Appendix 14 Noise and Vibration

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Appendix 14.1: Glossary of Acoustic Terminology

AAWT-18h	Annual Average Week Day Traffic over the time period 0600-0000. Only includes Monday to Friday data.																		
Ambient sound	The totally encompassing sound in a given situation at a given time, usually composed of sound from all sources near and far.																		
Assessment period	The period in a day over which assessments are made.																		
A-weighting	A frequency weighting applied to measured or predicted sounds levels in order to compensate for the non-linearity of human hearing.																		
Background noise	Background noise is the term used to describe the noise measured in the absence of the noise under investigation. It is described as the average of the minimum noise levels measured on a sound level meter and is measured statistically as the A-weighted noise level exceeded for ninety percent of a sample period. This is represented as the L_{90} noise level (see below).																		
Background Sound Level dB $L_{A90,T}$	A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels.																		
Broadband	Containing the full range of frequencies.																		
Decibel [dB]	<p>The level of noise is measured objectively using a Sound Level Meter. This instrument has been specifically developed to mimic the operation of the human ear. The human ear responds to minute pressure variations in the air. These pressure variations can be likened to the ripples on the surface of water but of course cannot be seen. The pressure variations in the air cause the eardrum to vibrate and this is heard as sound in the brain. The stronger the pressure variations, the louder the sound that is heard.</p> <p>The range of pressure variations associated with everyday living may span over a range of a million to one. On the top range may be the sound of a jet engine and on the bottom of the range may be the sound of a pin dropping.</p> <p>Instead of expressing pressure in units ranging from a million to one, it is found convenient to condense this range to a scale 0 to 120 and give it the units of decibels. The following are examples of the decibel readings of every day sounds:</p> <table> <tr> <td>Four engine jet aircraft at 100m</td><td>120 dB</td></tr> <tr> <td>Riveting of steel plate at 10m</td><td>105 dB</td></tr> <tr> <td>Pneumatic drill at 10m</td><td>90 dB</td></tr> <tr> <td>Circular wood saw at 10m</td><td>80 dB</td></tr> <tr> <td>Heavy road traffic at 10m</td><td>75 dB</td></tr> <tr> <td>Telephone bell at 10m</td><td>65 dB</td></tr> <tr> <td>Male speech, average at 10m</td><td>50 dB</td></tr> <tr> <td>Whisper at 10m</td><td>25 dB</td></tr> <tr> <td>Threshold of hearing, 1000 Hz</td><td>0 dB</td></tr> </table>	Four engine jet aircraft at 100m	120 dB	Riveting of steel plate at 10m	105 dB	Pneumatic drill at 10m	90 dB	Circular wood saw at 10m	80 dB	Heavy road traffic at 10m	75 dB	Telephone bell at 10m	65 dB	Male speech, average at 10m	50 dB	Whisper at 10m	25 dB	Threshold of hearing, 1000 Hz	0 dB
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Telephone bell at 10m	65 dB																		
Male speech, average at 10m	50 dB																		
Whisper at 10m	25 dB																		
Threshold of hearing, 1000 Hz	0 dB																		
dB(A): A-weighted decibels	The ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the 'A' filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter. The sound pressure level in dB(A) gives a close indication of the subjective loudness of the noise.																		
Façade Noise Level	A noise level measured or predicted at the façade of a building, typically at a distance of 1m, containing a contribution made up of reflections from the façade itself (+3 dB).																		
Free Field Noise Level	A noise level measured or predicted which is unaffected by reflections, generally taken as being 3m from any reflecting surface excepting the ground.																		
L_{Amax} noise level	This is the maximum noise level recorded over the measurement period.																		
L_{Amin} noise level	This is the lowest level during the measurement period.																		
$L_{Aeq,T}$ noise level	This is the 'equivalent continuous A-weighted sound pressure level, in decibels' and is defined in British Standard 7445 as the 'value of the A-weighted sound pressure level of a																		

	<p>continuous, steady sound that, within a specified time interval, T, has the same mean square sound pressure as a sound under consideration whose level varies with time'.</p> <p>It is a unit commonly used to describe construction noise, noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise.</p>
LA90 noise level	This is the noise level that is exceeded for 90% of the measurement period and gives an indication of the noise level during quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial noise.
LA10 noise level	This is the noise level which is achieved for 10% of the monitoring period and is often used to describe road traffic noise.
Rating Level, dB LA_{r,Tr}	Specific sound level plus any adjustment for the characteristic features of the sound.
Residual Sound	Ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound source.
Sound Reduction Index (R)	The sound reduction index is a single-number rating of the sound reduction through a wall or other building element. Since the sound reduction may be different at different frequencies, test measurements are subjected to a standard procedure which yields a single number that is about equal to the average sound reduction in the middle of the human hearing range.
Specific Sound Level, LA_{eq,Tr}	Equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given time interval T.
Weighted Sound Reduction Index dB R_w	Single number rating used to describe the laboratory airborne sound insulation properties of a material or building element over a range of frequencies, typically 100-3150Hz.
C_{TR}	An adjustment to the R _w scale to take account of the lower performance against a typical spectrum of road traffic noise dominated by low frequencies.
D_{ne,W}	Weighted element normalised level difference.
PPV	Ground vibration is measured in terms of Peak Particle Velocity (PPV) with units in mm/s. It should be noted that the PPV refers to the movement within the ground of molecular particles and not surface movement. The displacement value in mm refers to the movement of particles at the surface (surface movement).

