MAKING COMPLEX EASY

A TETRA TECH COMPANY

ELLETE WASTE

Noise Impact Assessment Report

794-ENV-EPC-20047
11 April 2025

rpsgroup.com

Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
00	Draft	Peter Kowalczuk Principal Consultant – Acoustics, Beng (Hons) MIOA	Richard Calvert Associate – Acoustics, BSc (Hons) MIOA	Pam Lowery Associate Director – Acoustics, MEng MSc, MIOA, PIEMA	19 February 2025
01	Amendments following comments	Peter Kowalczuk Principal Consultant – Acoustics, Beng (Hons) MIOA	Peter Kowalczuk Principal Consultant – Acoustics, Beng (Hons) MIOA	Peter Kowalczuk Principal Consultant – Acoustics, Beng (Hons) MIOA	11 April 2025

Approval for issue

Pam Lowery		11 April 2025

Prepared by:

RPS

Peter Kowalczuk
Principal Acoustic Consultant

Cathedral Buildings
Dean Street
Newcastle upon Tyne
NE1 1PJ

T +44 191 232 6306
E peter.kowalczuk1@rps.tetratech.com

Prepared for:

Ellete Waste Limited

Joe Sawrji

Contents

1 INTRODUCTION

1.1 Background

1.1.1 The Acoustics Team of RPS Environmental (RPS) has been commissioned by Ellete Waste Limited to undertake a noise impact assessment to accompany a Permit Variation Application. The development is understood to comprise a waste processing facility located to the south of Mearclough Road, Sowersby Bridge, HX6 3LF.

1.1.2 It is understood that the existing Permit EPR/NP1699ZH is to be varied to a bespoke waste activity permit that allows the treatment of waste using a Rotary Screener, and increasing the annual throughput to 100,000 tonnes/year.

1.1.3 The development is bound to the north by Mearclough Road Lane with industrial premises and the River Calder and residential dwellings beyond. To the east, the site is bordered by Fall Lane, with an existing recycling centre beyond. To the south, the site is bound by woodland and open land beyond. To the west, the site is bound by a car breaking facility, with Mearclough Road and existing industrial premises beyond. A residential premises is located approximately 215 m to the west of the development site.

1.1.4 Baseline sound levels at the site and nearby residential receptors have been measured in a noise survey carried out by TetraTech in November 2023. Details of the results of this survey have been resented and analysed in a report prepared by RPS and dated March 2024. This report is included in Appendix A of this report.

1.1.5 RPS is a member of the Association of Noise Consultants (ANC), the representative body for acoustics consultancies, having demonstrated the necessary professional and technical competence. This noise assessment has been undertaken with integrity, objectivity and honesty in accordance with the Code of Conduct of the Institute of Acoustics (IOA) and ethically, professionally and lawfully in accordance with the Code of Ethics of the ANC.

1.2 Noise Sensitive Receptors

1.2.1 The noise sensitive receptors (NSRs) located nearest to the proposed development, and therefore most likely to be affected by noise generated by the proposals, are summarised in Table 1.1 below and also shown on Figure 1 of this report.

Table 1.1: Noise Sensitive Receptors

Noise Sensitive Receptor	Noise Sensitive Receptor Address	NSR Type	Approximate Distance to Site Boundary (m)	Direction From Site
NSR1	47 Holmes Road, Sowerby Bridge, HX6 3LF	Residential	215	West
NSR2	53 Walker Lane, Sowerby Bridge, HX6 2AR	Residential	140	North

1.2.2 Residential premises, other than these identified above, could experience noise from the site, however, the NSRs are expected to be most affected by the noise from the proposed development and represent the worst-case receptor.

2 PLANNING POLICY AND GUIDANCE

2.1 Planning Policy and Guidance

2.1.1 The following planning, standards, and guidance have been used to inform the noise assessment, with full details contained in Appendix B of this report:

- National Planning Policy Framework, 2024 (NPPF);
- Noise Policy Statement for England, 2010 (NPSE);
- Planning Practice Guidance – Noise, 2019 (PPG-N);
- British Standard 4142:2014 + A1:2019 Methods for rating and assessing industrial and commercial sound (BS 4142:2014 + A1:2019);
- Environmental Agency - Method Implementation Document for BS4142, 2023 (MID); and,
- Environment Agency. Noise and vibration management: environmental permits. 2022.

3 BASELINE NOISE MONITORING

3.1 Introduction

3.1.1 TetraTech carried out a noise survey between the 9th November 2023 and 16th November 2023 to establish the existing ambient and background sound levels which are considered to be representative of the noise sensitive receptor identified in Table 1.1. It should be noted that RPS is a TetraTech company, and so the sharing of data, resources and expertise within the Tetra-Tech group is commonplace.

3.1.2 The results of the noise survey have been analysed and summarised in a noise survey report, dated March 2024 and prepared by RPS. This report is included in Appendix A.

3.2 Noise Survey Summary

3.2.1 The noise monitoring carried out by TetraTech comprised a long term monitoring location (LT1), on the northern site boundary, and 8 short term monitoring locations (ST1-8) throughout the local area. Their locations are shown on Figure 6 (LT1) and Figure 11 (ST1-8) in Appendix A.

Measured Noise Levels

3.2.2 The noise levels measured during the TetraTech noise survey in November 2023 are set out in Appendix A, and are summarised in Table 3.1 below.

Table 3.1: Summary of Measured Noise Levels

Monitoring Location	Daytime (07:00 – 23:00)		Night-time (23:00 – 07:00)	
	Residual Noise Levels (dB $L_{Aeq, 16hrs}$)	Measured Background Sound Levels (dB $L_{A90,T}$)	Residual Noise Levels (dB $L_{Aeq, 8hrs}$)	Measured Background Sound Levels (dB $L_{A90,T}$)
LT1	68	59	43	43
ST1	67	44	-	-
ST2	67	44	-	-
ST3	50	45	-	-
ST4	52	45	-	-
ST5	56	50	-	-
ST6	52	46	-	-
ST7	53	42	-	-
ST8	56	41	-	-

4 CALCULATIONS AND MODELLING

4.1 Computational Noise Model

4.1.1 In order to calculate noise impacts associated with operation of the proposed plant at NSRs, a computational noise model has been prepared in SoundPLAN v9.1 noise modelling software.

4.1.2 The model predicts sound levels under light down-wind conditions based on hemispherical sound propagation with corrections for atmospheric absorption, ground effects, screening and directivity based on the procedure detailed in ISO 9613-2:2024 'Acoustics - Attenuation of sound during propagation outdoors - Part 2: Engineering method for the prediction of sound pressure levels outdoors'.

4.1.3 Proposed site layout provided by the client has been used as the proposed site layout input into the computational noise model.

4.1.4 The proposed noise sources, used to inform the noise modelling and assessment are set out in Table 4.1 below, and shown in Figure 2 of this report.

Table 4.1: Proposed Noise Sources

Proposed Noise Source	Number of Sources	% On-Time	Source Type	Sound Power Level (dB(A))	OS Grid Reference	Reference
HGV Movements	1	6 vehicle movements an hour	Moving Point Source	107	SE 06936 23645	BS5228-1: C8.20
360 Mechanical Grab	1	100% of the operational hours	Point Source	99	SE 06942 23641	RPS Measured Data
Trommel	1	100% of the operational hours	Line Source	106	SE 06935 23630	SoundPLAN Data Library
Front Loader (Driving in Yard)	1	50% of the operational hours	Moving Point Source	104	SE 06936 23645	BS5228-1: C6.34
Front Loader (Loading Hopper Internally)	1	50% of the operational hours	Moving Point Source	103	SE 06939 23629	BS5228-1: C6.32
Hopper	1	100% of the operational hours	Point Source	106	SE 06939 23629	SoundPLAN Data Library
Converter Belt	1	100% of the operational hours	Line Source	80	SE 06930 23631	SoundPLAN Data Library

4.2 Assumptions

4.2.1 The following assumptions have been incorporated into the noise model:

- Operational hours are between 07:30 and 18:30. Therefore, no nighttime operations have been assessed.
- When operational, all noise sources are assumed to operate concurrently.
- The conservative assumption has been made that ventilation will be provided by roller shutters opening to accommodate the front loader moving in and out of the building. To represent a worst case scenario, it has been assumed that doors will be open 100% of the time during the operation of the site.

- The exact construction of the building is not known, therefore reasonable assumptions have been made regarding the construction of the walls and roof. It has been assumed that the walls will comprise an insulated corrugated panel which provides a minimum of 36 dB Rw sound attenuation, and the roof will comprise corrugated sheet steel which provides a minimum of 25 dB Rw sound attenuation.
- The majority of ground surrounding the site is a mixture of open grassland and built up areas. As such, the ground type in the model has been modelled as a mixture of both soft hard ground with the ground absorption factor set to G=0.4, with 0 being entirely reflective.
- Based on previous experience with similar sites, noise levels assumed for the proposed noise sources shown in Table 4.1 are robust assumptions for the equipment installed on site, and its acoustic performance.

4.3 Uncertainty

4.3.1 In all assessments, it is good practice to consider uncertainty which can arise from a number of different aspects. There are degrees of uncertainty associated with:

- instrumentation used for surveying;
- measurement technique and the variables influencing the measurement results such as transmission path and weather conditions; source terms used for modelling;
- calculation uncertainty;
- assessment uncertainty; and
- the subjective response of residents to noise sources.

4.3.2 Uncertainty due to instrumentation has been significantly reduced with the introduction of modern instrumentation and is reduced further by undertaking field calibration checks on sound level meters before and after each measurement period and that all instrumentation is within accepted laboratory calibration intervals.

4.3.3 Every effort has been made to reduce the uncertainty of the baseline sound level measurements. The duration of the baseline survey is considered to significantly reduce the uncertainty associated with the baseline sound levels. Based on professional judgement including substantial experience of acquiring and analysing baseline data for numerous sites in various locations, and a desk-based review of the site and surrounding area, it is considered that the baseline data acquired during the survey is typical of the area and the noise sensitive receptors.

4.3.4 Calculation uncertainty and assessment uncertainty have been reduced by peer review of all baseline data, model input data, model results and assessment calculations, and by using the appropriate level of precision at each stage of the assessment calculations.

4.3.5 A quantitative assessment has been undertaken based on source levels provided by the project team in relevant data sheets for the proposed equipment. Where assumptions have been made, they have favoured a worst-case scenario.

4.3.6 Areas and potential uncertainty have been minimised where possible at each stage of the assessment process. On the basis of the above, it is considered that uncertainty associated with the assessment process is unlikely to significantly change the conclusions of this noise impact assessment.

5 NOISE IMPACT ASSESSMENT

5.1 Introduction

5.1.1 This section reports the assessment of the potential impacts of the plant associated with the proposed development on noise sensitive receptors, with reference to the methodology contained within BS 4142:2014+A1:2019.

5.2 Identification of Specific Sound

5.2.1 As described in Section 4 of this report, computational noise modelling in SoundPLAN v9.1 has been used to predict the operational noise levels at the identified NSRs due to the Ellete Waste premises.

5.2.2 The predicted specific sound levels during the daytime period at the noise sensitive receptors are presented in Table 5.1 below.

