



EA Permitting Noise Impact Assessment

Site Address: A & C Tyres Collection Services Ltd, Little Warley Hall Lane, CM13 3EN

Client Name: Oaktree Environmental

Project Reference No: NP-013538

In partnership with:



Oaktree Environmental
Waste, Planning & Environmental Consultants

Authorisation and Version Control

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1. Introduction

NOVA Acoustics Ltd has been commissioned to prepare a noise impact assessment for a tyre recovery and treatment facility ('the development') at A & C Tyres Collection Services Ltd, Little Warley Hall Lane, West Horn ('the site').

The applicant is preparing an application for a bespoke permit which is to be submitted to the Environment Agency ('EA'). This report has been prepared to accompany the permit application and assesses the noise impact from the proposals in line with the EA's requirements.

A noise survey has been undertaken to establish the prevailing ambient and background sound climate at the closest Noise Sensitive Receptors ('NSRs'). The report details the existing ambient and background sound levels and the predicted noise emissions associated with the proposed with site's existing and proposed operations.

Measures required to mitigate noise impact from the proposed development have been recommended where necessary and assessed in accordance with the relevant performance standards, legislation, policy and guidance.

This noise assessment is necessarily technical in nature; therefore, a glossary of terms is included in Appendix A to assist the reader.

1.1 Standards, Legislation, Policy & Guidance

The following performance standards, legislation, policy and guidance have been considered to ensure good acoustic design in the assessment:

- The Environment Agency Guidance 'Noise and Vibration Management: Environmental Permits (Jan 2022)'.
- Environmental Agency 'Method Implementation Document ('MID') for BS4142 (2023).
- Noise Policy Statement for England (2010)
- British Standard BS4142:2014+A1:2019 – 'Methods for rating and assessing industrial and commercial sound'

Further information on the legislation can be found in Appendix B.

1.2 Background & Proposal Brief

The site is located to the northeastern corner of an existing small industrial estate. The site is surrounded by an MOT business and a machine maintenance service company.

The site operates currently under Standard Rules. NOVA Acoustics has been advised that the deliveries of tyres solely consist of van deliveries. Current operations are at 40 tonnes a week which equates to 2,500tpa. The bespoke permit proposals are to double the waste throughout of the site.

The following equipment/machinery is currently used on site:

- 3no. balers outside.
- 1 no. hand tyre popper inside the workshop.
- 1 no. hand tyre cutter within the workshop.

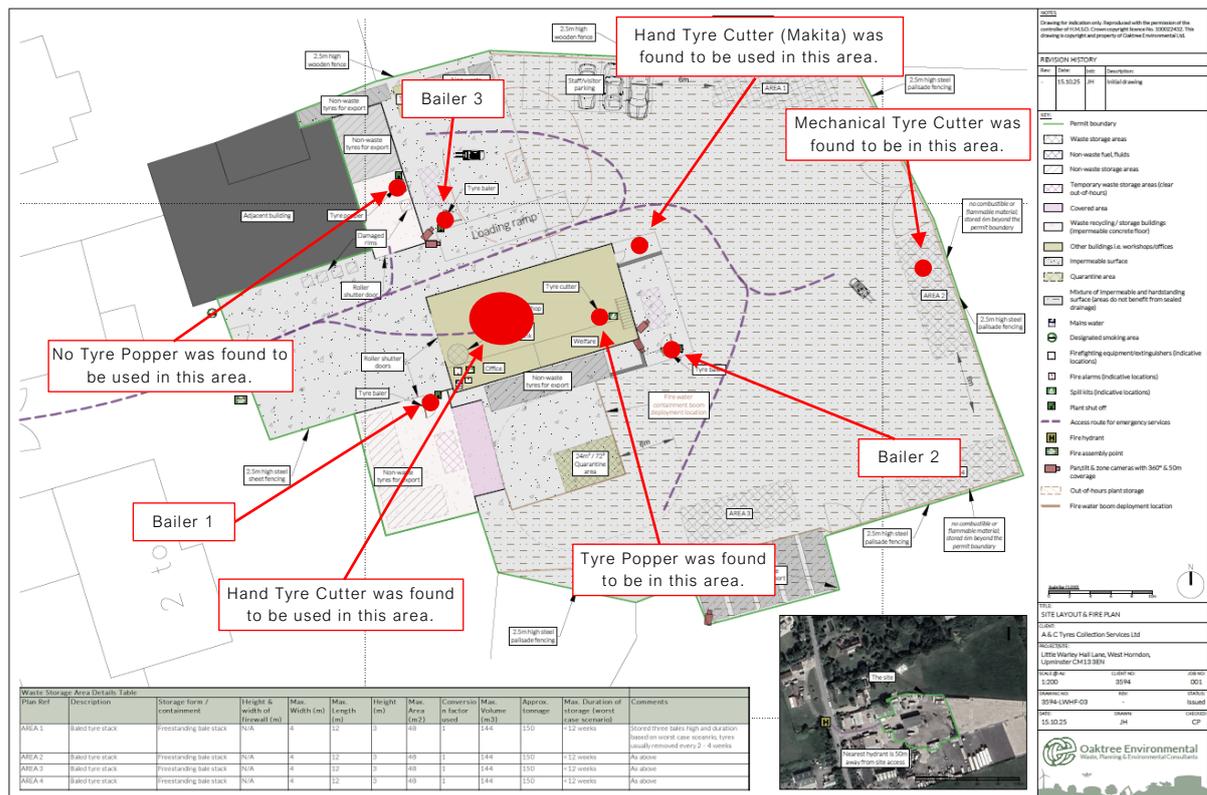
- 1no. hand tyre cutter outside (Makita).
- 1no. mechanical tyre cutter outside.
- Forklift movements & van deliveries/collections

The current operating hours for the site are presented in the table below. NOVA Acoustics has been informed that the below operating hours will remain unchanged.

Periods	Proposed Operations
Monday – Friday	07:00 – 17:00 hours
Saturday	No operations
Sunday	No operations
Bank & Public Holidays	No operations

Table 1 – Site Existing and Proposed Operating Hours

The figure below shows the site plan of the existing equipment and activities locations. Highlighted in red are the corrections observed during the site visits.



Drawing Ref No. 3594-LWHF-03_SLFP_(-) A2 from 'Oaktree Environmental'

Figure 1 – Proposed Development

2. Environmental Noise Survey

2.1 Measurement Methodology

An environmental noise survey was carried out by NOVA Acoustics in November to December of 2025, and both long-term unattended and short-term attended measurements were conducted. The measurement dates and particulars and the locations of the nearest NSRs are outlined in the following section.

All Class 1 sound level meters and microphones were fitted with a proprietary environmental kit complete with a suitable windshield (130mm diameter).

Measurements taken at heights greater than 1.5m were to avoid public interference. All measurements were taken using a fast time-weighting, logging every 0.1s and with integration periods in 15-minute samples, with 1-second integration samples used for all attended measurements. All measurements were undertaken under 'free field' conditions. 'MP' denotes a long-term monitoring location and 'ST' are the attended shorter-term measurements.

Details of the equipment used, and the recorded meteorological conditions are available in Appendix D.

Location	Survey Dates	Measurement Particulars
MP1	27/11/2025 – 02/12/2025	Equipment mounted on a telegraph pole within site.
MP2		Equipment mounted on an elevated tripod on an empty land at the eastern of the site.
MP3		Equipment mounted on a telegraph pole overlooking Little Warley Hall Lane (surrogate location).
ST1	27/11/2025	Equipment mounted on a tripod directly outside NSR4, to the south-west of the proposed development.
ST2		Equipment mounted on a tripod to the south of the proposed development.
ST3	02/12/2025	Equipment mounted on a tripod in proximity to NSRs 2 – 3.

Notes:

A measurement location MP2 was situated on the neighbouring site for a separate survey; it is not associated with this assessment; however, the acoustic climate was extremely similar in this location compared to the others.

Table 2 – Measurement Methodology



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Figure 2 – Measurement Locations and Site Surroundings

2.2 Area Description & Context

The area surrounding the site is primarily arable farmland with scattered residential properties in relatively close proximity. The closest residential NSRs are identified in the table below.

NSR	Approx. Distance from Site Boundary	Description
NSR1	25m W	A detached two-storey dwelling overlooking the existing industrial estate.
NSR2	75m W	'Meadowside' two-storey dwelling set back approximately 23m from Little Warley Hall Lane.
NSR3	55m NW	A detached two-storey dwelling set back approximately 23m from Little Warley Hall Lane.
NSR4	120m S	'Prettigate Farm' two-storey dwelling set back approximately 18m from Little Warley Hall Lane.

Table 3 – NSR Identification

2.3 Operational Procedures

Existing General Site Process

The following processes are undertaken on site:

- Incoming vehicles (vans) arrive at the site and report to the site office, where waste transfer documentation is checked. Loads are weighed using the on-site weighbridge or estimated in accordance with Environment Agency guidance where required.
- Loads are visually inspected to confirm compliance with the Environmental Permit. Once accepted, vehicles are directed to the designated unloading area.
- Tyres are unloaded and further visually inspected at the point of reception. Any non-compliant material is segregated and placed within a quarantine area prior to removal from site.
- Following unloading, tyres are manually inspected by trained operatives to determine whether they are suitable for re-use or require treatment as waste. Tyres with a tread depth greater than 1.6 mm are bulked and stored for resale.
- Tyres deemed unsuitable for re-use are processed on site. This includes manual feeding of tyres into vertical baling presses, where tyres are compacted into dense bales for onward recycling or recovery.
- Prior to baling, tyres may be cut or de-rimmed using tyre cutters, de-rimmers, or tyre popping equipment.
- Located at the centre of the site is the workshop where the tyre popper was observed during the site visit. A hand tool tyre cutter was also used within the workshop. During the site visit it was found that a mechanical tyre cutter (Eagle 'Tuf-cut' Tyre Cutter) and a hand tyre cutter (Makita Circular Saw) were used externally.
- Once baled, tyres are temporarily stored externally within designated storage areas (Areas 1–4). Bales are typically stacked up to three units high prior to removal from site.
- Site plant, including forklifts, is used to move baled material around the site and to load vans for off-site removal to suitably permitted recycling or recovery facilities.
- Located within the north-eastern section of the site is an existing garage area used for maintenance of site equipment.