Appendix 14.2: Baseline Noise Survey

A baseline noise survey was undertaken within the vicinity of The Hay Barn & Byre and The Granary on Thursday 10th March to Friday 11th March 2022 and within the vicinity of Phase 1A and Phase 1B of the Graven Hill Village Development. As already stated, construction works in connection with the Graven Hill Village Development and EAR are on-going, therefore baseline conditions were established by noise levels measured outside of the construction operational hours (07:30-18:00). Monitoring locations are illustrated in Figure 14.1 and described in Table 14.2.1. At all locations the microphone was mounted on integral steel pole approximately 1.5m above ground level.

Table 14.2.1: Description of Noise Monitoring Locations

ID	Location	Description
LT1	West of The Hay Barn & Byre and The Granary (circa. 85m) set back a comparable distance from the A41 (circa 105m).	Dominant noise outside of construction operational hours is road traffic noise from the A41
LT2	Phase 1A area of Graven Hill Village Development (Hull Lane).	Dominant noise outside of construction operational hours is road traffic noise from the A41
LT3	Phase 1B area of Graven Hill Village Development (Graven Hill Road)	Dominant noise outside of construction operational hours is road traffic noise from the A41

Table 14.2.2 presents a summary of the measured noise levels.

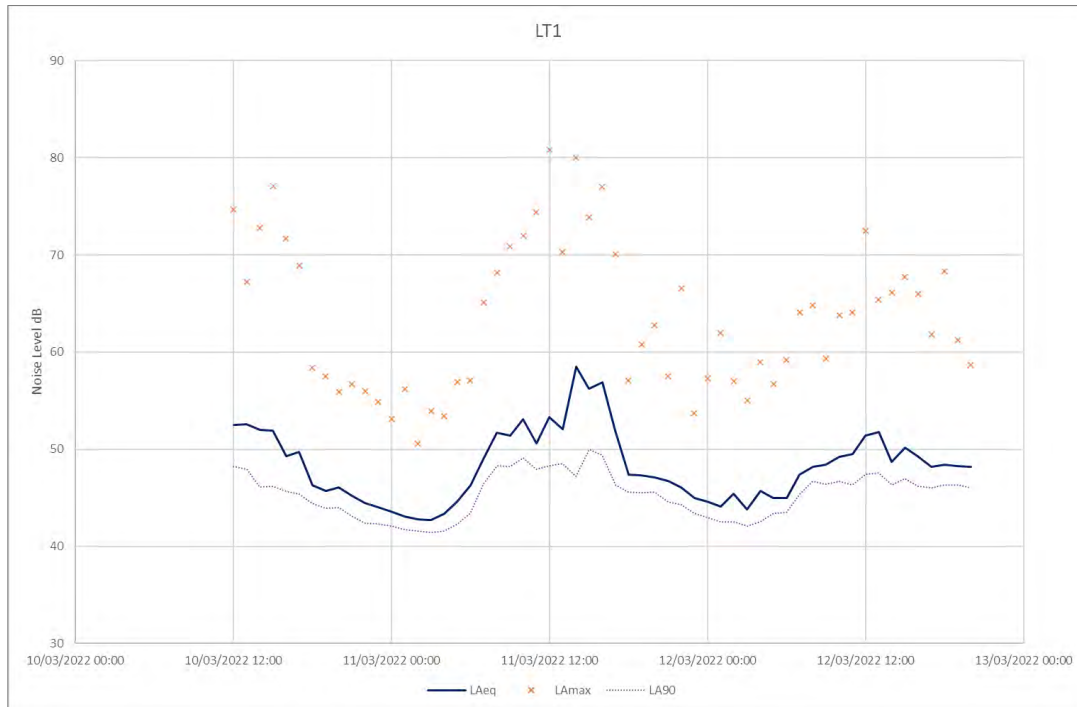
Table 14.2.2: Summary of Measured Noise Levels

ID	Location	Period	dB L _{Aeq} ¹	dB L _{Amax} ²	dB L _{A10} ³	dB L _{A90} ³ (mode)
LT1	The Hay Barn & Byre, The Granary	Post Construction 18:00-19:00	46	58 ⁴	No Data	44 (⁵)
		Evening (1800-2300)	46	58	No Data	44 (44)
		Night (2300-0700)	44	57	No Data	42 (42)
LT2	Phase 1A GHVD (Hull Lane)	Pre Construction (07:00-07:30)	56	62	57	54 (54)
		Post Construction (18:00-19:00)	65	78	57	49 (40)
		Evening (19:00-23:00)	47	59	48	43 (40)
		Night (23:00-07:00)	49	59	48	41 (39)
LT3	Phase 1B GHVD (Graven Hill Road)	Pre Construction (07:00-07:30)	54	70	53	50 (50)
		Post Construction (18:00-19:00)	52	69	52	41 (39)
		Evening (19:00-23:00)	45	68	45	39 (38)
		Night (23:00-07:00)	46	67	44	40 (37)