Table 5.1: Calculated Specific Sound Levels

NSR Name	Specific Sound Level (dB L_S) Daytime (07:30 to 18:30 hours)
NSR1	45
NSR2	48

5.2.3 The specific sound levels shown in Table 5.1 were calculated at the facades of NSRs located closest to and facing the proposed development, which are worst affected by the proposed noise sources.

5.3 Identification of the Background Sound Level

5.3.1 Section 8 of BS 4142:2014+A1:2019 provides guidance on the selection of the representative background sound level to be used in the assessment. BS 4142:2014+A1:2019 states that the background sound levels used for the assessment should be representative of the period being assessed (i.e., daytime and night-time periods), and that there is no "single" background sound level.

5.3.2 Therefore, quantitative analysis of the measured sound levels is required to select the most appropriate and representative background sound levels (L_{A90}) at the identified noise sensitive receptors. While measurements at LT1 have been carried out over a long period of time (7 days), the short term measurements carried out at ST2 are considered to be measured at a location more representative of NSR1; therefore, both have been considered in Table 5.2 below.

5.3.3 ST4 is considered to be representative of NSR2 and has been used to inform the assessment. As ST2 and ST4 are short term measurements, the lowest measured background sound levels have been used to establish the representative background sound levels, which presents a worst-case assessment.

5.3.4 A summary of the representative background sound levels at NSRs is shown in Table 5.2 below.

Table 5.2: Representative Background Sound Levels at NSRs

NSR Name	Representative Monitoring Location	Representative Background Sound Level (dB $L_{A90, T}$) Daytime (07:00 to 23:00 hours)
NSR1	LT1	59
NSR1	ST2	44
NSR2	ST4	45

5.3.5 As the background sound levels measured at ST2 are lower than those measured at LT1, these have been used to carry out a worst case assessment of the industrial sound at NSR1.

5.4 Application of Weighting for Characteristics of Specific Sound

5.4.1 BS 4142:2014 + A1:2019 includes guidance on the application of additional acoustic character corrections which include tonality, impulsivity or intermittency. Where such features are present or perceptible at the assessment location characteristic corrections to the specific sound level should be added to obtain a rating level.

5.4.2 The proposed operations at the site comprise activities which may generate some tonality or impulsivity components. However, due to the distance between the site and the nearby receptor, as well as the intervening industrial premises, it is unlikely that any tonality or impulsivity characteristics from the site will be identifiable at nearby noise sensitive receptors. Therefore, no corrections for acoustic characteristics are considered to be appropriate.

5.5 BS 4142:2014 + A1:2019 Assessment

5.5.1 The results of the computational noise modelling have been assessed in accordance with BS 4142:2014+A1:2019, as outlined in Section 2 above. The rating levels at the NSRs due to the operation of the proposed development have been compared with the representative background sound levels L_{A90}, with the difference presented below Table 5.3.

Table 5.3: Initial Noise Impact Assessment

NSR	Background Sound Level, dB $L_{A90,T}$	Specific Sound Level L_S (dB)	Character Correction, dB	Rating Level, dB $L_{A,Tr}$	Rating / Background Sound Level Difference, dB
Day-time Assessment					
NSR1	44	45	0	45	**+1**
NSR2	45	48	0	48	**+3**

5.5.2 The rating levels generated by the proposed development have been compared against the representative background sound level, to establish the likelihood of an adverse impact occurring due to noise at the NSRs.

5.5.3 As shown in Table 5.3 above, the predicted rating levels at NSR1 and NSR2 are up to 1 dB and 3 dB above the representative background sound levels during the daytime respectively.

5.5.4 With reference to the guidance in BS 4142:2014+A1:2019, an adverse impact is indicated by an exceedance of the rating level above the measured background sound level of 5 dB. The results of the initial impact assessment indicate the likelihood of a **low impact** at NSR1 depending on context. This is the lowest category of impact set out in BS 4142:2014+A1:2019.

5.5.5 In addition, the assumptions made regarding the operational times of the proposed equipment are considered to be worst case. It is therefore likely that the rating levels from the operation of Ellete Waste will be lower when in-situ.

5.6 BS 4142:2014 + A1:2019 Context Assessment

5.6.1 BS4142:2014+A1:2019 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 sources exceeds the background sound level and the context in which the sound occurs"*.

5.6.2 Context may be applied to the initial assessment of impacts, see above, by considering three pertinent factors:

- The absolute sound level;

- The character and level of the residual sound compared to the character and level of the specific sound; and,
- The sensitivity of the receptor.

Absolute Level of Sound

5.6.3 To determine the first context in BS 4142:2014+A1:2019 it is necessary to determine whether the residual and background sound levels are high or low. Section 11 of BS 4142:2014+A1:2019 states:

> *"Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.*
>
> *Where residual sound levels are very high, the residual sound might itself result in adverse impacts or significant adverse impacts, and the margin by which the rating level exceeds the background might simply be an indication of the extent to which the specific sound source is likely to make those impacts worse."*

5.6.4 As shown in Table 5.3, the rating level at NSR1 is 45 dB(A) and 48 dB(A) at NSR2 during the daytime. The background sound level is 44 dB L_{A90} at NSR1 and 45 dB L_{A90} during the daytime. The background sound levels and rating levels cannot be considered as either high or low during both the daytime and night-time periods.

5.6.5 Therefore, the comparison of rating levels to the representative background sound levels, shown in Table 5.3, is considered to be an appropriate indication of the noise impact at all receptors during the daytime and night-time periods.

Character and Level of the Residual and Specific Sound

5.6.6 The residual sound at NSR1 comprises road traffic noise and noise from nearby existing industrial premises. The proposed sources of noise associated with the development are considered to comprise predominantly low-mid frequency noise associated with engines operating at the Ellete Waste facility. We are therefore of the opinion that noise from the development will be similar in character to that of the residual sound which comprises predominantly low to mid frequency noise from road traffic noise.

5.6.7 The residual sound, as shown in Table 3.2, is 68 dB(A) at NSR1 and 52 dB(A) at NSR2, and the specific sound level is 44 dB(A) at NSR1 and 45 dB(A) at NSR2, as shown in Table 5.1. Therefore, while noise from the Ellete Waste facility may occasionally be faintly audible at receptors, it is likely to be largely masked by the residual sound and the likelihood of an adverse noise impact will be reduced further.

5.6.8 In addition to the above, the calculated specific noise levels generated by the proposed operations are based on worst-case assumptions. It is likely that the operation of the equipment will be less in-situ. This is therefore likely to reduce the rating levels at receptors indicated in Table 5.3 and the likelihood of impact.

5.6.9 Therefore, it is considered that noise from the proposed development will not be readily distinguishable from the existing acoustic environment. It is also considered likely that noise associated with the proposed development will be inaudible over the residual sound level at NSRs, which is thought to further reduce any noise impacts caused by the development, on NSRs.

Sensitivity of Receptor

5.6.10 With regard to pertinent factors to be taken into consideration, Section 11 of BS 4142:2014+A1:2019 states:

> *"The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal design and/or outdoor acoustic conditions, such as:*
>
> *i. Façade insulate treatment;*

ii. *Ventilation and/or cooling that will reduce the need to have windows open as to provide rapid or purge ventilation; and*

iii. *Acoustic screening."*

5.6.11 As the glazing and ventilation strategy for existing NSRs is not known, it has been assumed that the NSRs will rely on open windows to maintain sufficient background ventilation. In accordance with guidance contained in AVO, it is generally agreed that an open window provides 13 dB(A) of attenuation, therefore, this allows for a robust assessment of noise levels at receptors.

5.6.12 As the rating levels at noise sensitive receptors are below the measured residual sound levels, noise levels within sensitive receptors will not experience a perceptible increase in noise levels internally as a result of the proposed development.

5.6.13 Also, when considering sound from the development in isolation, and the attenuation of sound through an open window, then the specific sound would be less than the daytime internal noise guideline levels set out in BS8233:2014, when considered within all NSRs.

5.6.14 No specific mitigation measures are therefore considered to be necessary to protect receptors from industrial noise arising from the proposed development.

BS 4142:2014 + A1:2019 Assessment Summary

5.6.15 A BS 4142:2014+A1:2019 assessment has been undertaken to assess the potential noise impacts due to the operation of Ellete Waste facility, at nearby existing noise sensitive receptors.

5.6.16 Following an initial assessment of the noise impacts, the rating levels predicted at the NSR1 are shown to exceed the background sound levels by up to 1 dB. However, as the exceedance is below 5 dB, the proposed development is considered unlikely to give rise to adverse impacts.

5.6.17 Further, when the context assessment carried out for the proposed development is considered, it is shown that the actual impact at receptors will likely be lower than that indicated in Table 5.3. Therefore, it has been concluded that the proposed development will generate a **low impact** at all noise sensitive receptors, when considered in context. This is the lowest category stated in BS 4142:2014+A1:2019.

5.6.18 The assessment has shown that specific mitigation measures will not be required to reduce noise levels from the proposed development at nearby noise sensitive receptors.

5.6.19 With regards to national planning policy, it is considered that the results of the assessment demonstrate that the Ellete Waste facility will not result in an adverse impact to amenity at the nearby receptors.

5.6.20 It is therefore considered that the development is compliant with the requirements of the Noise Policy Statement for England (NPSE), the National Planning Policy Framework (NPPF) and is below the Lowest Observable Adverse Effect Level (LOAEL) as set out in Planning Practice Guidance on Noise (PPG-N).

6 CONCLUSION

6.1.1 The results of the noise impact assessment for the Ellete Waste facility indicate that the predicted specific sound levels during daytime operations are only slightly above the representative background sound levels at the nearest noise sensitive receptors (NSRs), suggesting a low impact depending on context.

6.1.2 Baseline noise levels were established through a comprehensive noise survey conducted by TetraTech from 9th to 16th November 2023. The results of this survey were utilised to define the representative ambient and background noise conditions at the nearest noise sensitive receptor (NSR), specifically NSR 1. The findings of the TetraTech noise survey are set out in Appendix A of this report.

6.1.3 The assessment demonstrates that the proposed operation of the Ellete Waste facility is unlikely to result in adverse impacts on residential amenity, with no significant adverse effects anticipated. The predicted noise levels are within acceptable limits as defined by the relevant standards.

6.1.4 Contextual factors, including the existing noise environment and characteristics of the proposed operations, have been considered, confirming that the noise from the facility will likely be indistinguishable from ambient noise levels, thus avoiding significant adverse impacts.

6.1.5 Noise emissions from the Ellete Waste facility are not expected to reach levels that would cause reasonable annoyance, ensuring a high level of protection for the environment and surrounding community.

APPENDICES

Appendix A – Noise Survey Report

1 INTRODUCTION

Noise monitoring carried out by Tetra Tech is set out in this appendix. The noise monitoring has been carried out to establish the existing baseline environment at nearby noise sensitive receptors. The location of the site is within an industrial area:

Ellete Waste Limited

Mearclough Road

Sowerby Bridge

Halifax

HX6 3LF.

1.1 Site Location

The Proposed Development is located on lands at Ellete Waste Limited, Mearclough Road, Sowerby Bridge, Halifax, HX6 3LF, as illustrated in **Figure 1** below.