Existing Site Equipment

Whilst on-site, the following equipment was observed.

Equipment	Model	No.	Operational Periods
Mobile Site Equipment			
Forklifts	Mitsubishi Diesel	2	Used regularly throughout the entire site.
Vans	Unknown	2/h	Vehicles travel in and out of the site.
Fixed Site Equipment			
Bailer	Gradeall MK2	3	Located externally. Used regularly through the day.
Hand Tyre Cutter	Unknown	1	Located internally within the workshop. Used regularly through the day.
Mechanical Tyre Cutter	Eagle 'Tuf-Cut'	1	Located externally. Used regularly through the day.
Hand Trim Cutter	Makita	1	Located externally. Used intermittently when required.

Table 4 – Existing Site Equipment

2.4 Subjective Impression of Noise Environment

The existing acoustic environment was dominated by consistent levels of road traffic from Southend Arterial Road (A127) to the north and the M25 to the south.

At ST1 and ST2, nearby and distant road traffic noise emissions were the dominant noise source in the area and noise from the existing operations of the site were inaudible at MP3.

Noise from road traffic was also the dominant at ST3 with occasional activity from the site (including cutting of tyres) being audible. However, the industrial noise was deemed secondary in nature, as is demonstrated below. All site noise emissions ceased at 08:44 to give a set of residual sound levels, some site-specific noise emissions were just perceptible during the ambient measurement.

Description	1/1 Octave Frequency Band (Hz, L _{eq,T} dB)							L _{Aeq,T} (dB)	L _{A90,T} (dB)
	63	125	250	500	1k	2k	4k		
ST3 Ambient: 08:10 – 08:44 (02/12/2025)	65	61	59	59	62	58	52	65	52
ST3 Residual: 08:45 – 09:10 (02/12/2025)	67	67	60	60	62	58	53	66	52

Table 5 – Attended Sound Level Results Summary

At MP1, site operations were clearly audible, and these are highlighted on the figure overleaf for reference. The site operational periods are highlighted in red.

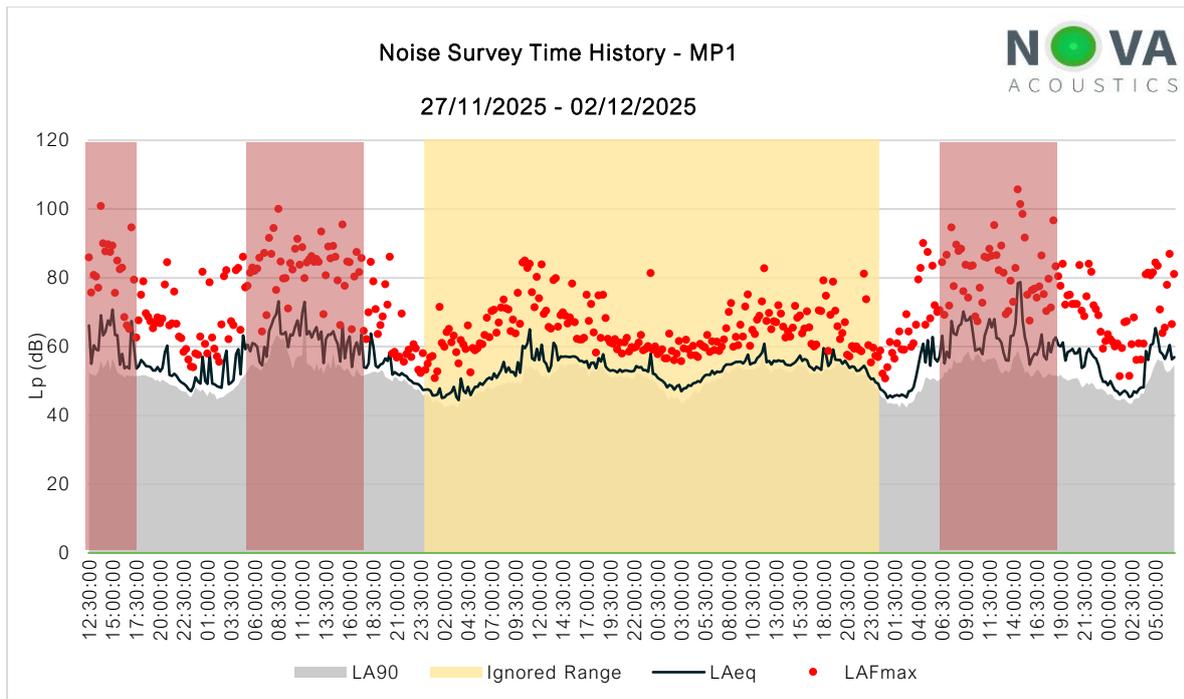


Figure 3 – MP1 Noise Survey Time History

The highest $L_{Aeq,1hr}$ measurement at MP1 was circa 76dB, which was deemed anomalous as the second highest 1-hour period was 70dBA with several instances of 66dB $L_{Aeq,1hr}$. As such, a reference of 70dBA $L_{Aeq,1hr}$ has been used to augment the noise modelling of Standard Rules operations.

2.5 Environmental Noise Survey Results

Background & Residual Sound Level Analysis

The site-specific noise emissions were inaudible at the surrogate long-term (MP3).

Shown in the following table are the 'lowest typical' or modal $L_{A90,15min}$ measurements during each period with the range of measurements presented beneath. The background sound levels have been derived from statical analysis and are based on the range and distribution of $L_{A90,15min}$ measurements. The complete time history results and histograms can be found in Appendix D.

Period ('T')	$L_{Aeq,15min}$ (dB)	$L_{A90,15min}$ (dB)
MP3: 07:00 – 17:00 Mon-Fri	63 (57 – 69)	52 (51 – 57)

Notes:

[1] Despite periods of light rain scattered throughout the survey, the background sound levels remained consistent and unaffected by damp roads or brief gusty conditions. Average wind speeds remained below 4.5m/s throughout the survey.

Table 6 – Long-term Sound Level Results Summary

Throughout the installation of the long-term monitoring positions, it was noted that a constant underlying hum from the nearby transport links always remained audible, with occasional cars passing via Little Warley Hall Lane. Although business located as part of the Hall Lane Farm industrial estate were in operation, very little noise was audible.

Attended Sound Survey Results Summary

Presented in the following table are the results from the attended surveying; all measurements were undertaken under free-field conditions.

Description	1/1 Octave Frequency Band (Hz, L _{eq,T} dB)							L _{Aeq,T} (dB)	L _{A90,T} (dB)
	63	125	250	500	1k	2k	4k		
ST1: 10:32 – 10:58 (27/11/2025)	61	57	55	56	61	56	50	63	51
ST2: 11:15 – 11:31 (27/11/2025)	59	54	53	54	57	52	48	60	52
ST3: 08:10 – 09:10 (02/12/2025)	66	65	59	59	62	58	52	65	52

Table 7 – Attended Sound Level Results Summary

Noise monitoring across ST1 – ST3 yielded an overall L_{A90} of between 51 – 52dB, which coincides with the findings of the long-term survey, indicating that noise from both the A127 and M25 remain dominant across all nearby NSRs.

Based on the above, it is thought that a baseline of **52dB L_{A90,15min}** has been used the baseline at all NSRs.

3. BS4142:2014 Noise Impact Assessment

3.1 Relevant Standards Guidance & Polices

Environmental Permitting Regulations 2022

Please see Appendix B.4 for the EA guidance followed throughout this assessment. This also includes the Environmental Agency 'Method Implementation Document ('MID') for BS4142 (2023).

BS4142:2014+A1:2019

When assessing industrial or commercial noise, acoustic design criteria are commonly set based on the guidance presented within BS4142:2014+A1:2019.

The following summarises the primary steps in the BS4142:2014+A1:2019 assessment methodology:

- A representative background sound level ($L_{A90,Tr}$) is determined based on the noise survey results;
- The cumulative specific sound level ($L_{Aeq,Tr}$) from the proposed development is predicted outside the windows of the NSRs and residential gardens;
- The rating sound level ($L_{Ar,Tr}$) is determined by applying 'acoustic feature corrections' which correct for the acoustic characteristics of the sound which may be perceptible and potentially cause annoyance at each NSR;
- The predicted rating sound level is compared with the background sound level, and the level of impact is initially estimated in accordance with BS4142:
 - o Typically, the greater this difference, the greater the magnitude of the impact.
 - o A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.
 - o A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.
 - o The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a negligible impact, depending on the context.
- Further context can then be provided where necessary.
- If necessary, mitigation measures are recommended to reduce the predicted noise impact.

3.2 Adopted Criteria

It is required that any site noise emissions causing significant noise impact (classed as 'significant adverse impact, dependent on context' in accordance with BS4142) are mitigated to an acceptable level given the context of the site.

Noise emissions causing an 'adverse impact' must be minimised to as low as practicable also considering context; this does not necessarily mean that such adverse effects cannot occur, providing the implementation of appropriate measures (may also be Best Available Techniques ('BAT')) can be "rigorously" demonstrated.

Site noise emissions causing 'no impact' to 'low impact' may not require any action over the basic appropriate measures or BAT.

Considering the above, the assessment criteria is as follows:

- BS4142 rating sound level from the permit at the most affected NSRs is controlled to avoid 'significant adverse impact', dependent on context of the site.
- Further measures and BAT have been considered to minimise any 'adverse impact', with the aim to reduce to 'low impact' where practicable, dependent on the context of the site.
- All noise impact is assessed in relation to the NPSE.

3.3 Operational Procedures

Standard Rules

The current operational procedures are detailed in Section 2.3 of this report.

Proposed Bespoke Permit

As detailed in Figure 1, there are some alterations to the initial permit layout.

The proposal shall increase the waste throughout to up to 10 extra loads per day, which will equate an extra 1 load per hour. That means that the current load volume will be doubled and the number of deliveries will be 2 per hour (4 vehicle movements).

NOVA Acoustics has also been informed that the new proposal could double the usage time of the 3no. bailers, 1no. tyre popper and 1no. tyre cutter. However, no additional equipment or relocation of the current equipment is proposed as part of the bespoke permit.

Assessment Periods

NOVA Acoustics has been informed that the current operating hours will remain unchanged. Therefore, the following BS4142 assessments have been conducted in line with the EA requirements.