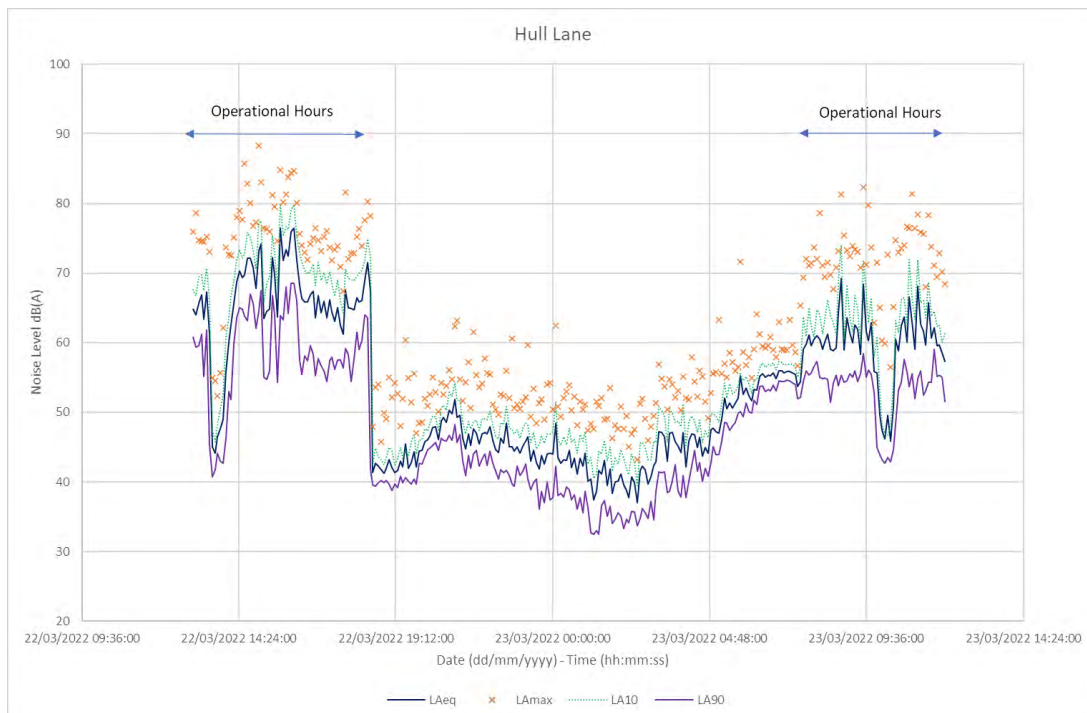
Note: ¹ Logarithmic average. ² 90th percentile. ³ Arithmetic average. ⁴ L_{AFmax} value measured in the 1-hour measurement period. ⁵ Only 1 value as hourly measurement therefore not possible to derive modal value

Graphs 14.2.1, 14.2.2 and 14.2.3 presents the time history plots of the measured noise levels at LT1, LT2 and LT3 respectively. The noise measurement interval at LT1 was 1-hour contiguous noise measurements and at LT2 and LT2 it was 5-minute contiguous noise measurements.