Figure 1: Proposed Site Location

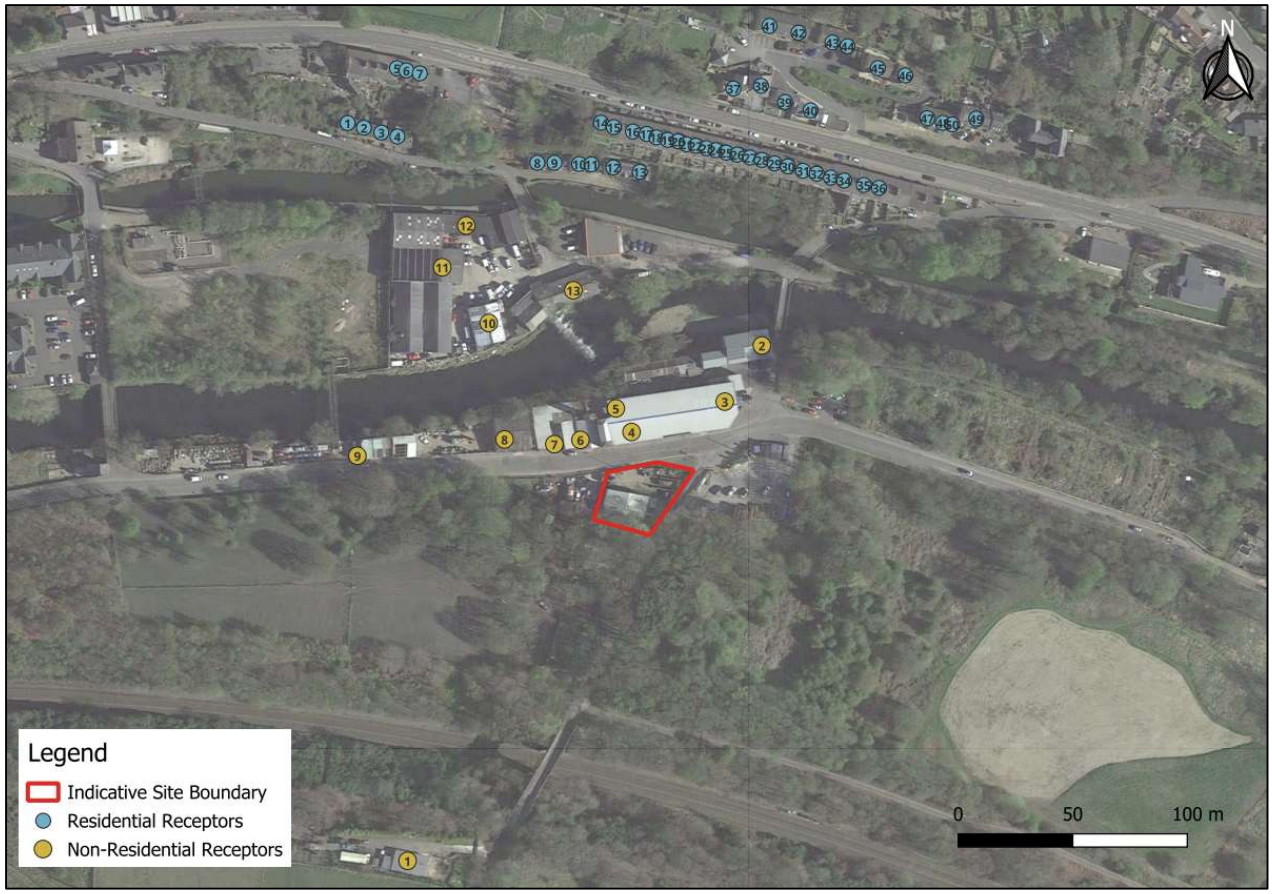
Existing Environment

South of this Proposed Development is predominately agricultural land use with sporadic residential housing. North of the site is a few commercial buildings such as Jacksons Gates and Railings, SARZ Breakers, Flowhire and K2 Autos. Further north is the river Calder and residential housing located on Wakefield Road and surrounding road networks.

Noise Sensitive Receptors

The proposed development resides in close proximity to residential areas, with Figure 2 illustrating the closest noise sensitive receptors within 200m.

Figure 2: Noise Sensitive Receptors



Details of all the existing receptor locations within 200m can be found in Section 5 of this Appendix.

2 METHODOLOGY

2.1 Noise Guidance

The noise impact assessment has considered the following relevant guidance documents:

- British Standard BS4142:2014 Methods for Rating and Assessing Industrial and Commercial Sound; and,
- British Standard BS 7445-1 Description and measurement of environmental noise – Part 1: Guide to quantities and procedures (BS, 7445-1).

British Standard BS4142:2014+A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound

BS 4142:2014 + A1:2019 describes methods for rating and assessing sound of an industrial and/or commercial nature, which includes:

- sound from industrial and manufacturing processes;
- sound from fixed installations which comprise mechanical and electrical plant and equipment;
- sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and
- sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and/or commercial site.

BS 4142 also provides procedures in determining if the noise in question is likely to give rise to complaints from residents in the vicinity.

BS 4142 states that one should 'obtain an initial estimate of the impact of the specific sound by subtracting the measured background sound level from the rating level and consider the following:

a. Typically, the greater this difference, the greater the magnitude of the impact.
b. A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
c. A difference of around + 5 dB is likely to be an indication of an adverse impact, depending on the context.
d. 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 low impact, depending on the context.

The aforementioned rating level is based upon the specific noise level of the noise source in question. A correction should be applied to the specific noise level to obtain an increased rating level if 'a tone, impulse or other characteristic occurs, or is expected to be present, for new or modified sound sources.

To summarise, BS4142 section 9.2 advises the following regarding corrections for acoustic characteristics:

- Tonality – for sound ranging from not tonal to prominently tonal the Joint Nordic Method gives a correction of between 0 dB and +6 dB for tonality. Subjectively, this can be converted to a penalty of 2 dB for a tone which is just perceptible at the noise sensitive receptor, 4 dB where it is clearly perceptible and 6 dB where it is highly perceptible.
- Impulsivity – A correction of up to +9 dB can be applied for sound that is highly impulsive, considering both the rapidity of the change in sound level and the overall change in sound level., Subjectively, this can be

converted to a penalty of 3 dB for impulsivity which is just perceptible at the noise sensitive receptor, 6 dB where it is clearly perceptible, and 9 dB where it is highly perceptible.

- Other sound characteristics – Where the specific sound features characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied.
- Intermittency – When the specific sound has identifiable on/off conditions, if the intermittency is readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied.

British Standard BS 7445-1:2003 Description and Measurement of Environmental Noise – Part 1: Guide to Quantities and Procedures (BS, 7445-1)

British Standard BS7445 provides the framework within which environmental noise should be quantified. BS 7445: Part 1 provides guidance to quantities and procedures in relation to environmental noise monitoring. BS7445-1 states that sound level meters that are used should conform to specifications of Class or Type 1 (or Class or Type 2 as a minimum) as given in BESN 61672.

The Class of a noise level meter describes its accuracy as defined by the relevant international standards. Sound level meters are defined by International Standards such as IEC 61672-1:2013 (or BS EN61672-1:2003). These standards define a wide range of complex accuracy, performance, and calibration criteria that instruments must meet to be fit for purpose. Within the Standard, there are two allowable levels of tolerance, and these are known as Class 1 and Class 2. Class 1 is more accurate than Class 2.

These Class 1 and Class 2 tolerances are necessary as a way of dealing with variations in the instruments. The variations are caused by the different electronic components used inside the sound level meters and because of the way different meters have been designed and verified. Even the test equipment used to check the sound level meters during manufacture will introduce some variation.

All equipment shall be calibrated and the configuration for calibration shall be in accordance with the manufacturer's instructions. A comprehensive recalibration at certain time intervals (for example annually) may be prescribed by authorities responsible for the use of the measurement results. A field check shall be made by the user at least before and after each series of measurements, preferably including an acoustic check of the microphone.

Meteorological conditions are not prescribed but it is recommended that wind speed should not exceed 5 m/s at height of 3-11m above ground, any temperature inversions near ground, or heavy precipitation.

3 BASELINE NOISE MONITORING SURVEY

Long term and short-term noise monitoring was undertaken to include:

- Long term background noise monitoring at noise monitoring location LT1 from the 9th November 2023 – 16th November 2023.
- Short term noise monitoring was undertaken at ST1- 8 completed on the 28th October 2023 to 29th October 2023.

3.1 Noise Monitoring Methodology

The long-term baseline noise monitoring survey was carried out using a Rion NL-52 Sound Level Analyser in conjunction with the following:

The sound level meter specifications from the noise survey equipment are detailed in Table 3.1.

Table 3.1: Rion NL-52 Noise Instrument Records

Equipment	Model / Type	Serial Number	Calibration Certificate Number	Last Calibration Date
Sound Level Meter	Rion NL-52	00620858	TCRT23/1678	25/09/20203
Preamplifier	Rion NH-25	20918	TCRT23/1678	25/09/20203
Microphone	Rion UC-59	15094	TCRT23/1678	25/09/20203
Calibrator	Rion NC-75	35270131	TCRT23/1678	25/09/20203

The short-term baseline noise monitoring survey at NML 1 was carried out using a Rion NL-52 Sound Level Analyser in conjunction with the following:

The sound level meter specifications from the noise survey equipment are detailed in Table 3.2.

Table 3.2: Rion NL-52 Noise Instrument Records

Norsonic NL-52 Sound Level Meter				
Equipment	**Model / Type**	**Serial Number**	**Calibration Certificate Number**	**Last Calibration Date**
Sound Level Meter	Rion NL-52	00219905	TCRT23/1400	26/05/2023
Preamplifier	Rion NH-25	00421	TCRT23/1400	26/05/2023
Microphone	Rion UC-59	18767	TCRT23/1400	26/05/2023
Calibrator	Rion NC-74	34536109	TCRT23/1400	26/05/2023

The short-term baseline noise monitoring survey was carried out using a Norsonic 140 Sound Level Analyser in conjunction with the following:

The sound level meter specifications from the noise survey equipment are detailed in Table 3.3.

Table 3.3: Norsonic 140 Noise Instrument Records

Norsonic NL-52 Sound Level Meter				
Equipment	**Model / Type**	**Serial Number**	**Calibration Certificate Number**	**Last Calibration Date**
Sound Level Meter	Norsonic 240	1402989	41264	21/06/2022
Preamplifier	Norsonic 1209	12304	41264	21/06/2022
Microphone	Norsonic 1225	91812	41264	21/06/2022
Calibrator	Norsonic 1251	31043	41264	21/06/2022

The calibration certificates and sound level meter specifications from the noise survey equipment are detailed in **Appendix A**. The noise monitoring instrumentation conforms to the requirements for integrating averaging sound level meters (Type 1) as specified in BS EN 60804. The sound level meter was accurately calibrated before and after use.

The microphone was placed at a height of 1.2 - 1.5m above ground level. The sound level meter was accurately calibrated before and after use with no drift observed. Photographs of the sound level meter and their locations can be found in **Appendix C**.

The following acoustic parameters were recorded during the survey periods:

L_{Aeq}	The continuous equivalent A-weighted sound pressure level. This is an "average" of the sound pressure level.
L_{Amax}	This is the maximum A-weighed sound level measured during the sample period.
L_{Amin}	This is the minimum A-weighted sound level measured during the sample period.
L_{A10}	This is the A-weighted sound level that is exceeded for noise for 10% of the sample period.
L_{A90}	This is the A-weighted sound level that is exceeded for 90% of the sample period.