- 07:00 – 17:00, Monday to Friday.

3.4 Source Noise Levels & Noise Modelling Data

On-site Measurement Methodology

For all on-site measurements the following measurement methodology was adhered to:

- All measurements of external noise sources were taken at 1.5m above local ground, in a position found to be most influenced by the generated noise emissions if residual noise could not be corrected for.
- Where possible, measurements have been taken at a position where point source propagation is to be expected. Where not possible, measurements at discrete locations around the noise source have been conducted to facilitate calculations considering ISO 3746. Where the ISO 3746 method could not be adhered to, manufacturers data has been consulted where possible.
- All measurements were taken using a fast time-weighting and the sound level meter was set to log every 1s.

- Measurements were taken in 1/3 octave frequency bands; however, the report details the 1/1 octave band sound levels inputted to the noise modelling software.

Shown in the below subsections are the sound power levels used as inputs for the noise modelling software. Also shown are the on-time corrections confirmed by the applicant as per the reference 1-hour daytime reference period of BS4142.

A summary of the specific sound levels for each source, along with the relevant directivity factor (Q factor) and distances used to derive the sound power levels can be found in Appendix E.

External Plant Equipment & Processes

Shown in the table below are the calculated sound power levels of the external plant equipment and processes.

Description	1/1 Octave Frequency Band (Hz, L _w dB)								L _{WA} (dB)	On-Times
	63	125	250	500	1k	2k	4k	8k		
Standard Rules Operations / Equipment										
Mechanical Tyre Cutter (eagle tuf-cut)– Idling	105	102	95	92	90	87	82	96	98	50%
Mechanical Tyre Cutter (eagle tuf-cut– Cutting ^[1])	116	113	112	109	109	108	107	108	116	40 sec
Tyre Bailer ^[2]	80	81	90	85	85	79	75	85	90	30%
Makita Hand Tool Tyre Cutter	93	104	98	101	107	105	103	111	114	30%
Bespoke Permit Operations / Equipment										
Mechanical Tyre Cutter (eagle tuf-cut)– Idling ^[3]	105	102	95	92	90	87	82	96	98	100%
Mechanical Tyre Cutter (eagle tuf-cut– Cutting ^[3])	116	113	112	109	109	108	107	108	116	80 sec
Tyre Bailer ^[3]	80	81	90	85	85	79	75	85	90	60%
Makita Hand Tool Tyre Cutter ^[3]	93	104	98	101	107	105	103	111	114	60%

Notes:

[1] 4no. 1-second peaks were measured over a typical 3-min period, which equates to a total of 80 seconds per hour when working continuously. Considering the current workflow, and for robustness, it is assumed that the machine currently works for the 50% of the time, equating to 40 seconds per hour.

[2] A Q factor of 8 has been applied as the measured bailer was partially covered. These levels are representative of all three balers for robustness.

[3] Due to the increased waste throughput of the bespoke permit, the 'on-time' is assumed to double. This was confirmed by site representatives.

Table 8 – External Source Sound Power Levels

Internal Noise Breakout Emissions

Measurements were also carried out within the workshop with the equipment running and a summary of these results are shown in the table below.

The tyre popper is permanently located within the workshop, along with a hand tool tyre cutter. The highest noise levels were measured from the tyre popper when the air of the tyres was released. Noise from the tyre cutter was also predominant. Internal ambient noise measurements were taken during each process in isolation and have been logarithmically summed to give a cumulative internal ambient noise level, the appropriate on-time corrections are then applied within the noise modelling software.

Description	1/1 Octave Frequency Band (Hz, L _{eq,T} dB)								L _{Aeq,T} (dB)	On-Times
	63	125	250	500	1k	2k	4k	8k		
Standard Rules										
Internal Hand Tyre Cutter	72	79	80	76	77	75	72	81	84	30%
Internal Tyre Popper	68	78	79	77	79	77	88	84	91	30%
Cumulative	73	82	83	80	81	79	88	86	92	30%
Bespoke Permit										
Internal Hand Tyre Cutter	72	79	80	76	77	75	72	81	84	60%
Internal Tyre Popper	68	78	79	77	79	77	88	84	91	60%
Cumulative	73	82	83	80	81	79	88	86	92	60%

Table 9 – Internal Sound Pressure Levels

Building Structures

Based on the observations on-site, the bottom 2.6m of the main building is comprised of corrugated steel with 200mm timber studs and nominal plywood. The rest of the building envelope (top section of the walls, roofing & closed roller shutter door) are comprised of a single layer of corrugated steel. There are no proposals to upgrade this structure at this time.

For modelling purposes, the sound insulation performance of the external envelope has been calculated with INSUL 9.0. Any open areas have been modelled as having an R_w of 0dB. It is important to note that the office and welfare are located on a mezzanine floor at the south elevation, these rooms are acting a buffer zone so noise breaking out those areas is negligible.

Description	Octave Frequency Band (Hz, SRI dB)								R _w (dB)
	63	125	250	500	1k	2k	4k	8k	
Bottom Wall Sections (0.6mm steel, 200mm timber stud, 10mm plywood)	9	11	25	32	39	38	42	42	34
Upper Wall Sections, Roofing & RSD (0.6mm steel)	8	10	14	19	24	29	34	34	23

Table 10 – Assumed Building Envelope Sound Insulation

In all instances, the noise emissions breaking out of the buildings is calculated within SoundPlan (in accordance with BS12354) accounting for the following:

- The calculated cumulative internal ambient noise levels and on-times presented in Table 9.
- The assumed building envelope sound insulation shown in Table 10.
- A Cd diffusivity term correction of -5dB for noise breakout from solid reflective elements (façades & roofing), and -3dB for any openings (fire doors).
- The western facing roller shutter remains closed during all noisy internal works.

Mobile Plant Movements

A summary of all mobile plant movements is shown in the table below. Please note that the sound power levels presented for the van pass-by are input values only; the speed and the number of events has been applied within the noise modelling software.

On the days of the surveying, no van deliveries took place. As such, archive data collected by NOVA Acoustics has been utilised.

Description	1/1 Octave Frequency Band (Hz, L _w dB)								L _{WA} (dB)	On-Time Correction
	63	125	250	500	1k	2k	4k	8k		
Standard Rules										
Van Pass-by ^[1]	88	81	78	77	77	76	72	68	82	2.2m/s (2 e/h)
Forklift Pass-by & Lifting ^[2]	77	76	75	73	69	67	65	57	75	30%
Bespoke Permit										
Van Pass-by ^[1]	88	81	78	77	77	76	72	68	82	2.2m/s (4 e/h)
Forklift Pass-by & Lifting ^[2]	77	76	75	73	69	67	65	57	75	60%
Notes:										
[1] Measured by NOVA Acoustics during a site visit for report NP-011281.										
[2] Measured by NOVA Acoustics during a site visit for report NP-012133-2.										

Table 11 – Mobile Plant Sound Power Levels

3.5 Noise Modelling & Specific Sound Levels

The proposed development has been modelled within SoundPlan 9.1, and the following assumptions have been made within the noise modelling software:

- To accurately model the land surrounding the proposed development, the topographical data has been obtained from the EA's 'National LIDAR Programme' on the DEFRA Data Services Platform.
- For the purpose of the assessment, the ground between the source and receivers is considered to be a mixture of acoustically 'soft' and 'hard' surfaces and has been modelled accordingly.
- Octave band source data was used to facilitate noise modelling in accordance with ISO 9613-2 (2024). ISO 9613-2 assumes a 'downwind' model to the NSRs.
- The sound map grid height has been set to 4m to represent the worst-case first-floor receptor windows; however, the noise levels used in the assessment has been taken from the most exposed point of each façade or within gardens at ground floor level.
- The site and all other buildings and any intervening objects have been modelled according to measurements taken on-site, with Google Maps and those provided by the LIDAR data.
- A building reflection loss of 0.5dB has been modelled in accordance with EA requirements.
- The sound levels and on-times provided in Section 3.4 have been inputted into the noise model.
- All van movements have been modelled as slow-moving point source emitters (line source L_w/m), and on-times have been calculated based on vehicle speed (2.2 m/s) the number of events per 1-hour reference time period.
- The forklift movements and operations have been modelled as an area source at 1m above the ground and on-times have been applied to account for 2no. forklift operating.
- The following source heights have been used:
 - o External 'Tuf-Cut' Tyre Cutter – 1m
 - o Bayler – 1.5m
 - o Makita Tyre Cutter – 0.5m
 - o Van / Forklift movements – 1m

The sound maps showing the specific sound level emissions from the site can be seen in the following figures.