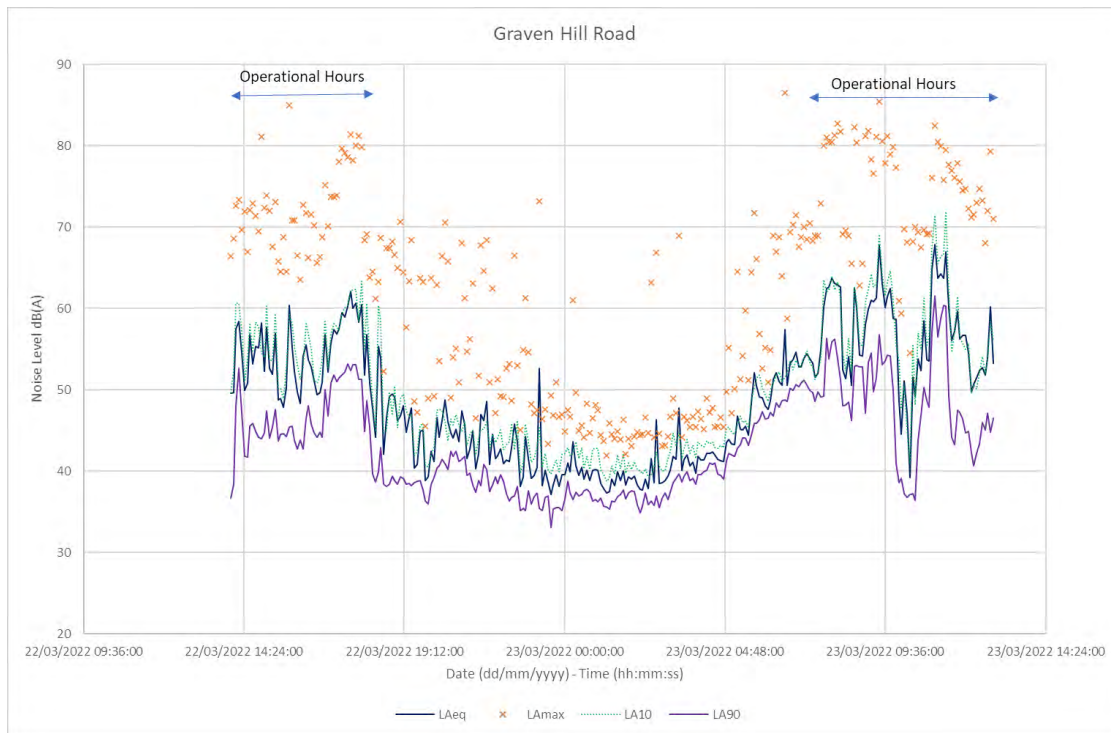
Graph 14.2.1: Time History Plot LT1



Graph 14.2.2: Time History Plot LT2



Graph 14.2.3: Time History Plot LT3



The dominant noise source outside construction operational hours was noted to be road traffic noise. The noise equipment was field calibrated pre and post the baseline survey with no significant drift.

Table 14.2.3 presents the equipment detail used for the baseline survey.

Table 14.2.3: Noise Equipment Detail – Environmental Baseline Survey

Measurement Location	Equipment	Model	Serial No.	Calibration Date & Certificate Details
LT1 The Hay Barn & Byre, The Granary	Sound Level Meter (Type 1)	Rion NL-52	00810563	UCRT22/1023 7 th January 2022
	Preamp	NH-25	11106	
	Microphone	UC-59	19954	
LT2 GHVD Phase 1A	Sound Level Meter (Type 1)	Rion NL-52	01043379	TCRT21/1177 12 th March 2021.
	Preamp	NH-25	43407	
	Microphone	UC-59	06864	
LT3 GHVD Phase 1B	Sound Level Meter (Type 1)	Rion NL-52	00142643	UCRT20/2100 17 th November 2020
	Preamp	NH-25	32671	
	Microphone	UC-59	06087	
All	Acoustic Calibrator	NC-74	35173533	TCRT1/1084 2 nd Feb 2021

All equipment was field calibrated with no significant drift.

The weather conditions during the survey were dry, with average temperature of 9-10oC. The average wind speed was 2m/s, predominantly ESE on 10th March and SE on 11th March 2022.

Appendix 14.3: Consultation

From: Neil Whitton <Neil.Whitton@Cherwell-DC.gov.uk>

Sent: 14 March 2022 12:02

To: Innes Urbanski <innes.urbanski@watermangroup.com>

Subject: RE: MOD Bicester - Graven Hill Employment Land - Acoustics and Air Quality

Hi Innes,

Good to speak to you just now. I think that the data you have collected from The Granary and The Hay Barn & Byre will be ok to use for this purpose.

As discussed come back to me if you want to speak further as you get into the process.

Kind Regards

Neil Whitton BSC, MCIEH

Environmental Health Officer

Cherwell District Council

Tel - 01295 221623

From: Innes Urbanski <innes.urbanski@watermangroup.com>

Sent: 14 March 2022 10:46

To: Neil Whitton <Neil.Whitton@Cherwell-DC.gov.uk>

Subject: FW: MOD Bicester - Graven Hill Employment Land - Acoustics and Air Quality

CAUTION: This email originated from outside of the Council. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Hi Neil,

Sorry to chase but is it possible to have a response to the query below.

Thanks and kind regards

Innes Urbanski MIOA

Associate Director

Waterman Infrastructure & Environment Ltd

Belgrave House | 47 Bank Street | Sheffield| S1 2DR

Direct tel: +44 3300 602 726

www.watermangroup.com | [LinkedIn](#) | [Twitter](#) | [YouTube](#)





From: Innes Urbanski

Sent: 08 March 2022 15:20

To: Neil Whitton <neil.whitton@cherwell-dc.gov.uk>

Subject: FW: MOD Bicester - Graven Hill Employment Land - Acoustics and Air Quality

Hi Neil,

As per the voicemail message, Mark Goulding provided me with your contact details so that I may discuss your requirements for undertaking a noise assessment in support of the outline application for Employment Use proximate to the Graven Hill development.

Primarily what I'd like to discuss is Cherwell District Council's requirement for establishing baseline conditions given there are on-going construction works which would contaminate the noise measurements. As detailed below, Waterman conducted baseline surveys in 2015 and 2016 associated with Graven Hill so are really out of date now, however we have recently conducted noise measurements proximate to The Granary and The Hay Barn & Byre, the purpose of which was to measure the level of construction noise. We will however have some data, albeit limited, that is not contaminated that could be potentially be used.

If you could given me a call to discuss the baseline approach that your require that would be greatly appreciated.

For your information the location of the historic noise measurement locations are as follows. I've marked up the approximate location of the existing noise logger which measures construction noise (red cross). The aerial image illustrates location of existing sensitive receptors (blue circle) and location of Employment Use (red circle)





Kind regards

Innes Urbanski MIOA

Associate Director

Waterman Infrastructure & Environment Ltd

Belgrave House | 47 Bank Street | Sheffield| S1 2DR

Direct tel: +44 3300 602 726

www.watermangroup.com | [LinkedIn](#) | [Twitter](#) | [YouTube](#)



Appendix 14.4: Demolition and Construction Assessment Methodology

Demolition and Construction Noise Assessment

The significance criteria for the construction noise assessment are based on 'The ABC Method' from BS 5228-1:2009+A1:2014¹. An extract describing this method is provided below.

