Report

Techemet Ltd – EA Permit Variation

Noise Assessment

For Techemet Ltd

19 September 2025

Noise CONSULTANTS | PART OF Logika Group

Document Control

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Prepared By:	Sam Norris (Senior Consultant)
Reviewed By:	Tom Everson (Senior Consultant) & Chris Youdale (Principal Consultant)

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Registered Office: 3rd Floor St Augustine's Court, 1 St. Augustine's Place, Bristol, BS1 4UD Tel: +44(0)117 974 1086

24 Greville Street, Farringdon, London, EC1N 8SS Tel: +44(0)20 3873 4780

First Floor, Patten House, Moulders Lane, Warrington WA1 2BA Tel: +44(0)1925 937 195

8-9 Ship St, Brighton and Hove, Brighton BN1 1AD Tel: +44(0)20 3873 4780

Avenue du Port, 86c Box 204, 1000 Bruxelles Tel: +44(0)20 3873 4780

Contents

Tables

Figures

1 Introduction

1.1 Scope and Background

1.1.1 This report describes a sound assessment prepared by Noise Consultants Ltd (NCL), part of Logika Group, on behalf of Techemet Ltd ('Techemet'), to support the permit variation for the Techemet site at the Vanguard Industrial Estate in Tamworth, that falls within the administrative district of Tamworth Borough Council (TBC).

1.2 Site Description, Environs, and Existing and Proposed Development

1.2.1 Techemet is located at 1 Vanguard, Ninian Way, Tamworth, Staffordshire, B77 5DY. The Site location is shown in **Figure 1-1**. Operations at the existing plant are permitted (Permit No. EPR/CB3006CW, issued 17th April 2015) under the Standard Rules Permit SR2015 No.3 for the mechanical dismantling of catalytic converters for the purposes of recovery and for the treatment and transfer of small Waste Electrical and Electronic Equipment (WEEE) components, batteries and end of life vehicle components. With respect to noise, the permit states:

"Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where it is not practicable to minimise the noise and vibration.

The operator shall:

(a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the Environment Agency for approval within the period specified, a noise and vibration management plan which identifies and minimises the risks of pollution from noise and vibration;

(b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency."

1.2.2 The proposed permit variation will include the installation of plant and equipment to perform similar activities in the Unit 10 building to those existing in the Main Factory, Sampler Area, and Extension. Notably, proposed plant and equipment considered includes plasma and angle grinding, ceramic block crusher, air compressor, welder, lathe, chop saw, and pillar drill. Areas of existing and proposed uses are shown in **Figure 1-2**.

1.2.3 The Site will operate continuously throughout the daytime, limited to working hours (07:00 – 16:00) on weekdays, and occasionally (07:00 – 12:00) or (07:00 – 16:00) on Saturdays. During these periods, sound from fixed plant and equipment will be steady and continuous. Visiting HGV's importing materials to the storage areas will travel along Vanguard and access the Site via Gate 2, south of the Main Factory building. Some instances of overtime require operations to commence in the early morning (06:00 – 07:00), although on an ad-hoc basis. An assessment of operations during this period has been included in this report as a worst-case.

1.2.4 To the north, south and west of the Site are existing industrial units. The site is bound to the east by Ninian Way, and the Birmingham and Derby Junction Railway is approx. 70 m west.

1.2.5 The nearest and most exposed noise-sensitive receptors (NSRs) are dwellings off Manta Road (approx. 100 m west of the Extension building, 80 m west of Unit 10). Pertinent details for each assessment

location are summarised in **Table 1-1**. The assessment locations are shown in **Figure 1-1**, numbered NSR1 – NSR4.

Table 1-1: Details of Assessment Locations (NSRs)

Assessment Location (NSR Ref)	Description / Address	Type	Grid Reference (O.S. X, Y)	Assessment Height (m above local ground)	Intervening Ground Type	Representative Baseline Measurement Location
NSR1	5 Manta Road, Dosthill, Tamworth B77 1NQ	2 Storey, Residential	421834, 300589	1.5 m	Mixed (comprised of tarmac railbed, and vegetation)	ML1
NSR2	7 Manta Road, Dosthill, Tamworth B77 1NQ		421834, 300574			
NSR3	9 Manta Road, Dosthill, Tamworth B77 1NQ		421827, 300554			
NSR4	18 - 28 Manta Road, Dosthill, Tamworth B77 1NQ		421800, 300604			

1.3 Assessment Summary

1.3.1 This noise assessment has been requested in connection with the permit variation for the consented Development as it will introduce new sources to the Site.