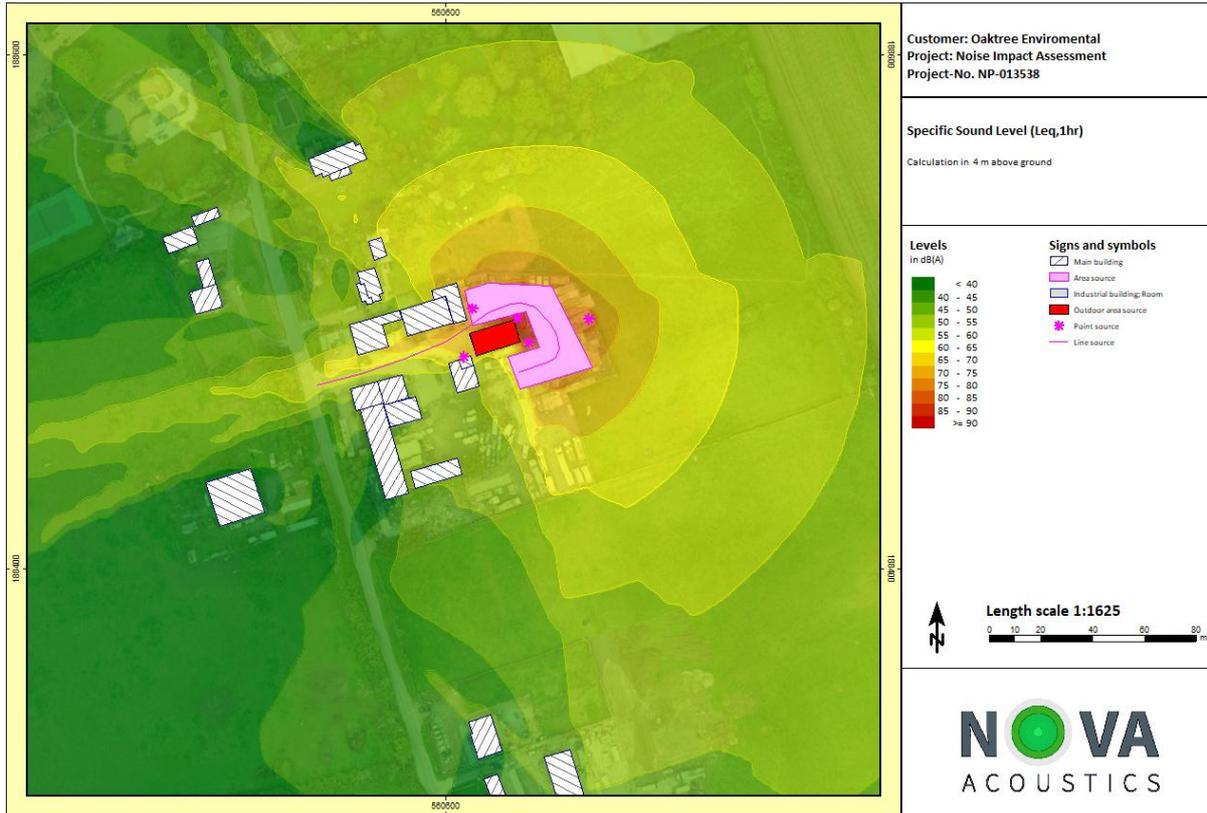


Figure 4 – Specific Sound Level Map – Standard Rules

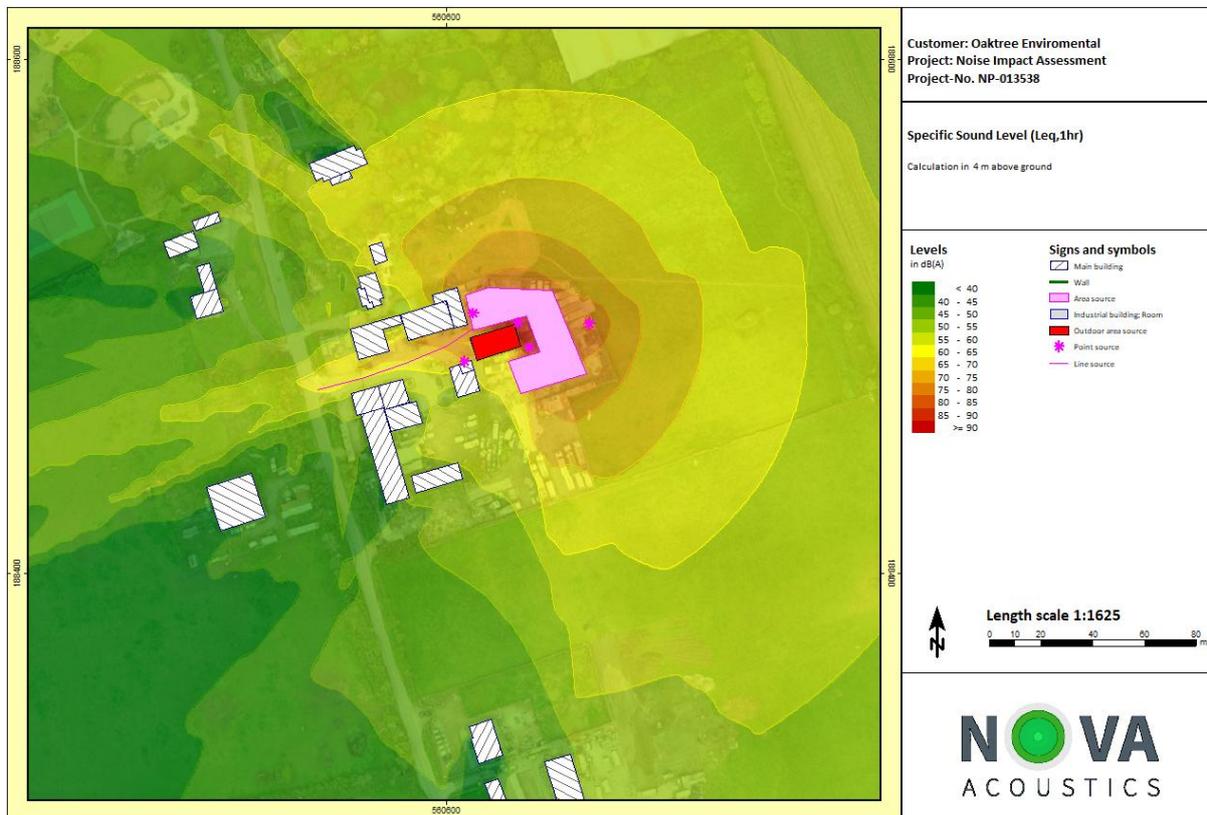


Figure 5 – Specific Sound Level Map – Bespoke Permit

3.6 BS4142 Noise Impact Assessments

The criteria that are applied to the BS4142 assessment outcomes are based on the table below. Please note that these are indicative at this stage and require a review of the 'contextual' nature of the site when compared to the background sound level. This is subsequently discussed after the BS4142 assessment.

Description	Exceedance Levels & Initial Assessment Outcome			
	<0	0 – 4	5 – 9	10+
Exceedance of Background (L _{A90})	<0	0 – 4	5 – 9	10+
BS4142 Initial Assessment Outcome	Negligible to 'Low Impact'	'Low Impact' / Low Likelihood of 'Adverse Impact'	'Adverse Impact'	'Significant Adverse Impact'

Table 12 – BS4142 Initial Noise Impact Criteria

BS4142 Assessment of Standard Rules

The BS4142 noise impact assessments are conducted at the most affected NSRs in the table below.

Daytime BS4142 Noise Impact Assessments				
Description	NSR			
	1	2	3	4
Predicted Specific Sound Level (dB L _{Aeq,1hr})	58	45	60	44
Subjective BS4142 Acoustic Feature Corrections	+6 ^[1]	+6 ^[1]	+6 ^[1]	+6 ^[1]
Rating Sound Level (dB L _{Ar,Tr})	64	51	66	50
Background Sound Level (dB L _{A90,15min})	52			
Exceedance of L _{A90}	+12	-1	+14	-2
Initial BS4142 Assessment Outcome	'Significant adverse impact, dependant on context' at NSRs 1 & 3. 'Low impact, dependant on context' at NSRs 2 & 4.			

Notes:

[1] A penalty of +6dB for 'clearly perceptible' impulsivity has been applied to account for the character of the 'Tuf-Cut' machine noise emissions that were occasionally clearly perceptible above the residual noise climate.

Table 13 – Indicative BS4142 Noise Impact Assessments – Standard Rules

The BS4142 assessment above indicates that 'significant adverse impact' is present at the most affected NSRs; namely NSRs 1 & 3.

The noise impacts are thought to align with the threshold for a 'Significant Observed Adverse Effect level' ('SOAEL') in line with the NPSE.

BS4142 Assessment of Proposed Bespoke Permit

The BS4142 noise impact assessments are conducted at the most affected NSRs in the table below.

Daytime BS4142 Noise Impact Assessments				
Description	NSR			
	1	2	3	4
Predicted Specific Sound Level (dB L _{Aeq,1hr})	61	48	63	47
Subjective BS4142 Acoustic Feature Corrections	+6 ^[1]	+6 ^[1]	+6 ^[1]	+6 ^[1]
Rating Sound Level (dB L _{Ar,Tr})	67	54	69	53
Background Sound Level (dB L _{A90,15min})	52			
Exceedance of L _{A90}	+15	+2	+17	+1
Initial BS4142 Assessment Outcome	'Significant adverse impact, dependant on context' at NSRs 1 & 3. A low likelihood of 'adverse impact, dependant on context' at NSRs 2 & 4.			
Notes:				
[1] A penalty of +6dB for 'clearly perceptible' impulsivity has been applied to account for the character of the 'Tuf-Cut' machine noise emissions that were occasionally clearly perceptible above the residual noise climate.				

Table 14 – Indicative BS4142 Noise Impact Assessments – Bespoke Permit

The BS4142 assessment above indicates that 'significant adverse impact' is present at the most affected NSRs; namely NSRs 1 & 3.

In light of the above, the noise impacts are thought to align with the threshold for a 'Significant Observed Adverse Effect level' ('SOAEL') in line with the NPSE. It is stated within the NPSE that "*significant adverse effects on health and quality of life should be avoided while also considering the guiding principles of sustainable development*".

As such, an indicative mitigation scheme has been recommended in the following section.

3.7 Recommendations & Mitigation Measures

Best Practicable Means (BPM) – Physical Control Measures

Barrier Installation

A minimum 2.4m tall acoustic screen should be installed around the mechanical tyre cutter (Eagle 'Tuf-Cut') and that the hand-held Makita tyre cutter operation is relocated to within the screened area.

The screen should have a minimum surface mass of 15kg/m² and not contain any holes or gaps.

Shown in the figure overleaf is an illustration of the proposed screening location. The proposal has considered the current site layout and access needs to the machine.



Figure 6 – Acoustic Screening Location

Bets Available Techniques (BAT)

The roller shutter door to the workshop should remain closed during all tyre cutting and popping.

Noise Modelling & Specific Sound Levels

The sound map showing the specific sound level emissions from the proposed development considering the mitigation measures can be seen in the figure below.