3.2 Long Term Noise Monitoring Survey

Long term noise monitoring surveys was taken at one location to determine existing background levels of the site and representative of the existing noise environment.

The long-term noise monitoring was undertaken to include daytime and night-time periods from 9th November 2023 – 16th November 2023.

Figure 3 below shows the location of the long term LT1.

Figure 3: Unattended Noise Monitoring Location

3.3 Long Term Noise Monitoring Results and Analysis

Recorded noise data from LT1 was analysed and visualised using RPS in house software. The software is written in Python and uses advanced statistical and visualisation libraries.

The approach to analysing the recorded noise data involved compiling all observations into a single dataset for the noise monitoring location using their respective time stamps before reading into the software.

The main steps the software takes are described below:

- Total precipitation and average wind speed are used to remove instances of noise data where total precipitation, or the average wind speed exceeded 0mm and 5m/s respectively;
- Before any further analysis, all monitoring data is visualised, and any dubious records are highlighted and removed.
- Data was divided into 2 sets daytime (07:00 – 23:00hrs) and night-time (23:00- 07:00hrs)
- For day and night-time periods, the noise monitoring parameter distributions were plotted for L_{Aeq} and L_{A90}.

Daytime and night-time frequency distribution graphs were plotted for the noise monitoring results including L_{A90} and L_{Aeq}.

Long Term Noise Monitoring Location 1

The long-term noise monitoring was undertaken to include daytime and night-time periods from 9th November 2023 – 16th November 2023, recording night time and daytime noise data, in 15-minute intervals. LT1 was located within the proposed development boundary and adjacent to the Mearclough Road, as shown in Figure 3

The complete noise and weather data undertaken at LT1 are detailed below in Figure 4-Figure 5.

LT1 Subjective Survey Notes

The dominant noise source was road traffic noise from Mearclough Road and surrounding road network.

Figure 4: Long Term Noise Monitoring Results at LT1 (09/11/2023 - 16/11/2023)

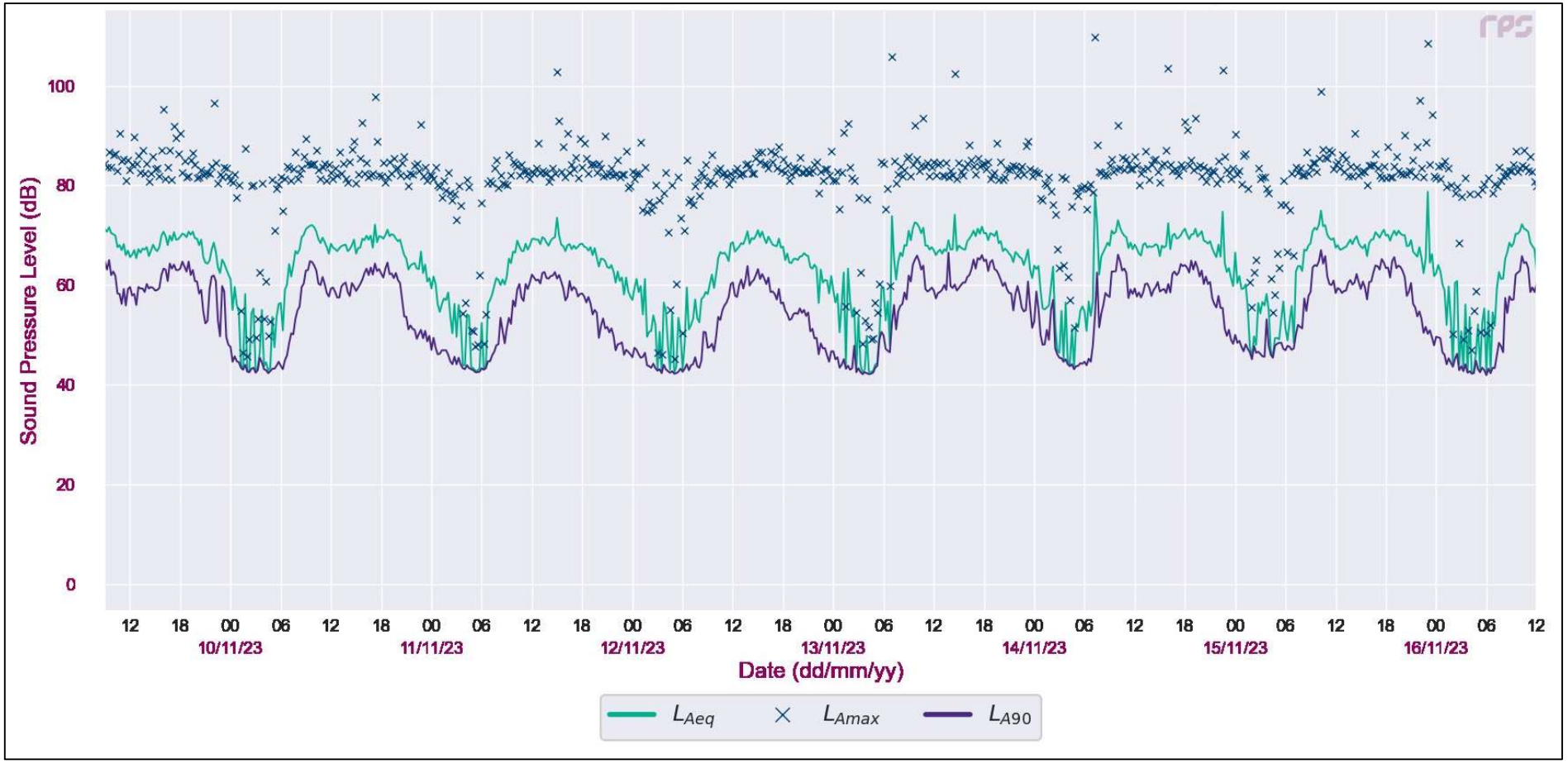
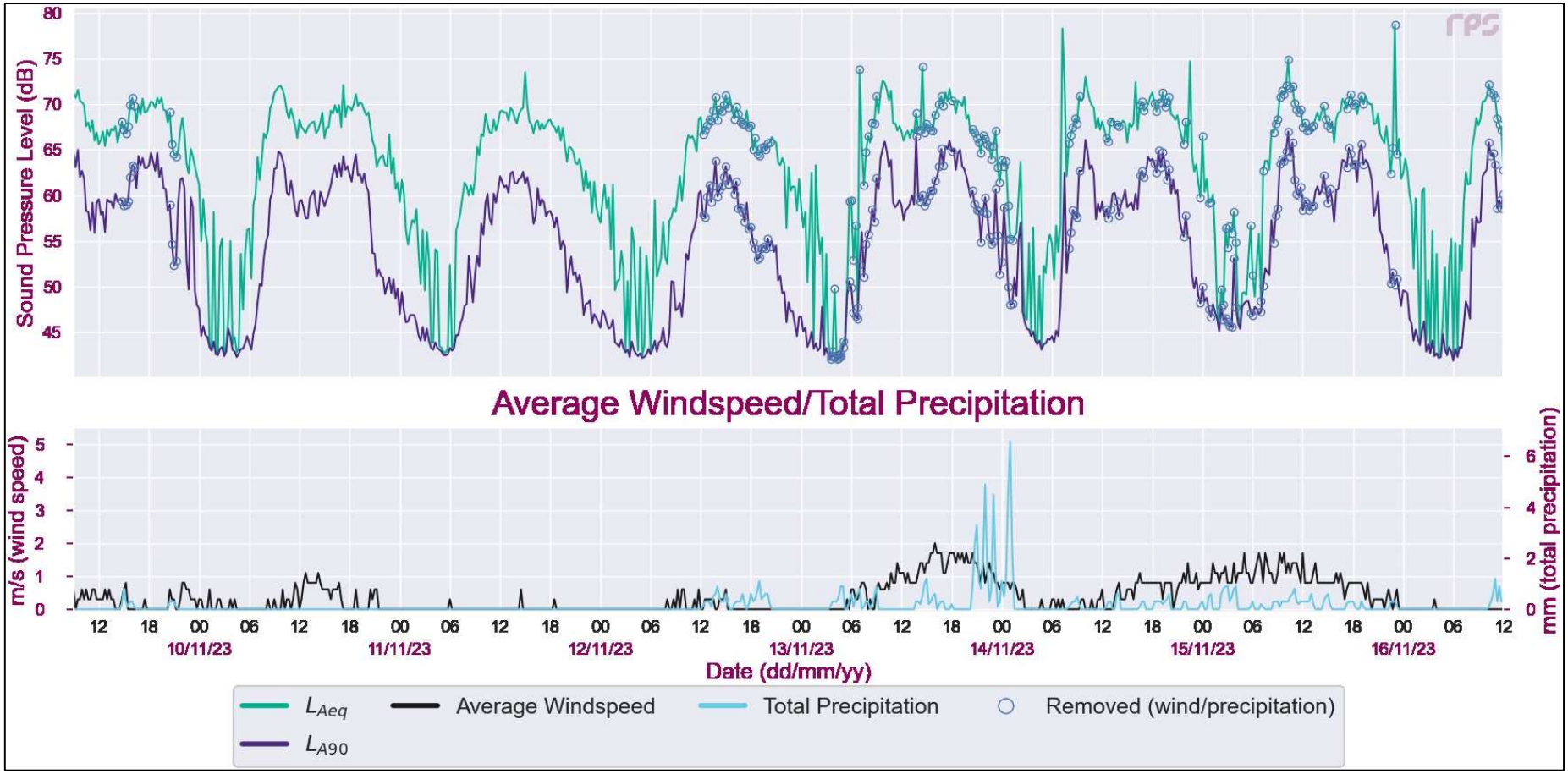


Figure 5: Long Term Noise and Weather Monitoring Results at NML 1 (09/11/2023 - 16/11/2023)



Frequency Data Analysis: L_{Aeq} and L_{A90} Results

Long Term Noise Monitoring Location 1

Daytime and night-time frequency distribution graphs were plotted L_{A90} and L_{Aeq} for the unattended noise monitoring survey. The graphical displays of the analysis undertaken is detailed below in Figure 6 - Figure 7.

The daytime data analysis for L_{Aeq} and L_{A90} were calculated to hourly averages; the night-time data remained as 15-minute interval averages.