Example Method 1 – The ABC Method

Table 14.4.1 shows an example of the threshold of likely significant effect at dwellings when the Site noise level rounded to the nearest decibel, exceeds the listed value. The table can be used as follows: for the appropriate period (night, evening / weekends or day), the ambient noise level is determined and rounded to the nearest 5 dB. This is then compared with the site noise level. If the site noise level exceeds the appropriate category value, then a significance effect is deemed to occur.

Table 14.4.1: Example threshold of significant effect at dwellings

Assessment category and threshold value period (L_{Aeq})	Threshold value, in decibels (dB)		
	Category A ^{A)}	Category B ^{B)}	Category C ^{C)}
Night-time (23.00-07.00)	45	50	55
Evenings and weekends ^{D)}	55	60	65
Daytime (07.00-19.00) and Saturdays (07.00-13.00)	65	70	75

NOTE 1: A likely significant effect is indicated if the site L_{AeqT} noise level, exceeds the threshold level for the Category appropriate to the ambient noise level

NOTE 2: If the ambient noise level exceeds the Category C threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a likely significant effect is indicated if the total L_{Aeq} noise level for the period increases by more than 3 dB due to site noise.

NOTE 3: Applied to residential receptors only.

A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.

B) Category B: threshold values to use when the ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.

C) Category C: threshold values to use when the ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.

D) 19.00-23.00 weekdays, 13.00-23.00 Saturdays and 07.00-23.00 Sundays.

(Source: BS 5228-1:2009+A1:2014, Page 119)

In this case, the threshold of significance has been determined using the ABC method of BS5228-1:2009+A1:2014. Calculations have not been undertaken for the evening or night-time periods as it is assumed that evening and night-time construction work would only be undertaken under exceptional circumstances and not without prior approval. Exceptional circumstances may include concreting operations where the pumping of concrete to foundations has to be a continuous process which may require operations outside the daytime period.

Table 14.4.2 presents the ABC BS5228 construction threshold daytime noise levels based on the measured prevailing noise levels.

¹ British Standards Institution (2009 + February 2014). 'BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites- Part 1: Noise'. BSI

Table 11.4.2: Construction Threshold Noise Levels

SR Ref Fig 14.1	SR Description	Pre/Post Existing Construction Works Noise Level dB $L_{Aeq,T}$	BS5228 ABC Threshold Noise Level dB $L_{Aeq,T}$	Distance from Site Boundary (approx. m)
A	The Hay Barn & Byre	46 (LT1)	65	270 (north east)
B	The Granary	46 (LT1)	65	320 (north east)
C	St Davids Baracks	52-54 (LT2)	65	40m (north)
D	Graven Hill Village 1A (Hull Lane)	52-54 (LT2)	65	720 (north)
E	Graven Hill Village 1B (Graven Hill Road)	47-56 (LT3)	65	720 (north)
F	Ambrose Farm House	46 (LT1)	65	460 (west)

Table 14.4.3 presents the magnitude of impact from demolition and construction noise used in the assessment of predicted daytime construction noise levels. The magnitude reflects that detailed within DMRB LA 1112 Table 3.12 'Construction time period – LOAEL and SOAEL' and Table 3.16 'Magnitude of impact and construction noise descriptors' and information provided within Appendix E of BS 5228:2009-1+A1:2014.

Table 11.4.3: Magnitude of Demolition, Construction Noise

Magnitude	Demolition & Construction Noise Level dB $L_{Aeq,T}$	Definition
Negligible	< Baseline (Prevailing) Noise Level	The effect is not of concern
Small	\leq Construction Threshold Noise Level	The effect is undesirable but of limited concern
Medium	> Threshold Noise Level to < Threshold +5dB (or ≤ 75 dB $L_{Aeq,T}$, whichever is highest)	The effect gives rise to some concern but is likely to be tolerable depending on scale and duration
Large	> Threshold +5dB (or >75 dB $L_{Aeq,T}$, whichever is highest)	The effect gives rise to serious concern and it should be considered unacceptable, exception for very brief exposure depending on the absolute level

Where T is taken as 10 hours Monday to Friday and 5 hours Saturday.

Generic calculations were undertaken using the data and procedures set out in BS 5228-1:2009+A1:2014 for the noisiest construction operations, to derive indicative noise levels at selected sensitive receptors (SRs). The highest noise levels tend to be associated with plant associated with, demolition, piling, construction of the substructure and superstructure. During the fit-out, construction noise would be significantly lower. The calculations assume that plant would be operating at the closest point to the receptor and do not take account of any mitigation.