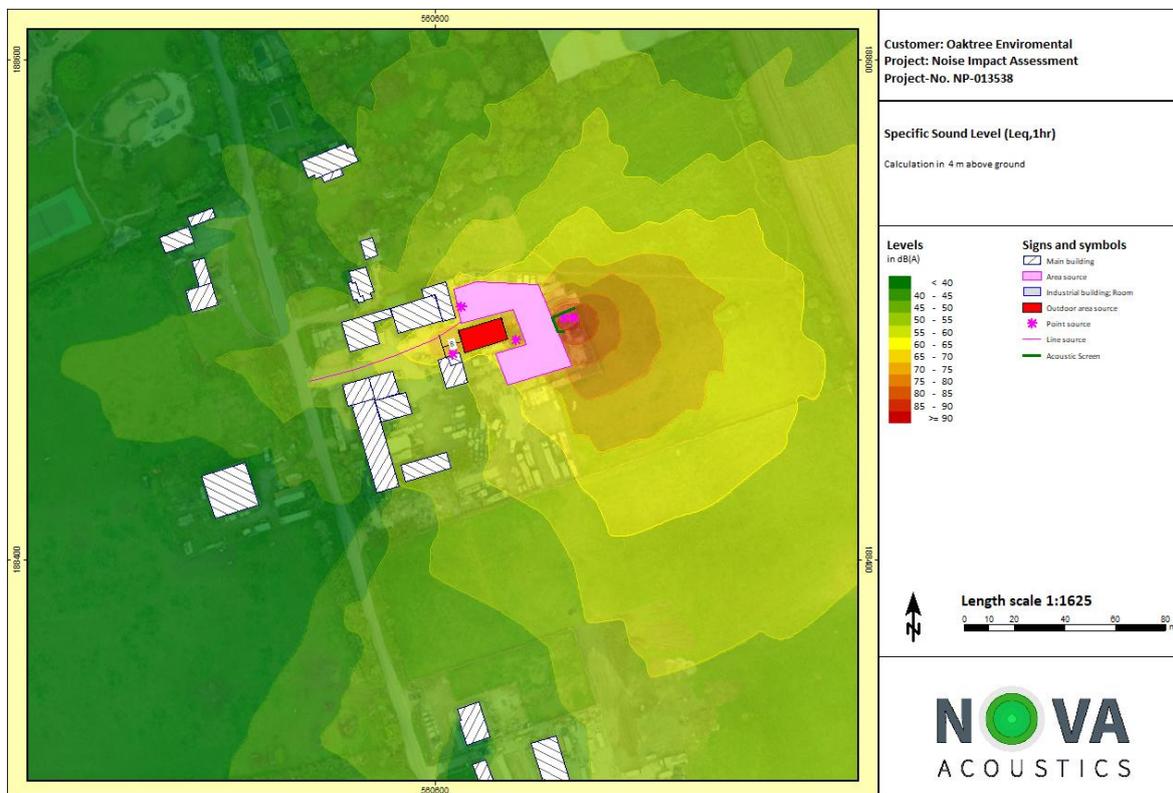


Figure 7 – Specific Sound Level Map – Proposed Mitigation Scheme

Revised BS4142 Noise Impact Assessment

The BS4142 noise impact assessments considering the mitigation scheme are conducted at the most affected NSRs in the table below.

Daytime BS4142 Noise Impact Assessments				
Description	NSR			
	1	2	3	4
Predicted Specific Sound Level (dB $L_{Aeq,1hr}$)	51	43	46	47
Subjective BS4142 Acoustic Feature Corrections	+3 ^[1]	+3 ^[1]	+3 ^[1]	+3 ^[1]
Rating Sound Level (dB $L_{Ar,Tr}$)	54	46	49	50
Background Sound Level (dB $L_{A90,15min}$)	52			
Exceedance of L_{A90}	+2	-6	-3	-2
Initial BS4142 Assessment Outcome	A low likelihood of 'adverse impact, dependant on context at NSR1. 'Low impact, dependant on context' at all other NSRs.			
Notes:				
[1] A penalty of +3dB for 'just perceptible' impulsivity has been applied to account for the mitigated noise emissions from the 'Tuf-Cut' machine. The L_{AFmax} sound levels were recorded as circa 6dB higher than their $L_{Aeq,1sec}$ counterparts. Screening calculations indicate that the mitigated L_{AFmax} noise emissions are not anticipated to exceed 5dB over the $L_{Aeq,T}$ residual noise levels, thus, impulsivity is expected to be reduced.				

Table 15 – BS4142 Noise Impact Assessments – Mitigated

As can be seen above, the 'worst-case' noise impact is at NSR1 where the background sound level is marginally exceeded by 2dB, and a low likelihood of 'adverse impact' has initially been predicted. At all other NSRs, 'low impact' is initially predicted.

The applicant has stipulated that the increase in waste throughput could double the frequency and on-times of operations and equipment, however, this is unlikely to be the case for the majority of time and that the noise impact would be lower than initially quantified.

In light of the above, the 'worst-case' noise impacts are thought to align with the threshold for a 'No Observed Adverse Effect Level' ('NOAEL') at all NSRs. It is stated that at NOAEL, "noise can be heard, but does not cause any change in behaviour, attitude or other physiological response". In addition, noise at this level "can slightly affect the acoustic character of the area but not such that there is a change in the quality of life".

At this stage the proposals are deemed consistent with the principles of sustainable development, are thought to meet the requirements of the Environmental Permitting Regulations and represent the application of Best Available Techniques.

4. Limitations and Uncertainty

Any measurement of existing ambient and background sound levels will be subject to a degree of inherent uncertainty. Environmental sound levels vary between days, weeks and throughout the year due to the variations in source level and conditions, meteorological effects on sound propagation and other factors.

Therefore, any environmental noise survey can only provide a snapshot of the noise levels. However, all efforts have been made to ensure that the measurements were conducted in a way to provide a robust sample of representative and typical conditions, e.g., avoiding or omitting adverse weather conditions. Nonetheless, a small degree of uncertainty will always remain in the noise levels from surveys.

The impact assessment has been prepared in accordance with source data measured by NOVA Acoustics for similar operations. The measurement distances were measured accurately using a laser meter, and the 'worst-case' highest sound levels measured where directivity was at its greatest have been used.

To reduce uncertainty when measuring noise sources that are erratic or variable, longer measurements were taken that included several full cycles rather than a single 'snapshot'.

The measurements were undertaken at distances where noise emissions from operations were thought to be dominant and also where they were propagating in point source manner.

The calculations using SoundPlan 9.1 conforms to ISO 9613-2:2024 that has an uncertainty reported as ± 3.0 dB. The ISO 9613 calculation methodology assumes wind direction with $\pm 45^\circ$ of the direction connecting the centre of the dominant sound sources and the centre of the specified receptor region, together with wind speeds of between $1 - 5 \text{ ms}^{-1}$. It should therefore be noted that in practice the eventual longer-term measured levels are invariably lower than predicted levels due to the temporal variation in meteorological conditions.

5. Conclusion and Action Plan

A BS4142 assessment has undertaken of the proposed bespoke permit operations in accordance with BS4142:2014+A1:2019, the Environment Agency's requirements and relevant national policy and guidance.

The initial BS4142 assessments have shown that 'significant adverse impact' is present from the Standard Rules operations, and that 'significant adverse impact' is also expected from the bespoke permit proposals. The noise impacts are thought to lie above a 'Significant Observed Adverse Effect Level' ('SOAEL') in accordance with the NPSE.

It is stated within the NPSE that *"significant adverse effects on health and quality of life should be avoided while also considering the guiding principles of sustainable development"*.

In line with the requirements of the NPSE, a scheme of mitigation has been recommended in Section 3.7. Provided the use of the Makita hand cutting tool is relocated within the proposed screened area around the 'Tuf-cut' tyre cutter, a low likelihood of 'adverse impact' is considered the 'worst-case' predicted noise impacts in accordance with BS4142. In this instance, the noise impacts are thought to align with the NPSE threshold for a 'No Observed Adverse Effect Level' ('NOAEL') at all NSRs for all assessment time periods.

To ensure the findings of this report are validated, it is recommended that the operator undertake a programme of confirmatory noise measurement and assessment once the mitigation is implemented. Any deviations from the assumed performance should be reviewed in consultation to identify and implement additional mitigation where required, ensuring continued alignment with EA expectations and the NPSE.

At this stage the proposals are deemed consistent with the principles of sustainable development, are thought to meet the requirements of the Environmental Permitting Regulations and represent the application of Best Available Techniques.

To ensure compliance with the EA's permitting requirements and to manage noise to *as low as reasonably practicable* levels in line with Best Available Techniques ('BAT'), the following **action plan** is recommended:

1. Plant Specification and Procurement

- Where practicable, procure quieter plant such as an electrically powered.
- The 2.4m tall acoustic screen around the tuf-cut tyre cutter and the relocated Makita hand cutter operation should be erected as per Section 3.7.
- The workshop roller shutter door should remain closed during all tyre cutting and popping activities.

2. Operational Controls

- Drops heights should be reduced where practicable.
- Position mobile plant and loading operations away from sensitive boundaries where possible, with preference for shielding provided by buildings and barriers.
- Restrict reversing alarms to broadband or "white noise" types.

3. Ongoing Noise Management

- Implement the site-specific Noise Management Plan including staff training, preventative maintenance, monitoring, complaint procedures, and reporting.
- Establish routine noise monitoring detailed in the Noise Management Plan to validate compliance and support continuous improvement.

4. Review and Continuous Improvement

- Reassess noise performance following implementation of the mitigation measures or quieter equipment.
- Where necessary, refine mitigation and operational practices to ensure noise impacts remain consistent with the NPSE and EA permit requirements.

The findings of this report will require written approval from the Environment Agency prior to work commencing.

Appendix A – Acoustic Terminology

A-weighted sound pressure level, L_{pA}	Quantity of A-weighted sound pressure given by the following formula in decibels (dBA). $L_{pA} = 10 \log_{10} (pA/p_0)^2$. Where: pA is the A-weighted sound pressure in pascals (Pa) and p_0 is the reference sound pressure (20 μ Pa)
Background Sound	Underlying level of sound over a period, T , which might in part be an indication of relative quietness at a given location
Equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$	Value of the A-weighted sound pressure level in decibels (dB) of a continuous, steady sound that, within a specified time interval, T , has the same mean-squared sound pressure as the sound under consideration that varies with time
Facade level	Sound pressure level 1 m in front of the facade
Free-field level	Sound pressure level away from reflecting surfaces
Indoor ambient noise	Noise in a given situation at a given time, usually composed of noise from many sources, inside and outside the building, but excluding noise from activities of the occupants
Noise Criteria	Numerical indices used to define design goals in a given space
Noise Rating (NR)	Graphical method for rating a noise by comparing the noise spectrum with a family of noise rating curves
Octave Band	Band of frequencies in which the upper limit of the band is twice the frequency of the lower limit
Percentile Level, $L_{AN,T}$	A-weighted sound pressure level obtained using time-weighting “F”, which is exceeded for $N\%$ of a specified time interval
Rating Level, $L_{Ar,Tr}$	Equivalent continuous A-weighted sound pressure level of the noise, plus any adjustment for the characteristic features of the noise
Reverberation time, T	Time that would be required for the sound pressure level to decrease by 60 dB after the sound source has stopped
Sound Pressure, p	root-mean-square value of the variation in air pressure, measured in pascals (Pa) above and below atmospheric pressure, caused by the sound
Sound Pressure Level, L_p	Quantity of sound pressure, in decibels (dB), given by the formula: $L_p = 10 \log_{10}(p/p_0)^2$. Where: p is the root-mean-square sound pressure in pascals (Pa) and p_0 is the reference sound pressure (20 μ Pa)
Weighted sound reduction index, R_w	Single-number quantity which characterizes the airborne sound insulating properties of a material or building element over a range of frequencies

Appendix B – Standards, Legislation, Policy, and Guidance

This report is to be primarily based on the following standards, legislation, policy and guidance.