1.3.2 This noise assessment has been prepared with regard to The Environment Agency's '*Guidance – Noise and vibration management: environmental permits*' (the 'Guidance'), which requires sound from the Site to be assessed in accordance with the methodology set out in BS 4142:2014+A1:2019[1] (BS 4142, 2019).

1.4 Report Structure

1.4.1 This report is structured to align with the structure recommended in the Guidance. The assessment locations, survey equipment, noise control, discussion on uncertainty and conclusions are provided in the report body. Report appendices contain relevant equipment certificates, the results and analysis of baseline and sound source survey data, and other supporting material referred to in the report body.

[1] British Standards Institute, BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound' (2019)

1.5 Competency

1.5.1 The surveys, calculations, noise modelling and assessment have been undertaken by the report author, Sam Norris. Sam is a Senior Consultant with over 3 years' post-qualification experience. Sam has an MEng in Acoustical and Audio Engineering from the University of Salford and is a Corporate Member of the Institute of Acoustics (MIOA).

1.5.2 The report has been reviewed by Tom Everson. Tom is a Senior Consultant with over 7 years' experience in acoustic consultancy. Tom has a BSc (Hons) in Audio Production and Technology from Middlesex University, a Certificate of Competence in Environmental Noise from the Institute of Acoustics and is a Corporate Member of the Institute of Acoustics (MIOA).

1.5.3 The report has been reviewed and approved by Chris Youdale. Chris is a Principal Consultant with over 9 years' experience in acoustic consultancy. Chris has a BSc (Hons) in Audio and Music Technology from Anglia Ruskin University, a MSc in Acoustics with Environmental Applications from the University of Salford and is a Corporate Member of the Institute of Acoustics (MIOA).