Figure 6: Long Term Daytime Histogram L_{Aeq},1 hr and L_{A90}, 1hr Results LT1 (09/11/2023 - 16/11/2023)

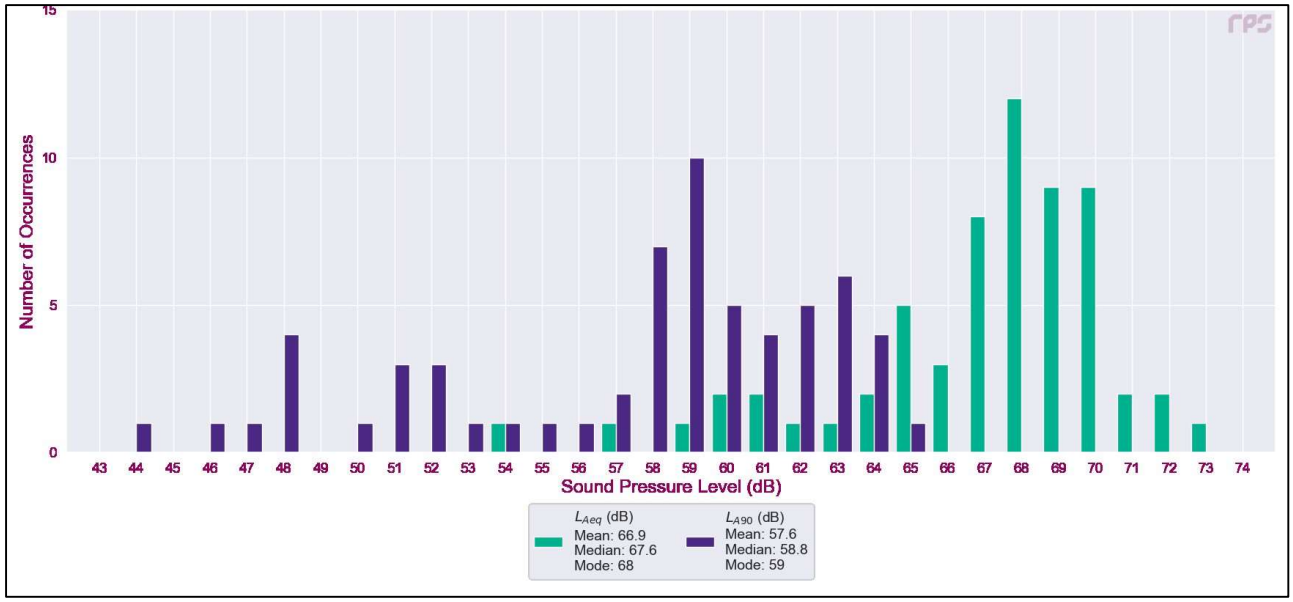
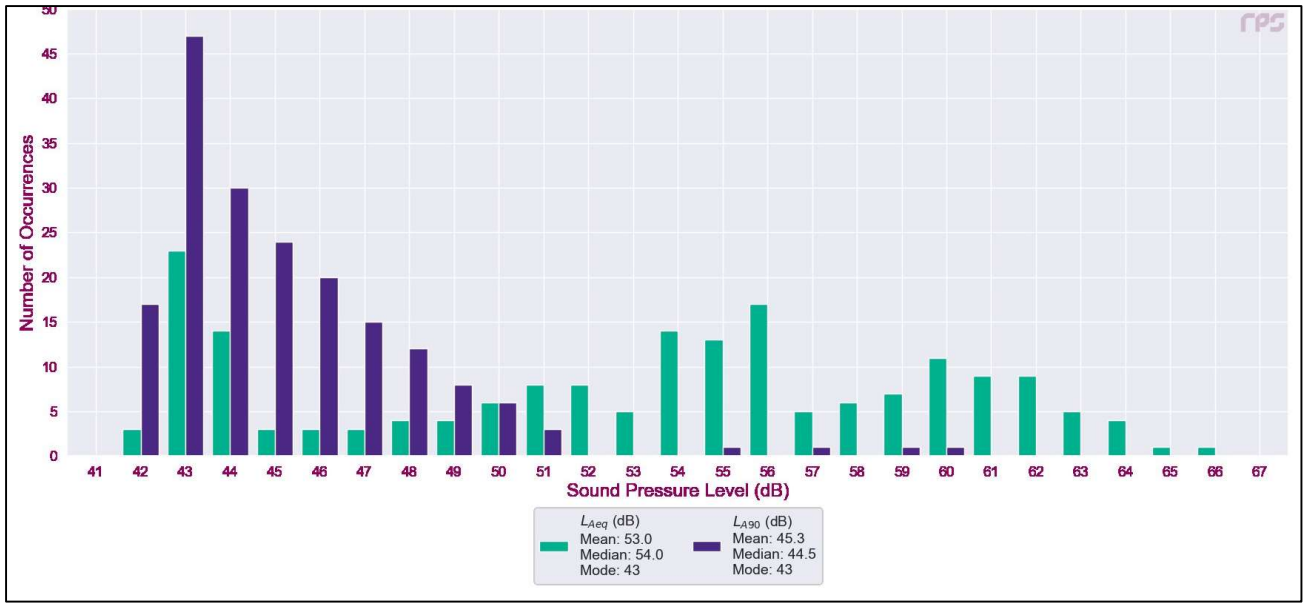


Figure 7: Long Term Night-time Histogram L_{Aeq},1 hr and L_{A90}, 1hr Results LT1 (09/11/2023 - 16/11/2023)



Long Term Noise Survey Analysis

The long-term typical background noise levels in accordance with BS 4142 for each analysis completed are summarised below in Table 3.4 including statistical analysis L_{A90} noise levels.

Table 3.4: Long Term Typical Daytime and Night-time L_{A90} and L_{Aeq} Noise Levels at LT1 (09/11/2023 - 16/11/2023)

Datasets	L_{A90} Analysis		L_{Aeq} Analysis	
	Daytime dB	Night-time dB	Daytime dB	Night-time dB
LT1	59	43	68	43

3.4 Short Term Noise Monitoring Survey

The short-term noise monitoring was undertaken at ST1- 8 completed on the 28th of October 2023 to 29th October 2023. Figure 8 below shows the location of ST1 – 8.

Figure 8: Attended Noise monitoring Locations (ST1 – 8)

3.5 Short Term Noise Monitoring Results

Short Term Noise Monitoring Location 1

Daytime noise monitoring was completed for ST1 was undertaken on 28th October 2023 to 29th October 2023. The recorded noise levels are detailed in Table 3.5 below.

Subjective observations were recorded during each survey period. The dominant noise source at T1 was road traffic noise from surrounding road networks. At approximately 16:07 hrs a loud car engine was audible at ST1.

Table 3.5: Daytime Short Term Noise Monitoring Results ST1

First measurement	Last measurement	L_{Aeq}	L_{AMax}	L_{Amin}	L_{A10}	L_{A90}
08:09	08:26	65.8	88.5	42.2	67.5	44.1
11:39	11:55	68.9	86.4	44.0	72.7	52.7
10:01	10:17	64.1	81.3	42.2	67.5	44.9
16:01	16:16	67.0	86.8	45.9	70.7	51.9

Short Term Noise Monitoring Location 2

Daytime noise monitoring was completed for ST2 was undertaken on 28th October 2023 to 29th October 2023. The recorded noise levels are detailed in Table 3.6 below.

Subjective observations were recorded during each survey period. The dominant noise source at ST2 was road traffic noise from surrounding road networks and bird song. At approximately 09:22 hrs a faint siren and dog barking is audible at ST2.

Table 3.6: Daytime Short Term Noise Monitoring Results ST2

First measurement	Last measurement	L_{Aeq}	L_{AMax}	L_{Amin}	L_{A10}	L_{A90}
09:33	09:48	61.9	78.1	41.0	66.3	44.4
12:55	13:11	64.1	81.4	42.5	69.3	44.9
11:09	11:24	69.0	83.9	42.1	74.2	46.2
14:08	14:23	69.4	83.8	39.5	75.0	43.7

Short Term Noise Monitoring Location 3

Daytime noise monitoring was completed for ST3 was undertaken on 28th October 2023 to 29th October 2023. The recorded noise levels are detailed in Table 3.7 below.

Subjective observations were recorded during each survey period. The dominant noise source at ST3 was road traffic noise from surrounding road networks.

Table 3.7: Daytime Short Term Noise Monitoring Results ST3

First measurement	Last measurement	L_{Aeq}	L_{AMax}	L_{Amin}	L_{A10}	L_{A90}
09:51	10:07	50.1	63.2	43.9	52.7	46.6
13:13	13:29	49.9	60.7	44.0	52.6	46.2
11:26	11:41	48.8	61.6	40.4	51.7	44.5
14:26	14:41	50.0	70.5	41.7	52.5	45.2

Short Term Noise Monitoring Location 4

Daytime noise monitoring was completed for ST4 was undertaken on 28th October 2023 to 29th October 2023. The recorded noise levels are detailed in Table 3.8 below.

Subjective observations were recorded during each survey period. The dominant noise source at T4 was road traffic noise from surrounding road networks.

Table 3.8: Daytime Short Term Noise Monitoring Results ST4

First measurement	Last measurement	L_{Aeq}	L_{AMax}	L_{Amin}	L_{A10}	L_{A90}
10:15	10:31	52.6	71.7	44.9	52.5	46.6
13:39	13:56	53.0	71.4	45.0	52.5	47.1
11:47	12:02	49.4	66.9	43.5	51.0	45.5
14:52	15:07	51.8	73.2	43.1	52.6	44.6

Short Term Noise Monitoring Location 5

Daytime noise monitoring was completed for ST5 was undertaken on 28th October 2023 to 29th October 2023. The recorded noise levels are detailed in Table 3.9 below.

Subjective observations were recorded during each survey period. The dominant noise source at ST5 was road traffic noise from surrounding road networks.

Table 3.9: Daytime Short Term Noise Monitoring Results ST5

First measurement	Last measurement	L_{Aeq}	L_{AMax}	L_{Amin}	L_{A10}	L_{A90}
10:38	10:53	56.6	73.7	51.2	57.7	52.6
14:00	14:16	58.1	82.4	51.4	59.2	52.9
12:07	12:22	53.7	67.4	49.5	55.7	50.8
15:10	15:25	53.0	67.6	49.1	54.8	50.4

Short Term Noise Monitoring Location 6

Daytime noise monitoring was completed for ST6 was undertaken on 28th October 2023 to 29th October 2023. The recorded noise levels are detailed in Table 3.10 below.

Subjective observations were recorded during each survey period. The dominant noise source at ST6 was road traffic noise from surrounding road networks.

Table 3.10: Daytime Short Term Noise Monitoring Results ST6

First measurement	Last measurement	L_{Aeq}	L_{AMax}	L_{Amin}	L_{A10}	L_{A90}
11:05	11:22	50.3	64.3	41.1	52.7	46.5
14:22	14:40	52.1	76.7	40.0	52.7	46.1
12:28	12:43	50.6	69.1	42.8	52.7	46.5
15:32	15:48	54.2	70.8	48.0	56.5	50.9

Short Term Noise Monitoring Location 7

Daytime noise monitoring was completed for ST7 was undertaken on 28th October 2023 to 29th October 2023. The recorded noise levels are detailed in Table 3.11 below.

Subjective observations were recorded during each survey period. The dominant noise source at ST7 was road traffic noise from surrounding road networks.

Table 3.11: Daytime Short Term Noise Monitoring Results ST7

First measurement	Last measurement	L_{Aeq}	L_{AMax}	L_{Amin}	L_{A10}	L_{A90}
09:04	09:20	53.7	76.7	41.4	50.4	43.8
12:24	12:43	53.6	73.9	44.1	54.4	46.1
10:41	10:58	50.8	74.6	40.1	49.0	41.8
13:42	13:57	52.8	73.7	40.3	52.2	43.0

Short Term Noise Monitoring Location 8

Daytime noise monitoring was completed for ST8 was undertaken on 28th October 2023 to 29th October 2023. The recorded noise levels are detailed in Table 3.12 below.

Subjective observations were recorded during each survey period. The dominant noise source at ST8 was road traffic noise from surrounding road networks.