B.1 – National Planning Policy Framework (2024)

Government policy on noise is set out in the National Planning Policy Framework (NPPF), updated in 2024. This replaced all earlier guidance on noise and places an emphasis on sustainability. In section 15, Conserving and enhancing the natural and local environment, paragraph 187e, it states:

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. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans;

Paragraph 198 states:

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 impact 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; and*
- c) *Limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.*

B.2 – Noise Policy Statement for England (2010)

Paragraph 198 of the NPPF also refers to advice on adverse effects of noise given in the Noise Policy Statement for England (NPSE). This document sets out a policy vision 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.

To achieve this vision the Statement identifies the following 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;
- Where possible, contribute to the improvement of health and quality of life.

In achieving these aims the document introduces significance criteria as follows:

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur. It is stated that *“significant adverse effects on health and quality of life should be avoided while also considering the guiding principles of sustainable development”*.

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected. It is stated that the second aim above lies somewhere between LOAEL and SOAEL and requires that: “all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also considering the guiding principles of sustainable development. This does not mean that such adverse effects cannot occur.”

NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise. This can be related to the third aim above, which seeks: *“where possible, positively to improve health and quality of life through the pro-active management of noise while also considering the guiding principles of sustainable development, recognising that there will be opportunities for such measures to be taken and that they will deliver potential benefits to society. The protection of quiet places and quiet times as well as the enhancement of the acoustic environment will assist with delivering this aim.”*

This is further expanded using the updated “Noise Exposure Hierarchy Table” which includes an additional level of impact referred to as the ‘No Observed Adverse Effect Level’ (‘NOAEL’). It is stated that at this level: *“noise can be heard, but does not cause any change in behaviour, attitude or other physiological response”*. In addition, noise at this level *“can slightly affect the acoustic character of the area but not such that there is a change in the quality of life”*.

The NPSE recognises that it is not possible to have a single objective noise-based measure that is mandatory and applicable to all sources of noise in all situations and provides no guidance as to how these criteria should be interpreted. It is clear, however, that there is no requirement to achieve noise levels where there are no observable adverse impacts, but that reasonable and practicable steps to reduce adverse noise impacts should be taken in the context of sustainable development and ensure a balance between noise sensitive and the need for noise generating developments.

Any scheme of noise mitigation outlined in this report will, therefore, aim to abide by the above principles of the NPPF and NPSE whilst recognising the constraints of the site.

B.3 – BS4142:2014+A1:2019 – ‘Methods for rating and assessing industrial and commercial sound’

Overview

BS4142:2014 sets out a method to assess the likely effect of sound from factories, industrial premises or fixed installations and sources of an industrial nature in commercial premises, on people who might be inside or outside a dwelling or premises used for residential purposes in the vicinity.

The procedure contained in BS4142:2014 for assessing the effect of sound on residential receptors is to compare the measured or predicted sound level from the source in question, the $L_{Aeq,T}$ 'specific sound level', immediately outside the dwelling with the $L_{A90,T}$ background sound level.

Where the sound contains a tonality, impulsivity, intermittency and other sound characteristics, then a correction depending on the grade of the aforementioned characteristics of the sound is added to the specific sound level to obtain the $L_{A,r,T}$ 'rating sound level'. A correction to include the consideration of a level of uncertainty in sound measurements, data and calculations can also be applied when necessary.

Rating Penalty

Section 9 of BS4142:2014 describes how the rating sound level should be derived from the specific sound level, by deriving a rating penalty.

BS4142:2014 states:

"Certain acoustic features can increase the significance of impact over that expected from a basic comparison between the specific sound level and the background sound level. Where such features are present at the assessment location, add a character correction to the specific sound level to obtain the rating level. This can be approached in three ways:

- a) subjective method;*
- b) objective method for tonality;*
- c) reference method."*

Due to the nature of the development the subjective method has been adopted to derive the rating sound level from the specific sound level. This is discussed in Section 9.2 of BS4142:2014, which states:

"Where appropriate, establish a rating penalty for sound based on a subjective assessment of its characteristics. This would also be appropriate where a new source cannot be measured because it is only proposed at that time, but the characteristics of similar sources can subjectively be assessed. Correct the specific sound level if a tone, impulse or other characteristics occurs, or is expected to be present, for new or modified sound sources."

BS4142:2014 defines four characteristics that should be considered when deriving a rating penalty, namely; tonality; impulsivity; intermittency; and other sound characteristics, which are defined as:

a) Tonality

A rating penalty of +2 dB is applicable for a tone which is "just perceptible", +4 dB where a tone is "clearly perceptible", and +6 dB where a tone is "highly perceptible".

b) Impulsivity

A rating penalty of +3 dB is applicable for impulsivity which is "just perceptible", +6 dB where it is "clearly perceptible", and +9 dB where it is "highly perceptible".

c) Other Sound Characteristics

BS4142:2014 states that where *"the specific sound features characteristics that are neither tonal nor impulsive, though otherwise are readily distance against the residual acoustic environment, a penalty of +3 dB can be applied."*

d) *Intermittency*

BS4142:2014 states that when the *“specific sound has identifiable on/off conditions, the specific sound level ought to be representative of the time period of length equal to the reference time interval which contains the greatest total amount of on time ... if the intermittency is readily distinctive against the residual acoustic environment, a penalty of +3 dB can be applied.”*

Background Sound Level

The background sound level is the underlying level of sound over a period, T, and is indicative of the relative quietness at a given location. It does not reflect the occurrence of transient and/or higher sound level events and is generally governed by continuous or semi-continuous sounds.

To ensure the background sound level values used within the assessment are reliable and suitably represent both the particular circumstance and periods of interest, efforts have been made to quantify a 'typical' background sound level for a given period. The purpose has not been to simply select the lowest measured value. Diurnal patterns have also been considered as they can have a major influence on background sound levels, for example, the middle of the night can be distinctly different (and potentially of lesser importance) compared to the start or end of the night time period for sleep purposes.

Since the intention is to determine a background sound level in the absence of the specific sound that is under consideration, it is necessary to understand that the background sound level can in some circumstances legitimately include industrial and/or commercial sounds that are present as separate to the specific sound.

Assessment of Impact

BS4142:2014 states: *“The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs”*. An estimation of the impact of the specific sound can be obtained by the difference of the rating sound level and the background sound level and considering the following:

- *“Typically, the greater this difference, the greater the magnitude of the impact.”*
- *“A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.”*
- *“A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.”*
- *“The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a negligible impact, depending on the context.”*

Interpreting the guidance given in BS4142:2014, with consideration of the guidance given in the NPSE and NPPG Noise, an estimation of the impact of the rating sound is summarised in the following text:

- A rating sound level that is +10 dB above the background sound level is likely to be an indication of a Significant Observed Adverse Effect Level;

- A rating sound level that is +5 dB above the background sound level is likely to be an indication of a Lowest Observed Adverse Effect Level;
- The lower the rating sound level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating sound level does not exceed the background sound level, this is an indication of the specific sound source having a negligible impact and would therefore classify as No Observed Adverse Effect Level.

During the daytime, the assessment is carried out over a reference time period of 1-hour. The periods associated with day or night, for the purposes of the Standard, are 07.00 to 23.00 and 23.00 to 07.00, respectively.

B.4 – Environmental Permitting Regulations 2022

Most recently updated in January 2022, the 'Noise and Vibration Management: Environmental Permits' provides advice on how the Environment Agency ('EA') assesses noise from industrial processes, what the law says must be done to manage noise and vibration, how to carry out a noise impact assessment and what should be included in a noise management plan ('NMP'). It replaces Horizontal Guidance for Noise (H3) Parts 1 and 2, and the Scottish Environmental Protection Agency (SEPA) Guidance on the control of noise at Pollution Prevention and Control (PPC) installations.

The guidance lists the reasons why regulation of noise is important, defines when an assessment is needed, and states required competency standards before presenting the approved methodology for undertaking a noise impact assessment, broken into the following four steps:

Step 1: desktop risk assessment:

- Identification of plant or operations that could be audible at any known or proposed NSR, including non-routine noise sources (e.g. emergency pressure relief / venting systems).
- Description and ranking of noise sources in terms of off-site impact, noting what they sound like and when they operate.
- Identification of current and proposed NSRs by name, type, location and distance from source.
- Description of the land between the site and the NSRs and whether any man-made features could increase or decrease the audibility of the sound at the NSRs.

Step 2: off-site monitoring survey, involving baseline measurements at NSRs to the standards defined in BS4142:

- When considering overall site impact, background sound levels at NSRs must not be influenced by site noise.
- In addition to assessment of the 'typical' impact required by BS4142, worst-case impact scenarios should also be considered, e.g. atypical sound sources, low background sound levels, or downwind propagation from the noise source.
- When applying for a variation, the existing noise sources on the site (before changes) must not be included in the baseline background and residual sound levels. The existing and proposed sources should be considered as separate components and combined to give a new total for the specific sound level at the receptor(s).