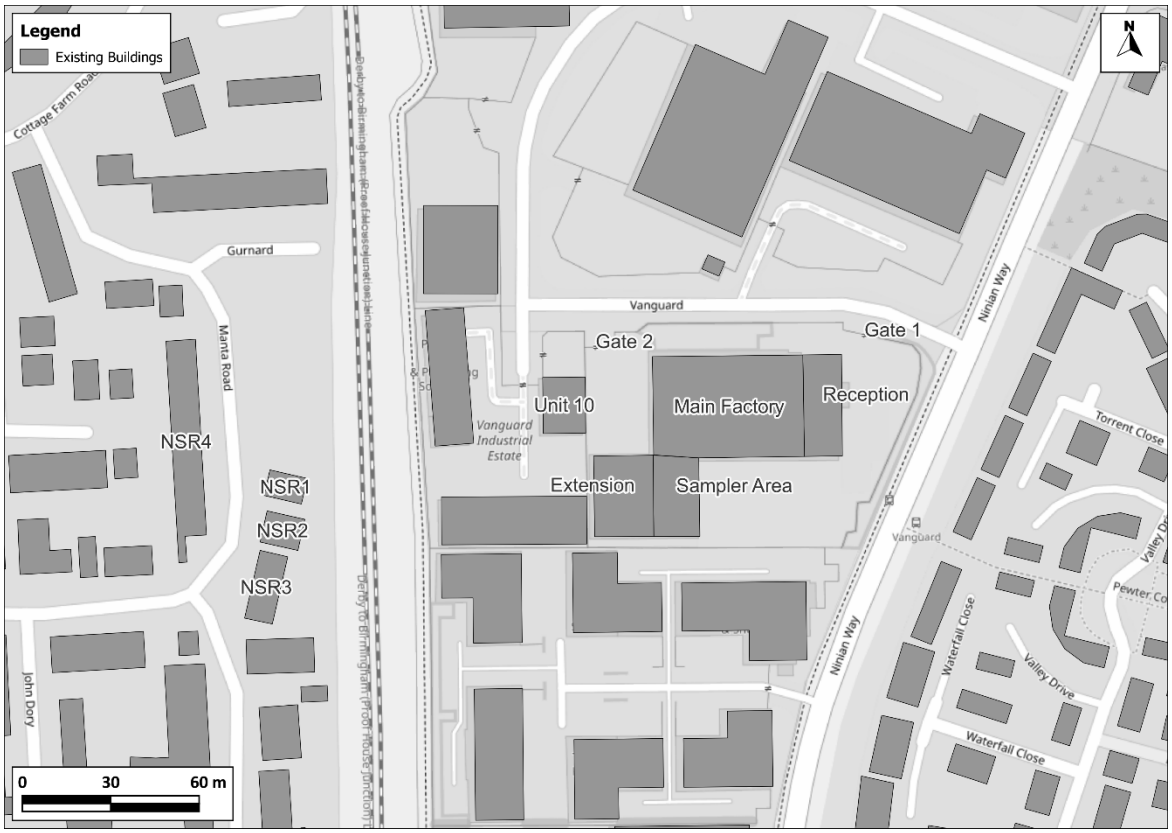

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Figure 1-1: Site Location and Layout

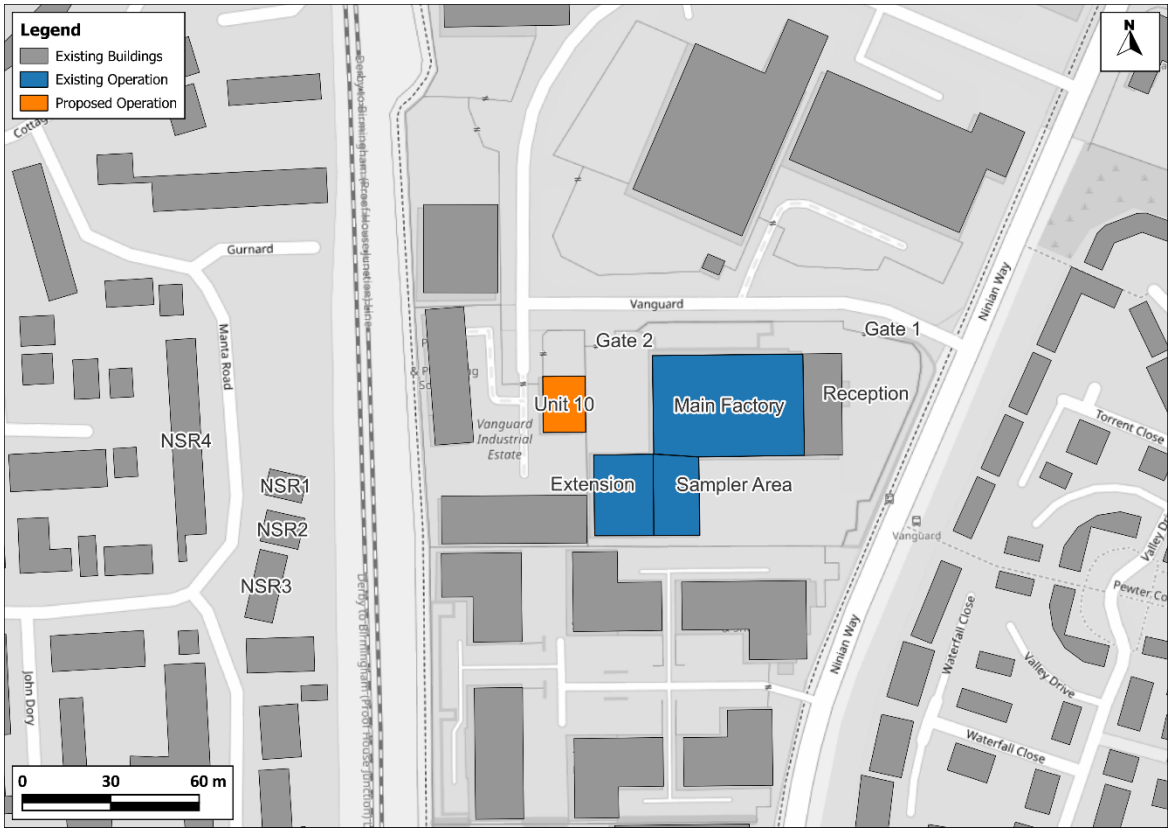

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Figure 1-2: Existing and Proposed Building Uses

2 Assessment and Baseline Survey Locations

2.1 Noise Sensitive Receptors – Assessment Locations

2.1.1 This report includes an assessment of operational sound at existing NSRs in the vicinity of the Site, which have been identified as residential dwellings and as such are regarded as having a high sensitivity to noise. Several of the NSRs are adjacent to the existing industrial site to the southeast, as such it is not possible to obtain background sound levels without influence of sound from nearby industrial uses at these properties, as would be require by EA guidance. Therefore, a proxy location has been chosen for this assessment where sources of environmental sound are representative of baseline conditions at the NSRs and during periods of existing operation, and when existing operations are inaudible.