Table 3.12: Daytime Short Term Noise Monitoring Results ST8

First measurement	Last measurement	L_{Aeq}	L_{AMax}	L_{Amin}	L_{A10}	L_{A90}
08:42	08:59	57.8	81.4	41.1	54.1	43.2
12:03	12:19	54.8	75.2	42.3	50.3	44.6
10:21	10:37	54.2	77.3	38.7	48.7	40.7
13:23	13:38	56.8	80.1	40.5	52.7	43.3

4 CALIBRATION CERTIFICATES

Figure 9: Calibration Certificate of Rion NL-52

MEASUREMENT SYSTEMS

CERTIFICATE OF CALIBRATION

Date of Issue: 25 September 2023

Certificate Number: TCRT23/1678

Issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Approved Signatory

K. Mistry

Customer	Tetra Tech 4th Floor No1 Great Central Square Vaughan Way Leicester LE1 4JS			
Order No.	7012904			
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator			
Identification	*Manufacturer*	*Instrument*	*Type*	*Serial No. / Version*
	Rion	Sound Level Meter	NL-52	00620858
	Rion	Firmware		2.0
	Rion	Pre Amplifier	NH-25	20918
	Rion	Microphone	UC-59	15094
	Rion	Calibrator	NC-75	35270131
		Calibrator adaptor type if applicable		NC-75-022
Performance Class	1			
Test Procedure	TP 2.SLM 61672-3 TPS-49 *Procedures from IEC 61672-3:2006 were used to perform the periodic tests.*			
Type Approved to IEC 61672-1:2002	YES	Approval Number	21.21 / 13.02	
	If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2003			
Date Received	22 September 2023	ANV Job No.	TRAC23/09424	
Date Calibrated	25 September 2023			

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2:2003, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2002.

Previous Certificate	*Dated*	*Certificate No.*	*Laboratory*
	20 September 2021	TCRT21/1654	ANV Measurement Systems

Figure 10: Calibration Certificate of Rion NL-52

MEASUREMENT SYSTEMS

CERTIFICATE OF CALIBRATION

Date of Issue: 26 May 2023

Certificate Number: TCRT23/1400

Issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Approved Signatory

K. Mistry

Customer: Tetra Tech
4th Floor
No. 1 Central Square
Vaughan Way
Leicester
LE1 4JS

Order No. 7011194

Description: Sound Level Meter / Pre-amp / Microphone / Associated Calibrator

Identification:

Manufacturer	*Instrument*	*Type*	*Serial No. / Version*
Rion	Sound Level Meter	NL-52	00219905
Rion	Firmware		2.0
Rion	Pre Amplifier	NH-25	00421
Rion	Microphone	UC-59	18767
Rion	Calibrator	NC-74	34536109
	Calibrator adaptor type if applicable		NC-74-002

Performance Class: 1

Test Procedure: TP 10. SLM 61672-3:2013
Procedures from IEC 61672-3:2013 were used to perform the periodic tests.

Type Approved to IEC 61672-1:2013: Yes
If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2013

Date Received: 25 May 2023 ANV Job No. TRAC23/05241

Date Calibrated: 26 May 2023

The sound level meter submitted for testing has successfully completed the periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. As evidence was publicly available, from an independent testing organisation responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 specifications of IEC 61672-1:2013.

Previous Certificate	*Dated*	*Certificate No.*	*Laboratory*
	Initial Calibration		

Figure 11: Calibration Certificate of Norsonic 140

Laboratory Location

Campbell Associates Ltd
5b Chelmsford Road Industrial Estate
GREAT DUNMOW, Essex, GB-CM6 1HD
Phone 01371 871030

CALIBRATION

Certificate of Calibration and Conformance

Certificate number: **41264**

Test Object: **Sound Level Meter, BS EN IEC 61672-1:2003 Class 1**

Producer: **Norsonic AS.**
Type: **140**
Serial number: **1402989**
Customer: **Tetra Tech Group Limited**
Address: **Leicester Office, Executive Park, Avalon Way Anstey Leicester, LE7 7GR**
Contact Person: **Richard Barraclough**
Order No: **7006603**

Introduction:
Calibration has been performed as set out in CA Technical Procedures which are based on the procedures for periodic verification of sound level meters as per the **Test Object** listed above. Results and conformance statement are overleaf and detailed results, where appropriate, are provided in the attached Measurement Report.

Tested:	*Producer*	*Type*	*Serial No*	*Certificate No*
Microphone	Norsonic	1225	91812	41263
Calibrator*	Norsonic	1251	31043	41262
Preamplifier	Norsonic	1209	12304	Included

* The calibrator was complete with any required coupler for the microphone specified.

Additional items that have also been submitted for verification:

Wind shield	Norsonic	Nor1451 (ø 60mm)
Attenuator	N/A	
Extension cable	N/A	

These items have been taken into account wherever appropriate.

Instruction Manual: Im140_1Ed8R0En Firmware Version: 2.1.670 The test object is a single channel instrument.

Conditions	*Pressure kPa*	*Temperature °C*	*Humidity %RH*
Reference conditions	101.325	23	50
Measurement conditions	101.19 ±0.03	22.23 ±0.25	43.30 ±1.7

Calibration Dates:

Received date:	01/06/2022	Reviewed date:	21/06/2022
Calibration date:	10/06/2022	Issued date:	21/06/2022

Technicians: (Electronic certificate)

Calibrated by: *Katie Brown*

Reviewed by: *Jenny Crawford*

This certificate is issued in accordance with the CA Quality Management system. It provides traceability of measurement to recognized national standards, and to the units of measurement realized at the National Physical Laboratory or other recognized national standards laboratories. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

5 NOISE SENSITIVE RECEPTORS

Table 5.1: Residential Receptors within 200m of the Proposed Development

Receptor ID	Eastings	Northings	Distance to Boundary (m)
1	406812	423798	189.7
2	406819	423796	183.8
3	406827	423794	177.8
4	406834	423793	172.5
5	406834	423822	198.5
6	406838	423821	195.7
7	406844	423820	192.0
8	406895	423781	138.2
9	406902	423781	136.7
10	406913	423781	134.0
11	406919	423781	132.8
12	406928	423779	129.8
13	406940	423777	126.6
14	406923	423799	149.8
15	406928	423797	147.1
16	406937	423795	144.4
17	406943	423794	143.0
18	406947	423792	141.4
19	406952	423791	140.4
20	406956	423791	140.0
21	406960	423789	139.0
22	406964	423789	138.8
23	406969	423788	138.4
24	406973	423787	138.2
25	406977	423786	138.1
26	406982	423785	138.3
27	406988	423784	138.2
28	406993	423783	138.2
29	406998	423781	138.1
30	407004	423780	138.4
31	407011	423778	138.7
32	407017	423777	139.7
33	407023	423775	140.7
34	407029	423774	142.1
35	407037	423772	144.6
36	407044	423771	147.0
37	406980	423814	166.1
38	406993	423815	169.7
39	407003	423808	165.1
40	407014	423804	164.6
41	406996	423841	196.0

Receptor ID	Eastings	Northings	Distance to Boundary (m)
42	407009	423838	195.8
43	407024	423834	195.6
44	407030	423832	196.3
45	407043	423823	192.5
46	407056	423820	195.0
47	407065	423801	183.9
48	407072	423799	186.1
49	407086	423801	196.4
50	407076	423798	188.0

The nearest residential receptor to the Proposed Development has been highlighted above.

Table 5.2: Non-Residential Receptors within 200m of the Proposed Development

Receptor ID	Eastings	Northings	Distance to Boundary (m)
1	406839	423477	169.2
2	406993	423702	61.8
3	406977	423677	32.7
4	406936	423664	15.1
5	406929	423674	26.6
6	406914	423661	18.4
7	406903	423659	26.2
8	406881	423661	47.2
9	406817	423654	106.8
10	406874	423712	83.1
11	406853	423736	114.8
12	406864	423754	123.8
13	406911	423726	80.6

The nearest non-residential receptor to the Proposed Development has been highlighted above.

6 NOISE MONITORING SURVEY PHOTOGRAPHS

Table 6.1: Photographs of Norsonic 140 Sound Level Meter at Long Term NML 1

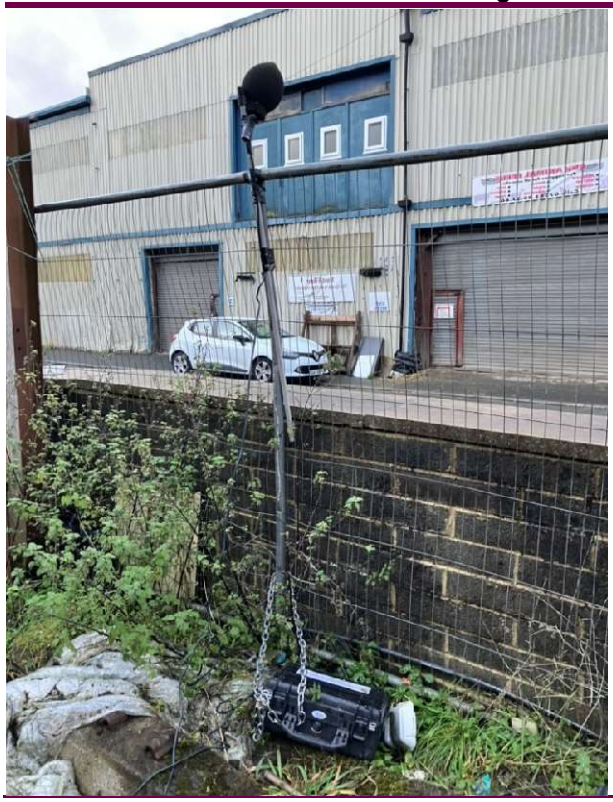
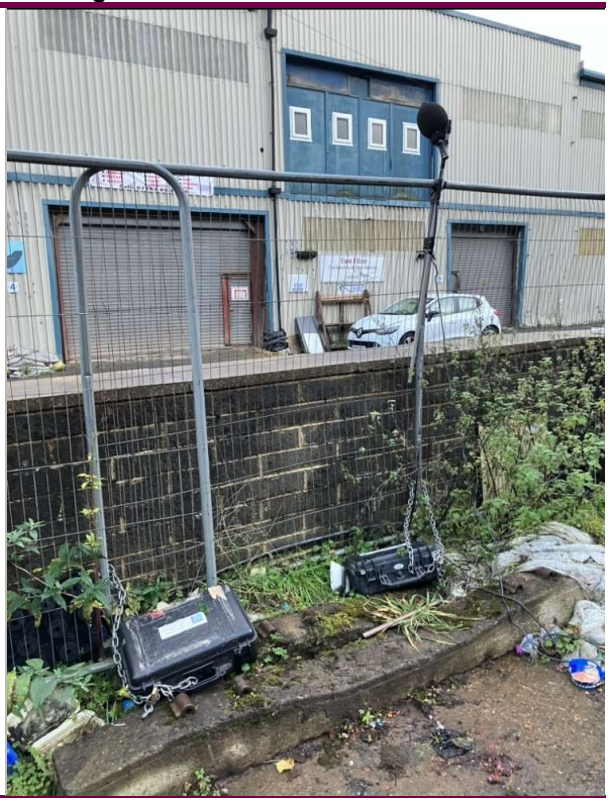
Long Term Monitoring Site	
	