The noisiest construction operations and associated noise levels with no mitigation are considered to be as follows:

- Demolition 92 dB $L_{Aeq,1h}$ at 10m
- Earthworks 84 dB $L_{Aeq,1h}$ at 10m
- CFA Piling 85 dB $L_{Aeq,1h}$ at 10m

² Highways England (May 2020). Design Manual for Roads and Bridges, LA 111 Sustainability and Environmental Appraisal. Noise and Vibration. Rev 2. Crown Copyright.

- Concreting 83 dB $L_{Aeq,1h}$ at 10m
- Pavement 81 dB $L_{Aeq,1h}$ at 10m

Table 14.4.4 presents the generic plant and on-time used in the calculation of the demolition and construction noise levels. A maximum worst case noise level over a one hour period was calculated, assuming that plant would be operating at the closest point to the nearest receptor. In practice, noise levels would tend to be lower owing to greater separation distance as the works progress. They would also tend to reduce over a 10-hour working day (week-day, 5 hours Saturday) owing to periods of plant inactivity.

The closest receptors to the proposed Development are identified Figure 14.1.

With CEMP measures based on information within BS5228-1, a reduction of noise levels by 10dB should be achievable.

Table 14.4.4 Generic Construction Noise Levels

Phase / Plant	BS5228-1:1997+A1:2014	LAeq @10m	Kh	(t/T)*100	Partial Exposure	Barrier Attenuation	Noise Level @ NSR LAeq,1h (dB)	Overall LAeq,1h (dB)
Demolition								92
Breaker Mounted on Wheeled Backhoe (7.4t)	Table C1 ref 1	92	0	0.75	-1	0	90.8	
High reach excavator with hydraulic shear	Table C1 Ref 16	82	0	0.25	-6	0	76.0	
Tracked Crusher (47t)	Table C1 ref 14	82	0	0.25	-6	0	76.0	
Dozer (11t)	Table C2 ref 13	78	0	0.25	-6	0	72.0	
Handheld Pneumatic Breaker (concrete foundation)	Table C1 ref 6	83	0	0.25	-6	0	77.0	
Wheeled Backhoe Loader (8t)	Table C2 ref 8	68	0	0.5	-3	0	65.0	
Compressor	Table C5 ref 5	65	0	0.5	-3	0	62.0	
Lump Hammer	Table C1 ref 19	69	0	0.25	-6	0	63.0	
Hand-held circular saw (Petrol-cutting concrete blocks)	Table C4 ref 72	79	0	0.1	-10	0	69.0	
Scaffold poles and clips	Table D7 ref 1	80	0	0.2	-7	0	73.0	
Tracked Mobile Crane x 2	Table C4 ref 50	74	0	0.5	-3	0	71.0	
Lorry x 5	Table C2 ref 34	87	0	0.1	-10	0	77.0	
Earthworks								84
Tracked Excavator (14t)	Table C2 ref 7	70	0	1	0	0	70.0	
Tracked Excavator (14t)	Table C2 ref 7	70	0	1	0	0	70.0	
Wheeled Backhoe Loader (8t)	Table C2 ref 8	68	0	1	0	0	68.0	
Hydraulic Vibratory Compactor (Tracked Excavator)	Table C2 ref 42	78	0	1	0	0	78.0	
Dozer (11t)	Table C2 ref 13	78	0	1	0	0	78.0	
Lorry (4-axle wagon)	Table C2 ref 34	80	0	1	0	0	80.0	
CFA								85
Crawler mounted rig - Continuous Flight Auger Piling Cast In-Situ	Table C3 ref 21	79	0	1	0	0	79.0	
Tracked Excavator	Table C3 Ref 23	68	0	1	0	0	68.0	
Tracked Excavator Inserting Cylindrical Metal Cage	Table C3 Ref 24	74	0	1	0	0	74.0	
Truck Mounted Concrete Pump + Boom Arm	Table C4 ref 29	80	0	1	0	0	80.0	
Concrete Mixer Truck	Table C4 Ref 20	80	0	1	0	0	80.0	

Phase / Plant	BS5228-1:1997+A1:2014	LAeq @10m	Kh	(t/T)*100	Partial Exposure	Barrier Attenuation	Noise Level @ NSR LAeq,1h (dB)	Overall LAeq,1h (dB)
Pump Boom + Vibrating Poker	Table C4 ref 36	71	0	1	0	0	71.0	
Pump Boom + Vibrating Poker	Table C4 ref 36	71	0	1	0	0	71.0	
Concreting								83
Truck Mounted Concrete Pump + Boom Arm	Table C4 ref 29	80	0	1	0	0	80.0	
Concrete Mixer Truck	Table C4 Ref 20	80	0	1	0	0	80.0	
Pump Boom + Vibrating Poker	Table C4 ref 36	71	0	1	0	0	71.0	
Pavement Works								81
Road planer	Table C5 ref 7	82	0	0.25	-6	0	76.0	
Spreading chip and fill	Table C5 ref 12	77	0	0.25	-6	0	71.0	
Vibratory roller	Table C5 ref 20	75	0	0.25	-6	0	69.0	
Asphalt paver (+ tipper lorry)	Table C5 ref 30	75	0	0.25	-6	0	69.0	
Vibratory compactor (asphalt)	Table C5 ref 29	82	0	0.25	-6	0	76.0	
Lorry (4-axle wagon)	Table C2 ref 34	80	0	0.25	-6	0	74.0	
Deconstruction/Dismantling (low impact demolition option)								84
High reach excavator with hydraulic shear	Table C1 Ref 16	82	0	0.5	-3	0	79.0	
Dozer (11t)	Table C2 ref 13	78	0	0.25	-6	0	72.0	
Handheld Pneumatic Breaker (concrete foundation)	Table C1 ref 6	83	0	0.25	-6	0	77.0	
Wheeled Backhoe Loader (8t)	Table C2 ref 8	68	0	0.5	-3	0	65.0	
Compressor	Table C5 ref 5	65	0	0.5	-3	0	62.0	
Lump Hammer	Table C1 ref 19	69	0	0.25	-6	0	63.0	
Hand-held circular saw (Petrol-cutting concrete blocks)	Table C4 ref 72	79	0	0.1	-10	0	69.0	
Scaffold poles and clips	Table D7 ref 1	80	0	0.2	-7	0	73.0	
Tracked Mobile Crane x 2	Table C4 ref 50	74	0	0.5	-3	0	71.0	
Lorry x 5	Table C2 ref 34	87	0	0.1	-10	0	77.0	