2.1.2 A baseline monitoring location has been selected that is a similar distance from Manta Road and the Birmingham to Derby Railway line. This location is 105 m west of the Site. Therefore, the background sound levels described in this report are likely to be lower than would be the case at the nearest NSRs, closer to the railway line. The assessment conclusions are therefore likely to be conservative.

2.1.3 Assessment locations are at ground floor level and predicted Site sound levels are representative of those in external amenity spaces.

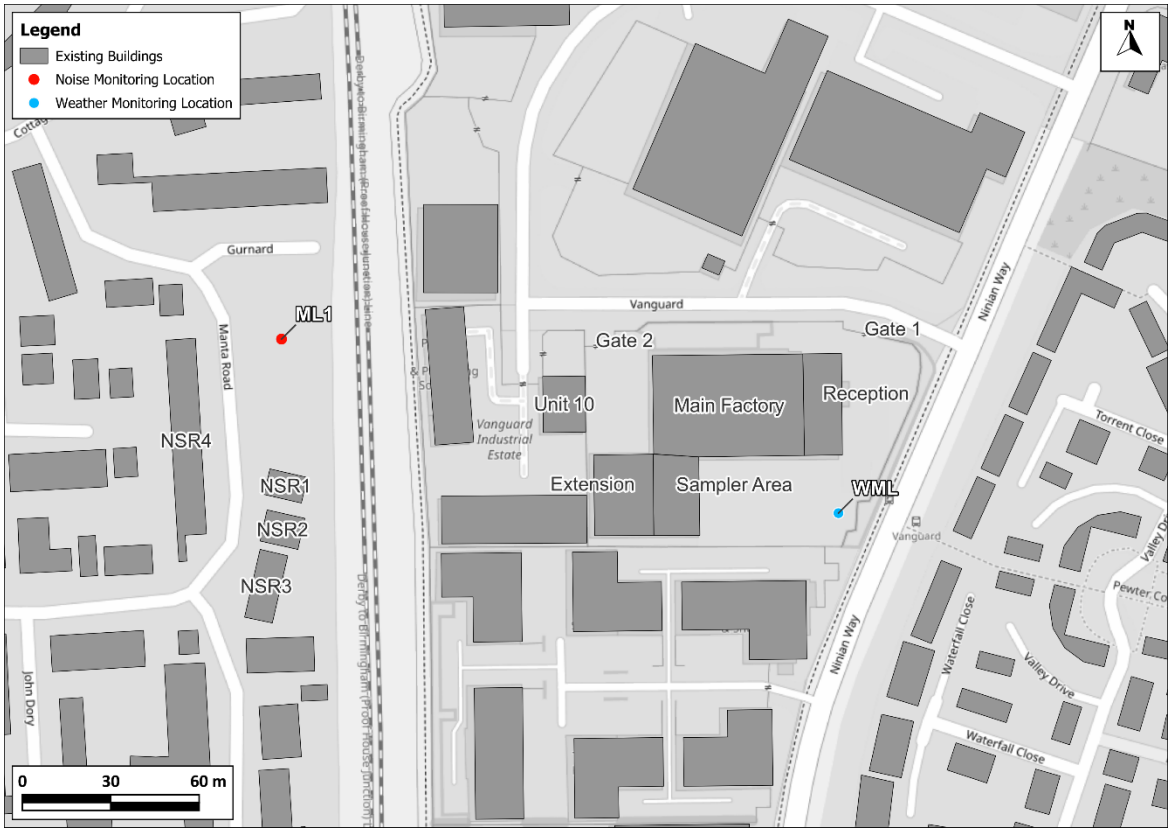
2.2 Baseline Survey Locations and Conditions

2.2.1 Existing baseline sound levels have been measured during the day on a weekday and early morning on a weekend, at an off-site location representative of each NSR identified in **Table 1-1**. A baseline measurement location (ML) has been used where the residual (L_{Aeq}) and background (L_{A90}) sound levels were considered reasonably representative of its associated NSRs. The existing Techemet site was operational up to 16:00 on the Friday, and from 06:15 on the Saturday (limited to sampling, cutting platform and forklift use) but was not discernible from the baseline at the off-site monitoring location, except for occasional reverse warning alarms (RWA). Therefore, the baseline data obtained is considered representative of the underlying sound climate (given the caveat described in **Section 2.1** above) and is therefore considered appropriate for use in this assessment.