Table 6.2: Photographs of Rion NL-52 Sound Level Meter (28/10/23-29/10/23)

ST1 Location	
	
	

Table 6.3: Photographs of Rion NL-52 Sound Level Meter (09/11/23)

ST1 Location	
	
	

Table 6.4: Photographs of Rion NL-52 Sound Level Meter (28/10/23-29/10/23)

ST2 Location	
	
	

Table 6.5: Photographs of Rion NL-52 Sound Level Meter (09/11/23)

ST2 Location	
	
	

Table 6.6: Photographs of Rion NL-52 Sound Level Meter (28/10/23-29/10/23)

ST3 Location	
	
	

Table 6.7: Photographs of Rion NL-52 Sound Level Meter (09/11/23)

ST3 Location	
	
	

Table 6.8: Photographs of Rion NL-52 Sound Level Meter (28/10/23-29/10/23)

ST4 Location	
	
	

Table 6.9: Photographs of Rion NL-52 Sound Level Meter (09/11/23)

ST4 Location	
	
	

Table 6.10: Photographs of Rion NL-52 Sound Level Meter (28/10/23-29/10/23)

ST5 Location	
	
	

Table 6.11: Photographs of Rion NL-52 Sound Level Meter (09/11/23)

ST5 Location

Table 6.12: Photographs of Rion NL-52 Sound Level Meter (28/10/23-29/10/23)

ST6 Location	
	
	

Table 6.13: Photographs of Rion NL-52 Sound Level Meter (09/11/23)

ST6 Location
  

Table 6.14: Photographs of Rion NL-52 Sound Level Meter (28/10/23-29/10/23)

ST7 Location


Table 6.15: Photographs of Rion NL-52 Sound Level Meter (09/11/23)

ST7 Location

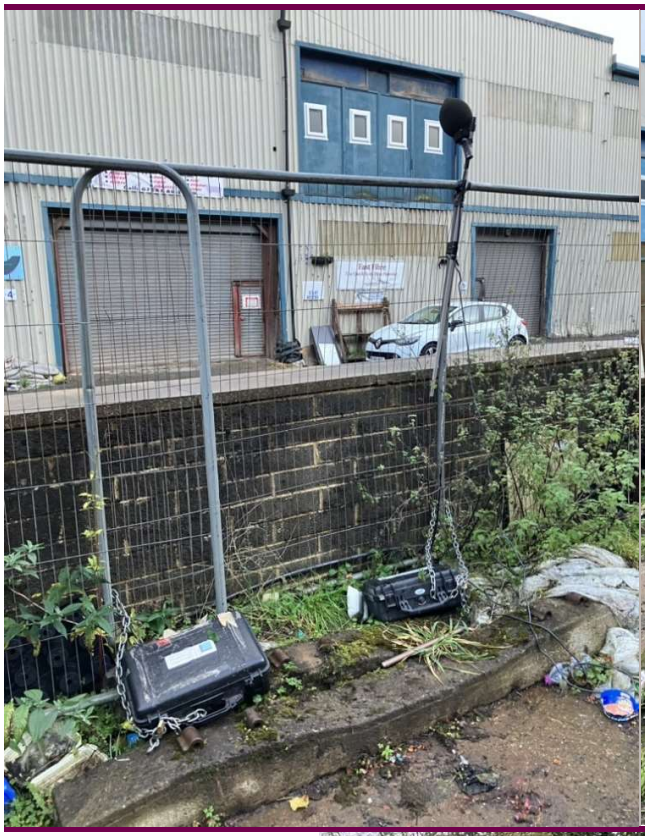
Table 6.16: Photographs of Rion NL-52 Sound Level Meter (28/10/23-29/10/23)

ST8 Location	
	
	

Table 6.17: Photographs of Rion NL-52 Sound Level Meter (09/11/23)

ST8 Location

Table 6.17: Photographs of the weather station (09/11/23)

Weather Station located beside LT1
 


Appendix B – Policy and Guidance

APPENDIX B

National Planning Policy Framework

In December 2024 the 'National Planning Policy Framework' (NPPF) was amended as the current planning policy guidance within England.

Paragraph 187 of the NPPF states:

> *'Planning policies and decisions should contribute to and enhance the natural and local environment by:*
>
> *e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. 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 of the NPPF states:

> *'Planning policies and decisions should also ensure that new development is appropriate for its location taking in account the likely effects (including cumulative effects) of pollution on heath, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impact that could arise from the development. In doing so they should:*
>
> *a) Mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development - and avoid noise giving rise to significant adverse impact 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'…*

Paragraph 200 of the NPPF states:

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

Noise Policy Statement for England

With regard to 'significant adverse impacts on health and the quality of life' the NPPF refers to the 'Noise Policy Statement for England' (NPSE).

The Noise Policy Statement for England sets out the long term vision of the government's noise policy, which is to *"promote good health and a good quality of life through the effective management of noise within the context of policy on sustainable development". This vision* is supported by the following three aims, which are also incorporated into paragraph 198 of the NPPF as set out above:

- avoid significant adverse impacts on health and quality of life;
- mitigate and minimise adverse impacts on health and quality of life; and
- where possible, contribute to the improvement of health and quality of life.

The Explanatory Note within the NPSE introduces the following concepts to assist in establishing significant effects:

- NOEL – No Observed Effect Level

  This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

- LOAEL – Lowest Observed Adverse Effect Level

  This is the level above which adverse effects on health and quality of life can be detected.

- SOAEL – Significant Observed Adverse Effect Level

  This is the level above which significant adverse effects on health and quality of life occur.

The NPSE recognises that these levels are likely to be different for different noise sources, for different receptors and at different times of day.

Planning Practice Guidance - Noise

The Planning Practice Guidance for Noise (PPG-N) provides further detail about how the effect levels can be recognised. Above the NOEL' noise becomes noticeable, however it has no adverse effect as it does not cause any change in behaviour or attitude. Once noise crosses the LOAEL threshold it begins to have an adverse effect and consideration needs to be given to mitigating and minimising those effects, taking account of the economic and social benefits being derived from the activity causing the noise. Increasing noise exposure further might cause the SOAEL threshold to be crossed. If the exposure is above this level the planning process should be used to avoid the effect occurring by use of appropriate mitigation such as by altering the design and layout. Such decisions must be made taking account of the economic and social benefit of the activity causing the noise, but it is undesirable for such exposure to be caused. At the highest extreme the situation should be prevented from occurring regardless of the benefits which might arise. Table A.1 summarises the noise exposure hierarchy.

Table A. 1: National Planning Practice Guidance Noise Exposure Hierarchy

Response	Examples of Outcomes	Increasing Effect Level	Action
No Observed Effect Level (NOEL)			
Not present	No Effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level (NOAEL)			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level (LOAEL)			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level (SOAEL)			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

The PPG-N summarises the approach to be taken when assessing noise. It accepts that noise can override other planning concerns, but states:

> *"Neither the Noise Policy Statement for England nor the National Planning Policy Framework (which reflects the Noise Policy Statement) expects noise to be considered in isolation, separate from the economic, social and other environmental dimensions of proposed development"*

British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings

British Standard 8233 “Guidance on sound insulation and noise reduction for buildings” 2014 (BS 8233:2014), suggests the following guideline noise levels and states that they are based on guidelines issued by the World Health Organisation (WHO);

- 35 dB L_{Aeq} (16 hour) during the daytime in noise sensitive rooms
- 30 dB L_{Aeq} (8 hour) during the night-time in bedrooms
- 45 dB $L_{Amax,F}$ during the night time in bedrooms
- 50 dB L_{Aeq} (16 hour) desirable external noise levels for amenity space such as gardens and patios
- 55 dB L_{Aeq} (16 hour) upper guideline value which would be acceptable in noisier environments.

In addition, for internal noise levels it states;

> *“Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.”*

Furthermore, with regard to external noise, the Standard states;

> *“However, it is also recognised that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited”.*

British Standard 4142:2014 Methods for rating and assessing industrial and commercial sound (BS 4142)

BS 4142 is used to rate and assess sound of an industrial and/or commercial nature including:

- sound from industrial and manufacturing processes;
- sound from fixed installations which comprise mechanical and electrical plant and equipment;
- sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and
- sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and/or commercial site.

The standard is applicable to the determination of the following levels at outdoor locations:

- rating levels for sources of sound of an industrial and/or commercial nature; and
- ambient, background and residual sound levels, for the purposes of:

    1) Investigating complaints;

    2) Assessing sound from proposed, new, modified or additional source(s) of sound of an industrial and/or commercial nature; and

    3) Assessing sound at proposed new dwellings or premises used for residential purposes.

The purpose of the BS 4142 assessment procedure is to assess the significance of sound of an industrial and/or commercial nature.

BS 4142 refers to noise from the industrial source as the ‘specific noise’ and this is the term used in this report to refer to noise which is predicted to occur due to activities associated with industrial noise. The ‘specific noise’ sources, of the existing industrial premises that have been observed are detailed in Section 3 of this report.

BS 4142 assesses the significance of impacts by comparing the specific noise level to the background noise level (L_{A90}). Section 3 of this report provides details of the background noise survey undertaken.

Certain acoustic features can increase the significance of impacts over that expected from a simple comparison between the specific noise level and the background noise level. In particular, BS 4142 identifies that the absolute level of sound, the character, and the residual sound and the sensitivity of receptor should all be taken into consideration. BS 4142 includes allowances for a rating penalty to be added if it is found that the specific noise source contains a tone, impulse and/or other characteristic, or is expected to be present. The specific noise level along with any applicable correction is referred to as the ‘rating level’.

The greater the increase between the rating level over the background noise level, the greater the magnitude of the impact. The assessment criteria given by BS 4142 are as follows:

The greater the increase between the rating level over the background noise level, the greater the magnitude of the impact. The assessment criteria given by BS 4142 are as follows:

- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5 dB 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 low impact, depending on the context.

During the daytime, BS 4142 requires that noise levels are assessed over 1-hour periods. However, during the night-time, noise levels are required to be assessed over 15-minute periods.

Where the initial estimate of the impact needs to be modified due to context, BS 4142 states that all pertinent factors should be taken into consideration, including:

- The absolute level of sound;
- The character and level of the residual sound compared to the character and level of the specific sound; and,
- The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.

Appendix C – Staff Expertise

Team Expertise - Noise

Peter Kowalczuk Beng (Hons), MIOA – Principal Acoustic Consultant

Peter is an Acoustic Consultant with over seven years' experience. He has been a member of the Institute of Acoustics since 2018 and a corporate Member of the Institute of Acoustics (MIOA) since 2021.

Peter has project managed and undertaken assessments for a wide variety of projects including residential developments; large scale industrial and commercial developments; various renewable energy schemes; road and rail schemes; and minerals extraction and exploration.

Peter has been involved in preparing input into Environmental Impact Assessments (EIAs) and undertaken noise assessments to support planning applications, environmental permit variations, and discharge planning conditions. Peter has a Continuous Professional Development Record to support this competency and experience.

For this project Peter has taken on the role of Technical Lead and has been responsible for preparing all deliverables.

Richard Calvert BSc (Hons), MIOA - Associate

Richard is an Acoustic Consultant with over twenty years' experience. He has been a member of the Institute of Acoustics since 2004 and a corporate Member of the Institute of Acoustics (MIOA) since 2009.