The calculation of demolition/construction noise is determined from the following calculation
 dB LAeq at receptor = Noise level at 10m – 20 x Log (distance to receptor from works / 10)

Table 14.4.5 presents the assumed distance from receptor to demolition and construction operations.

Table 14.4.5: Assumed Distance of Works to Receptors

SR Ref	SR Description	Distance from Site Boundary Works (Earthworks & Pavement Works) (m)	Distance from Demolition (m)	Distance from Piling & Concreting Works (m)
A	The Hay Barn & Byre	270	725	270
B	The Granary	320	785	320
C	St Davids Baracks	40	55	40
D	Graven Hill Village 1A (Hull Lane)	720	730	720
E	Graven Hill Village 1B (Graven Hill Road)	720	730	720
F	Ambrose Farm House	460	740	460

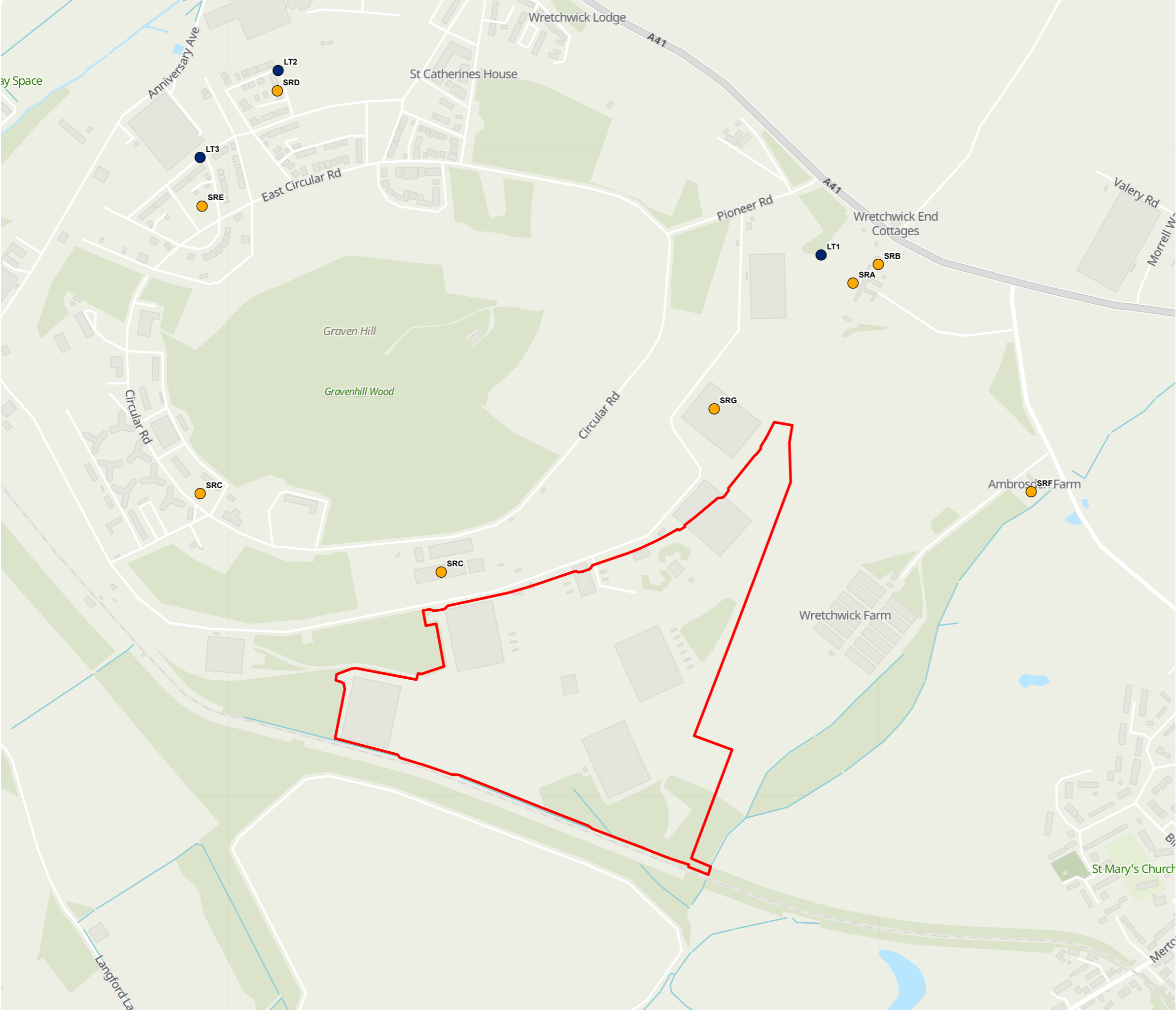
Appendix 14.5. Road Traffic Noise Assessment