2.2.2 The baseline NML is identified in **Figure 2-1** with pertinent details summarised in **Table 2-1**.

Table 2-1: Summary Baseline Sound Measurement Locations (ML)

Measurement Location (ML Ref)	Description / Address	Measurement Conditions	Grid Reference (O.S. X, Y)	Underlying Sound Climate (ranked)
ML1	Greenspace east of Manta Road.	1.5 m above local ground, free-field	421832, 300639	Rail passby relatively frequent. Distant road traffic audible from Hedging Lane to the south, and the surrounding residential estate.



Contains OpenStreetMap data © OpenStreetMap contributors.

Figure 2-1: Assessment, Background Sound and Meteorological Survey Locations

3 Survey

3.1 Survey Instrumentation

3.1.1 Details of the survey instrumentation deployed during the baseline and sound source surveys are summarised in **Table 3-1**.

Table 3-1: Monitoring Equipment Specifications

Purpose	Make / Model	Serial No.	Date of Last Calibration	Measurement Locations
Sound Source (June 2025) Measurements	Rion NL-52	01009670	02/02/2025	Various (onsite)
Baseline Measurements	Rion NL-52	01176453	31/07/2023	ML1
Acoustic Field Calibrator	Rion NC-75	34212937	19/12/2024	n/a
Weather Monitoring	Davis Vantage Vue	MT210407033	n/a	WML

3.1.2 All measurements were undertaken using sound level meter (SLM) instrumentation conforming to BS EN 61672-1:2013[2], Class 1, each calibrated within the preceding 2 years. The calibration level of each SLM was checked before and after the survey using an acoustic field calibrator conforming to BS EN 60942:2003[3], Class 1, calibrated within the preceding 12 months. No significant drift (< 0.1 dB) in the calibration levels was observed. Calibration certificates of the SLMs and Acoustic Calibrator used are provided in **Appendix A1**.

3.1.3 A suitable windshield was fitted to the measurement microphones to minimise the effects of any wind induced turbulent sound for the duration of the measurements.

3.2 Baseline Survey

3.2.1 Baseline sound measurements were conducted, where possible, in accordance with BS 7445-1:2003[4] and BS 4142:2014, from 14:10 - 15:10, and 16:15 - 17:15 on Friday 27th, and from 06:00 - 07:00 on Saturday 28th June 2025.

3.2.2 Baseline sound levels were:

- Measured at a height of 1.4 m - 1.5 m above ground, as required by BS 4142:2014;
- Carried out under free-field conditions (i.e. the SLM was positioned at least 3.5 m from all surrounding reflective surfaces other than the ground); and
- Measured in consecutive 15-minute periods, with the L_{AFmax}, L_{Aeq}, and L_{A90} descriptors.

[2] British Standards Institute. BS EN 61672-1:2013 '*Electroacoustics. Sound level meters – Specifications*' (2013)
[3] British Standards Institute. BS EN 60942:2003 '*Electroacoustics. Sound calibrators*' (2003)
[4] British Standards Institute. BS 7445-1:2003 '*Description and measurement of environmental noise. Guide to quantities and procedures*' (2003)

3.3 Sound Source Survey

3.3.1 In addition to the baseline survey, sound source measurements within the existing Techemet site were undertaken. The sound climate in these areas was dominated by fixed plant and equipment and was typically steady with forklift truck movements and RWA intermittently audible. Short duration measurements of fixed continuous plant were undertaken at a known distance to quantify levels of sound for this assessment.

3.4 Survey Data Processing

3.4.1 Processing and analysis of the measured data has been undertaken using Microsoft Excel. Octave band measurements collected during the sound source survey have been used to inform the calibration of the noise model.