Step 3: source assessment, involving quantification of the noisiest items of plant or operations identified in Step 1 and estimating / predicting their impact at the receptor using BS4142. Due consideration of uncertainty should be incorporated into the assessment:

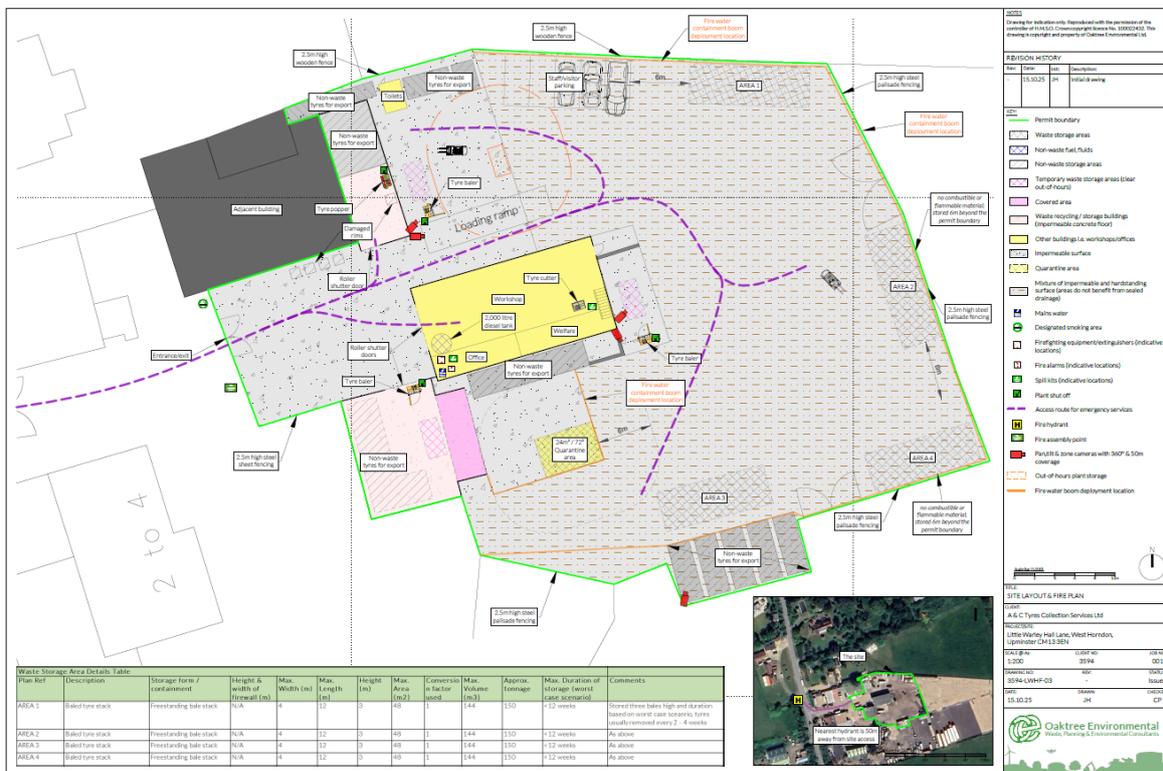
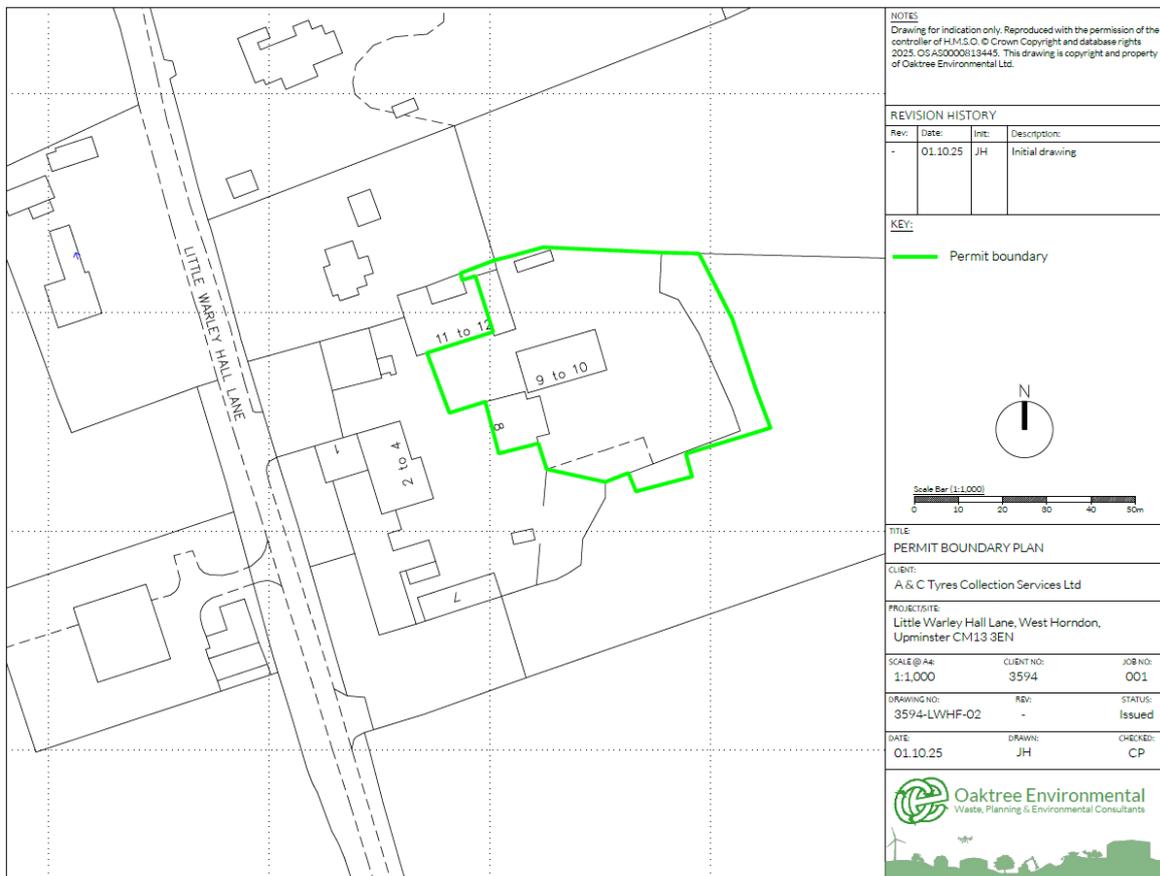
- Where modelling or calculation is used, they must comply with the requirements of 'ISO 9613 Acoustics – attenuation of sound during propagation outdoors' and the following must be provided alongside the assessment:
 - o Statement of modelling/calculation assumptions.
 - o Copy of all modelling/calculation files (models to be submitted in original software format and, where possible, QSI data exchange format).
 - o Copy of numerical noise data (excluding terrain data) in a clearly labelled and concise spreadsheet.

Step 4: BAT or appropriate measures justification, involving presentation of Best Available Techniques or appropriate measures and justification for their use in the context of the specific application:

- Demonstration that emissions have been prevented or minimised as far as reasonably practicable with respect to:
 - o The dominant noise sources (where necessary considered as sub-components within a system).
 - o All existing noise attenuation measures (physical, managerial and maintenance).
 - o Consideration of all reduction techniques for dominant noise sources and provide a reasoned determination of what is achievable.
 - o As appropriate, prediction of the impact of upgrade works and commitment to a firm timescale.
 - o Development of a noise management plan where there will be a noise impact beyond the site boundary.

Further guidance is provided in the 'Method Implementation Document ('MID') for BS4142 (2023)'.