Operational Development Traffic Noise Assessment 2024 (Short-Term Assessment)

Assessment of LA10 18-hour Basic Noise Levels at 10m from Road											
Road		2024 Without Development			2024 With Development			% Flow Change			
		% HGV	Speed kph	Flow	% HGV	Speed kph	Flow		2024 Without	2024 With	Change
1	A41 NE of M40 Jnc 9	9.8	96	35006	10.5	96	35683	1.9	78.5	78.7	+0.2
2	A41 (Wendlebury Rd-B4030)	9.6	84	35942	10.3	84	36619	1.9	77.6	77.8	+0.2
3	A41 (north B4030 roundabout)	8.7	58	34981	9.4	58	35658	1.9	74.1	74.3	+0.2
4	A41 (Oxford Rd-A4421)	7.7	67	29003	9.0	67	30018	3.5	73.8	74.2	+0.4
5	A41 (east wretchwick way / w of EAR)	7.8	80	20738	10.7	80	22432	8.2	74.5	75.4	+0.9
6	A41 (east of EAR)	6.2	96	27315	6.5	96	27533	0.8	76.8	76.9	+0.1
7	Wretchwick Way A4421 (A41 to Peregrine Way)	5.0	79	14121	6.2	79	14539	3.0	72.3	72.6	+0.3
8	Wretchwick Way A4421 (Peregrine Way to Gavray Drive)	6.3	83	11145	7.8	83	11564	3.8	71.8	72.3	+0.5
9	Charbridge Lane (Gavray Drive - Bicester Rd)	3.5	78	20257	4.4	78	20676	2.1	73.3	73.6	+0.3
10	A4421 (west of Charbridge Ln)	3.6	72	26322	4.2	72	26740	1.6	72.9	73.2	+0.3
11	A4421 (Launton Rd - Buckingham Rd)	5.2	72	23774	5.9	72	24193	1.8	72.9	73.1	+0.2
12	EAR	0.0	0	0	46.2	50	1912	100.0	0.0	64.8	64.8

Comparison of Extant (Consented) Development v Proposed Development 2024

Assessment of LA ₁₀ 18-hour Basic Noise Levels at 10m from Road											
Road		2024 Consented Development			2024 Proposed Development			% Flow Change			
		% HGV	Speed kph	Flow	% HGV	Speed kph	Flow		2024 Consented	2024 Proposed	Change
1	A41 NE of M40 Jnc 9	9.9	96	36128	10.5	96	35683	1.9	78.7	78.7	0.0
2	A41 (Wendlebury Rd-B4030)	9.7	84	37064	10.3	84	36619	1.9	77.7	77.8	+0.1
3	A41 (north B4030 roundabout)	8.8	58	36103	9.4	58	35658	1.9	74.2	74.3	+0.1
4	A41 (Oxford Rd-A4421)	8.0	67	30686	9.0	67	30018	3.5	74.1	74.2	+0.1
5	A41 (east Wretchwick way / w of EAR)	8.3	80	23547	10.7	80	22432	8.2	75.2	75.4	+0.2
6	A41 (east of EAR)	6.3	96	27677	6.5	96	27533	0.8	76.9	76.9	0.0
7	Wretchwick Way A4421 (A41 to Peregrine Way)	5.3	79	14815	6.2	79	14539	3.0	72.5	72.6	+0.1
8	Wretchwick Way A4421 (Peregrine Way to Gavray Drive)	6.7	83	11839	7.8	83	11564	3.8	72.2	72.3	+0.1
9	Charbridge Lane (Gavray Drive - Bicester Rd)	3.8	78	20952	4.4	78	20676	2.1	73.5	73.6	+0.1
10	A4421 (west of Charbridge Ln)	3.8	72	27016	4.2	72	26740	1.6	73.1	73.2	+0.1
11	A4421 (Launton Rd - Buckingham Rd)	5.4	72	24468	5.9	72	24193	1.8	73.0	73.1	+0.1
12	EAR	12.0	50	3170	46.2	50	1912	100.0	63.7	64.8	+1.2



- Site Boundary
- Long Term Monitoring Locations
- Noise Sensitive Receptors



Project Details	WIE11386-177: Graven Hill D1 Employment Land Use
Figure Title	Figure 14.1: Noise Monitoring & Sensitive Receptor Locations
Figure Ref	WIE11386-177_GIS_ES_14.1A
Date	2022
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