Richard has a special interest in building acoustics involving the internal design of various building types such as residential, education and commercial. He has been involved in the design and build of numerous schools and commercial premises to BREEAM standards.

Richard has project managed and undertaken assessments for a variety of developments, including: residential schemes; large scale mixed-use developments, incorporating commercial, retail, leisure and residential elements; energy from waste facilities; manufacturing facilities; distribution centers; retail units; road schemes; minerals extraction and exploration; solar farms; and commercial projects including motorway service stations.

He has provided input into Environmental Impact Assessments (EIAs) and undertaken noise assessments to support planning applications, discharge planning conditions and planning appeals; he has also provided technical advice on mitigation options. He has a Continuous Professional Development Record to support this competency and experience.

For this project Richard has carried out the initial technical review of the noise assessment report.

Pam Lowery, Associate Director

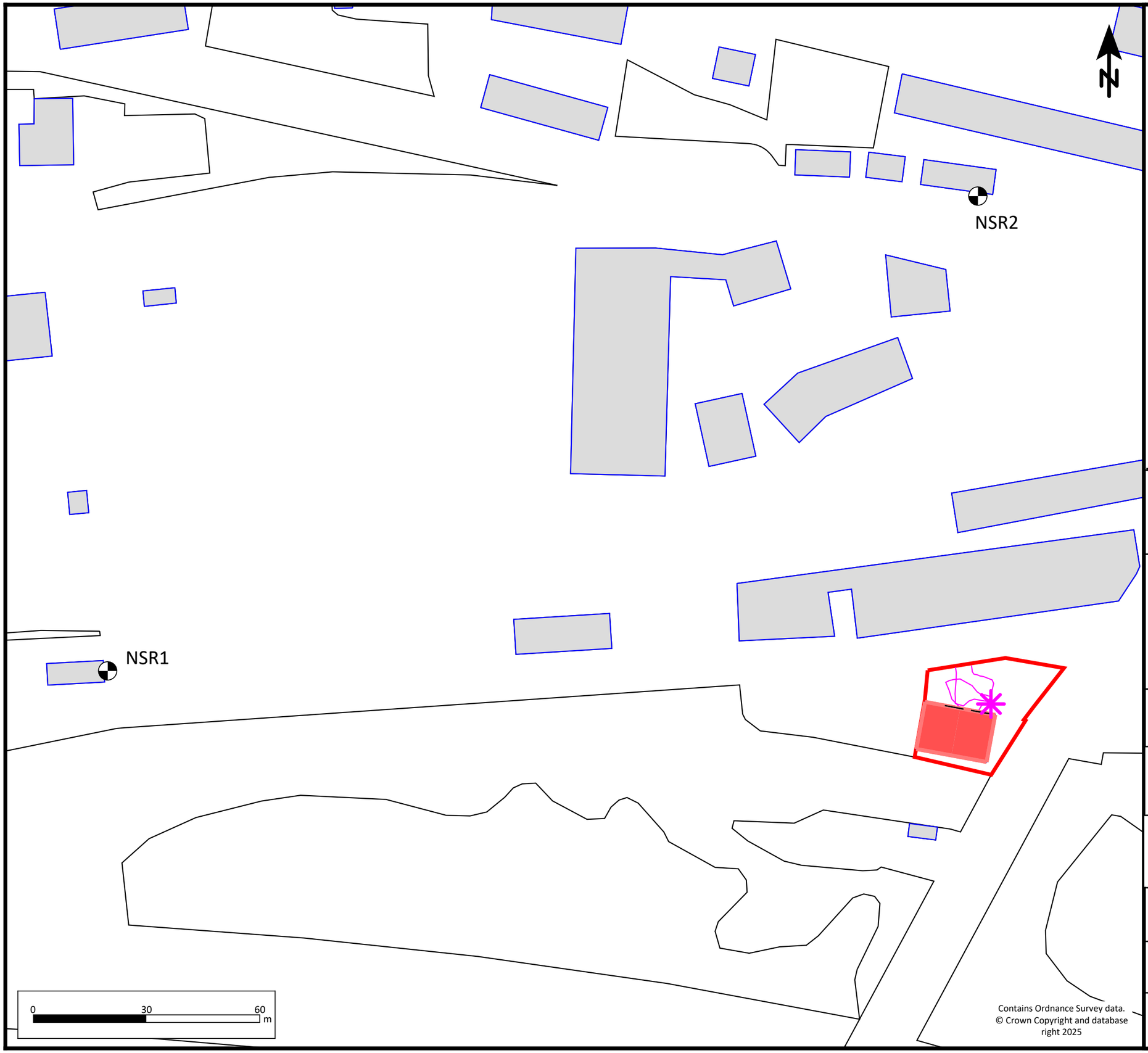
Pam is an Associate Director working within the RPS acoustics team. She joined the team in 2024, based out of the Birmingham office. Pam has over 22 years' experience in the Acoustics, Noise and Vibration sector and was previously at AECOM where she spent just over 6 years as part of their Acoustics team. Prior to her consultancy roles, Pam worked for two major public sector clients in the UK – National Highways (formerly Highways Agency) and High Speed Two (HS2 Ltd).

She is a Member of the Institute of Acoustics and a Practitioner Member of the Institute of the Environmental Management and Assessment. She is also a member of the IOA's Sound, Noise and Health Group and the Association of Noise Consultants Sustainability Committee.

Pam has extensive experience in environmental acoustics, with a focus on Transportation. She has provided technical and policy support in the assessment of numerous road and rail projects for local and national government clients in the UK and Ireland. She has also led the development of noise and vibration assessment procedures for road schemes included within the Design Manual for Roads and Bridges, as well as co-authoring the suite of HS2 Phase One acoustics technical standards.

For this project Pam has taken on the role of reviewing and approving the report and appendices.

FIGURES



Key

- Basemap
- Noise Sensitive Receptor
- Existing Buildings
- Red Line Boundary
- Ellete Waste Facility
- Line source
- Point source

Notes

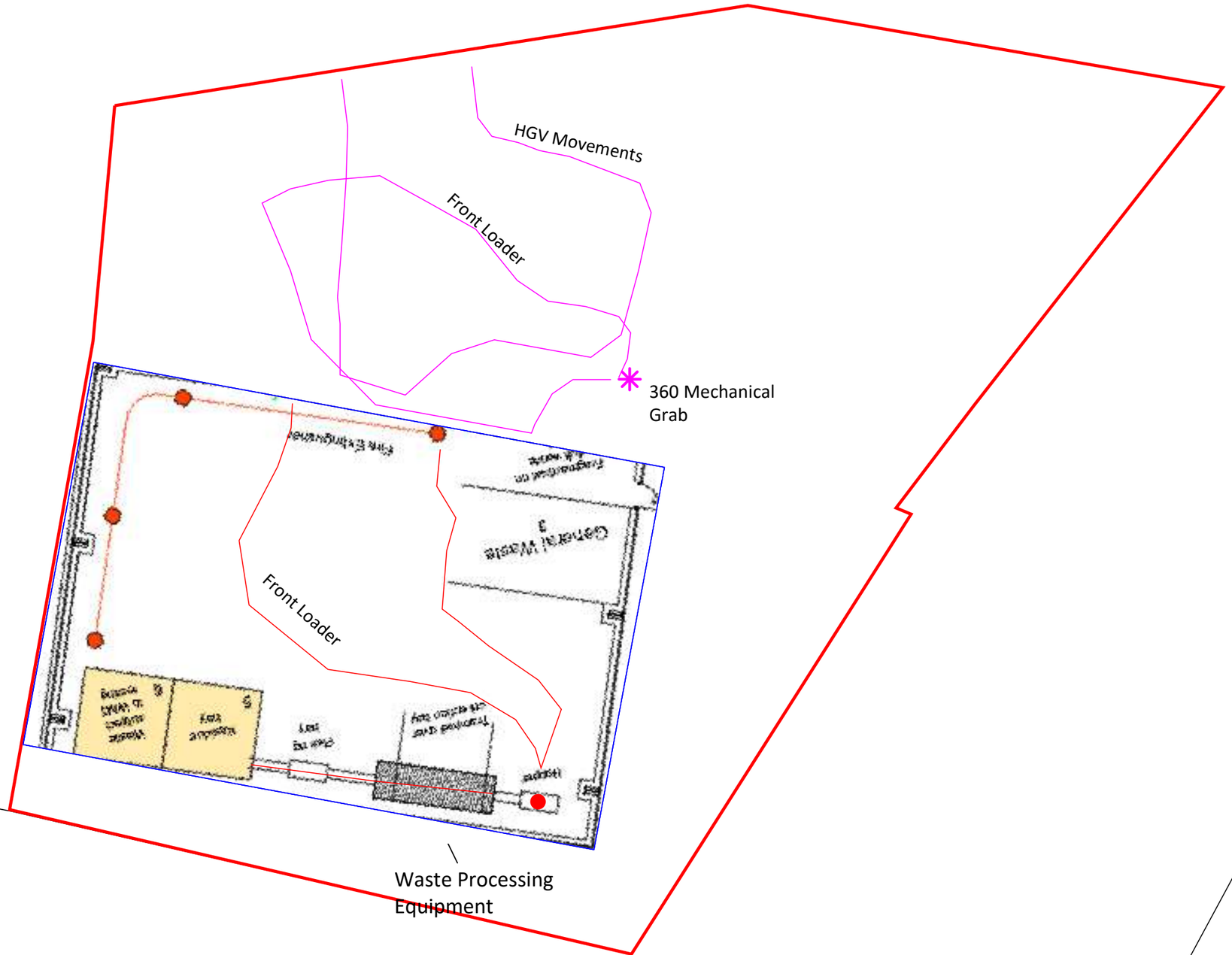
1. This drawing has been prepared in accordance with the scope of RPS' appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipient's responsibility to print to correct scale. Only written dimensions should be used.

A TETRA TECH COMPANY

6-7 Lovers Walk, Brighton, East Sussex, BN1 6AH
T 01273 546 800 E rpsbn@rpsgroup.com W rpsgroup.com

CLIENT:	Ellete Waste Limited
PROJECT:	Ellete Waste
TITLE:	Development Site and Noise Sensitive Receptor Location Plan

DRG NO: FIGURE 1		REV: A
DRG SIZE: A3	SCALE: 1:1000	DATE: 09/04/2025
DRAWN BY: PK	CHECKED BY: RC	APPROVED BY: PL



Key

- Basemap
- Red Line Boundary
- Ellete Waste Facility
- Line source
- Point source

Notes

1. This drawing has been prepared in accordance with the scope of RPS' appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
2. If received electronically it is the recipient's responsibility to print to correct scale. Only written dimensions should be used.

A TETRA TECH COMPANY

6-7 Lovers Walk, Brighton, East Sussex, BN1 6AH
T 01273 546 800 E rpsbn@rpsgroup.com W rpsgroup.com

CLIENT: Ellete Waste Limited

PROJECT: Ellete Waste

TITLE: Noise Sources Considered in NIA

DRG NO:		REV:
FIGURE 2		A
DRG SIZE: A3	SCALE: 1:150	DATE: 09/04/2025
DRAWN BY: PK	CHECKED BY: RC	APPROVED BY: PL