Appendix C – Location Plan Provided to NOVA Acoustics



Appendix D – Environmental Survey

D.1 – Time History Noise Data

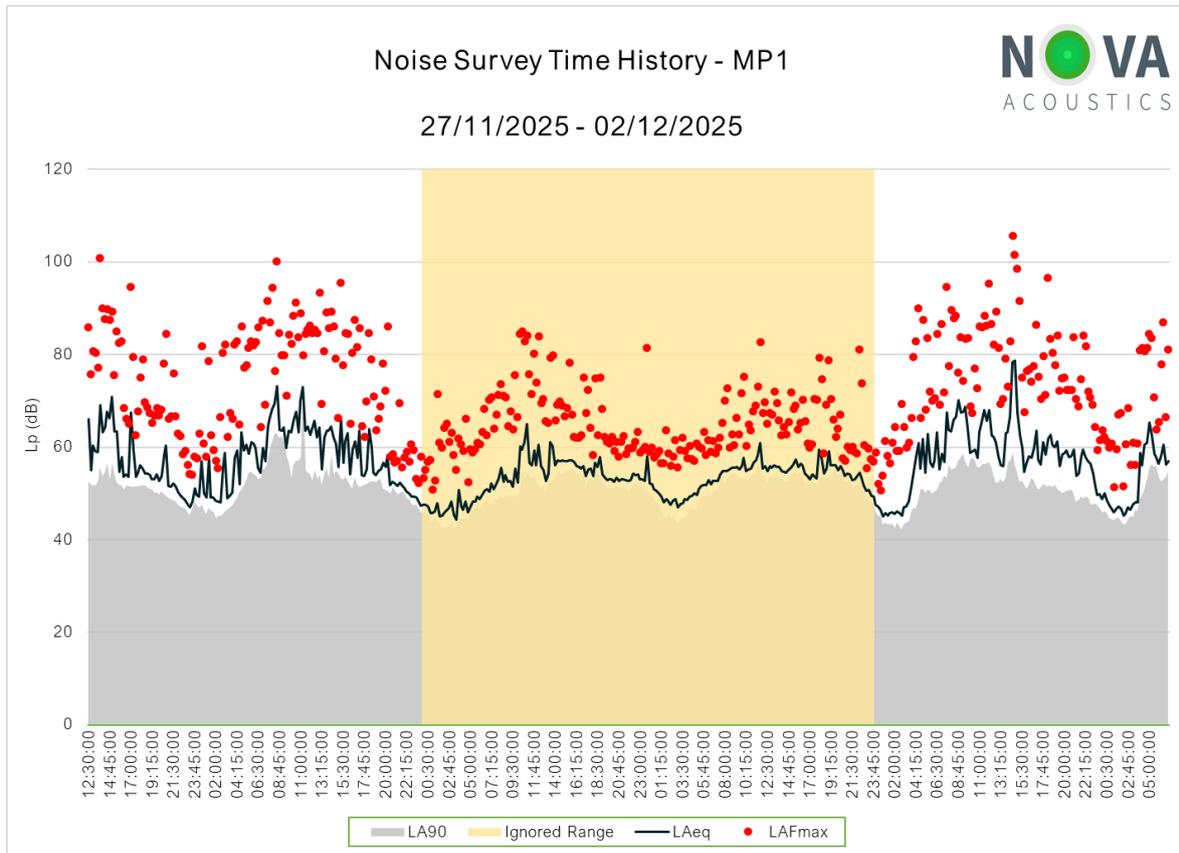


Figure 8 – MP1 Noise Survey Time History

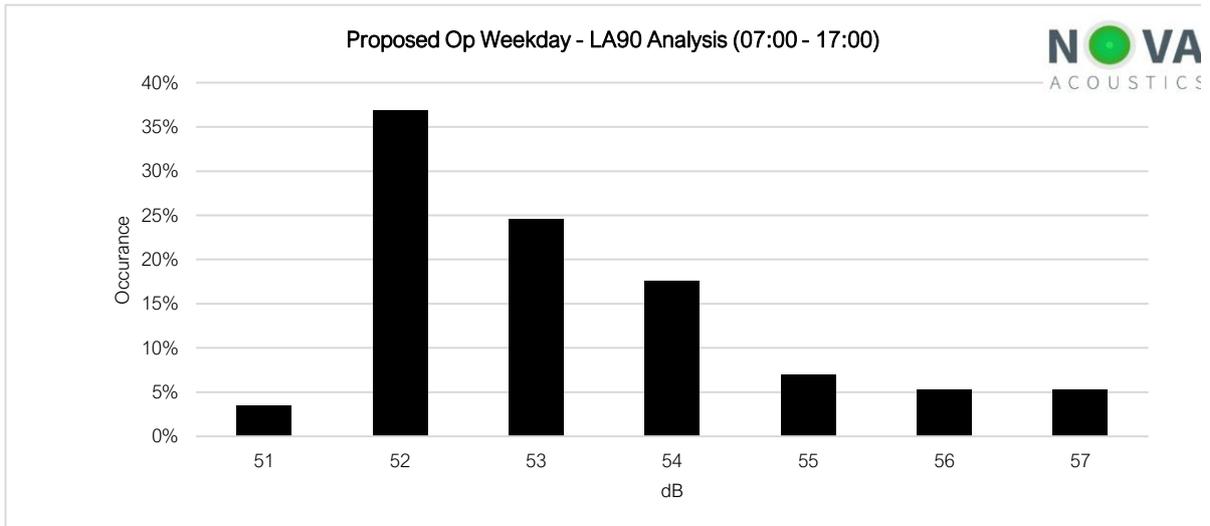
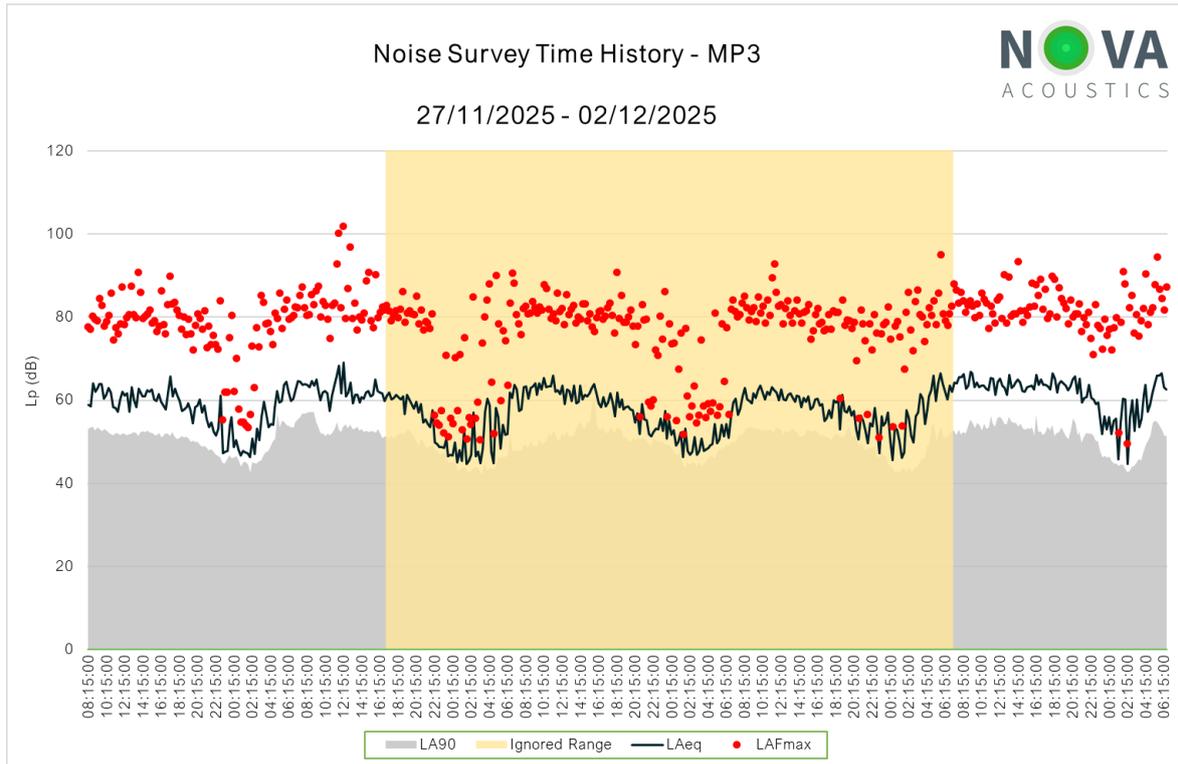


Figure 9 – MP3 Noise Survey Time History & $L_{A90,15min}$ Histograms

D.2 – Surveying Equipment

Piece of Equipment	Serial No.	Pre-Cali (dB)	Post-Cali (dB)
Svantek SV971A Class 1 Sound Level Meter	141345	94.7	94.5
Svantek SV971 Class 1 Sound Level Meter	154353	94.5	94.0
Cesva SC420 Class 1 Sound Level Meter	141425	94.2	93.8
Cesva CB011 Class 1 Calibrator	T253551	94.0	

Table 16 – Surveying Equipment

All equipment used during the survey was field calibrated at the start and end of the measurement period with a negligible deviation of ≤ 0.5 dB between the start and end of the measurements. All sound level meters are calibrated every 24 months, and all calibrators are calibrated every 12 months by a third-party calibration laboratory. All microphones were fitted with a protective windshield for the entire measurements period. Calibration certificates can be provided upon request.

D.3 – Meteorological Conditions

A David Instruments Vantage Vue weather meter was installed under free-field conditions on-site for the duration of the survey. When reviewing the time history of the noise measurements, any scenarios that were potentially affected by the local weather conditions have been omitted.

The analysis of the noise data includes statistical and percentile analysis and review of minimum and maximum values, which aids in the preclusion of any periods of undesirable weather conditions. The weather conditions were deemed suitable for the measurement of environmental noise in accordance with BS7445 Description and Measurement of Environmental Noise. The graph below presents the temperature, wind speed and rainfall range for the entire measurement period. Please note that the wind speed is presented as m/s.

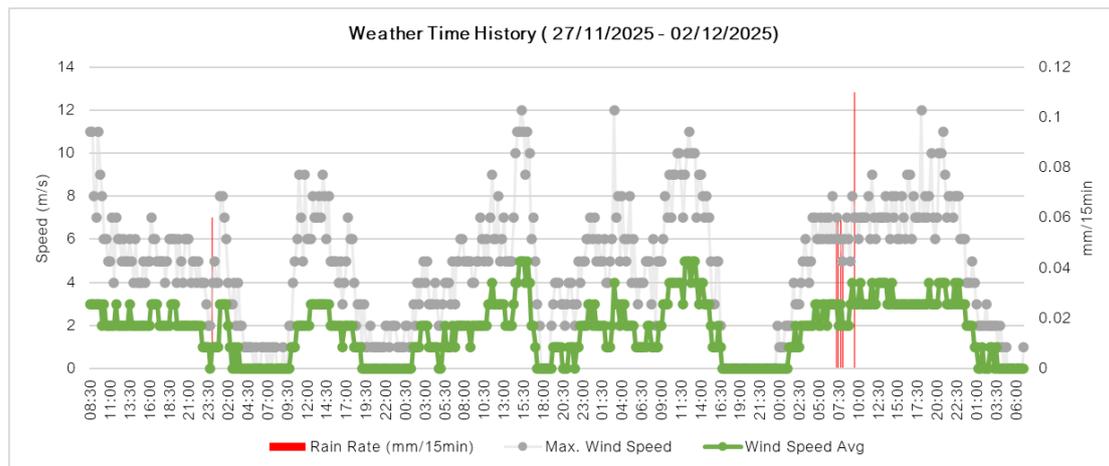


Table 17 – Survey Weather Conditions

Due to the consistency of the L_{A90} levels throughout the unattended survey, it is considered unlikely that any short-term wind gusts influenced the proposed criterion at the closest NSRs. This is further supported by the comparison of the attended measurements taken five days apart, which show that the overall L_{A90} remained stable at 51–52 dB across all three measurements.

Appendix E – On-Site Measurements

On-Site Measurements									
Description	1/1 Octave Frequency Band (Hz, dB)								Overall (dBA)
	63	125	250	500	1k	2k	4k	8k	
Mechanical Tyre Cutter - Idling @ 5m (Q Factor of 2)	82	79	72	69	67	64	59	73	75
Mechanical Tyre Cutter - Cutting @ 6.5m (Q Factor of 2)	91	88	87	84	84	83	82	83	90
Mechanical Tyre Bailer @ 5.2m (Q Factor of 8)	63	64	73	68	68	62	58	68	73
Hand Tyre Cutter - Cutting @ 4.5m (Q Factor of 8)	72	79	80	76	77	75	72	81	84
Mechanical Tyre Popper @ 3.5m (Q Factor of 8)	68	78	79	77	79	77	88	84	91
Makita Hand Tyre Cutter - Cutting @ 3.6m (Q Factor of 2)	73	84	78	81	87	85	83	91	93

Table 18 – On-Site Measurements



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