3.5 Meteorological Conditions

3.5.1 A weather station was deployed during the baseline survey adjacent to the noise monitoring location (Location WML, **Figure 2-1**) to monitor the prevailing weather conditions in the vicinity of the Site for the duration of the survey. Temperature and wind speed during the survey are summarised in **Appendix A2** and shows that the prevailing weather conditions were warm (20 – 25 °C) and calm with maximum wind speeds not exceeding 3.6 ms^{-1}. No periods of rain were observed throughout the baseline monitoring.

3.5.2 The prevailing weather conditions were therefore considered acceptable for the purposes of the assessment.

3.6 Local Conditions

3.6.1 There were no known atypical traffic conditions, such as speed restrictions or traffic control (e.g. temporary traffic lights), and all road traffic at the measurement locations was free flowing.

3.6.2 The prevailing local conditions were therefore considered acceptable for the purposes of the assessment.

4 Assessment Methodology

4.1 Assessment Approach

4.1.1 The calculation of operational sound from the Site has been undertaken by a noise modelling exercise, as this readily permits sound source levels, sound insulation, screening and the effects of dispersion to be input, the results analysed and evaluated, and any necessary mitigation to be evaluated and optimised.

4.1.2 The assessment includes all significant sources that would be in operation at any one time. The assessment considers the sources summarised in **Table 4-1** that have been determined to result in potentially significant noise at the assessment locations.

Table 4-1: Summary of Potentially Significant Sound Sources

Potentially Significant Sound Sources	Summary Description
Existing Internal/External Fixed plant and handheld equipment	All potentially significant items of fixed plant that will be in continuous operation. And any items of handheld equipment accounting for assumed on-time corrections.
Existing HGVs Unloading	HGV flows to/from the Site will vary throughout the daytime only. Miscellaneous makes/models expected.
Proposed Development Fixed plant and handheld equipment	All proposed items of fixed plant that will be continuous in operation. And any items of handheld equipment accounting for assumed on-time corrections.

4.1.3 To enable a comparison of specific sound levels from the existing operations of the Site against the proposed operations of the Site, two scenarios have been modelled:

- Existing Scenario: Representative of the Site as it currently operates
- Proposed Scenario: Representative of the Site as it would operate with the proposed changes to its operations as described in **Section 1.2**

4.1.4 As required by the Guidance, the calculated operational sound levels have then been assessed in accordance with BS 4142:2014 at the assessment locations, with a 'typical' background sound level (dB L_{A90}) established from analysis of the baseline survey data. The assessment has been undertaken for a 1 hr period in the daytime (07:00 – 23:00 hrs).

4.1.5 To inform the assessment and provide reliable source data for use in noise modelling:

- A sound source survey has been undertaken of existing sources and activities that will be present in the Development; and
- Empirical data in 1/1 octave bands for existing HGV movements/idling, and forklift truck movements, and proposed plant/equipment.

4.1.6 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. A character correction for tonality, impulsivity, and/or intermittency is therefore added to account for these features. Where the specific sound has characteristics that do not fall into the tonal, impulsive or

intermittent categories but are otherwise readily distinguishable against the residual acoustic environment, a penalty of +3 dB can be applied in isolation.

4.1.7 Any corrections for the character of sound have been added to the specific sound level ($L_{As,Ts}$) to determine the rating level ($L_{Ar,Tr}$) from the Site which has then been compared to a typical background sound level (L_{A90}) measured at the NML associated with the assessment location to determine an initial estimate of the impact of the operation on the receptors with regards to the adverse impacts set out in BS 4142:2014 that states:

- *"Typically, the higher the rating level is above the background sound level the greater the magnitude of impact;*
- *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; and*
- *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."*

4.1.8 The initial estimate of the impact is then modified due to the context in which the sound occurs and avoids rigid adherence to noise limits at the exclusion of any other relevant considerations, which is vital in providing a reasoned assessment.

5 Monitoring Data and Predictions

5.1 Baseline Monitoring Results and Analysis

5.1.1 The results of the baseline survey undertaken between the 27th and 28th of June 2025 are provided in **Appendix A1**.

5.1.2 The full baseline sound survey is presented as a time/level history in **Appendix A2** and summarised in **Table 5-1** (rounded to the nearest integer value).

5.1.3 The main sound sources at each location are described in **Table 2-1**. Sound from the Site was not dominant at any time and therefore the measured sound levels are representative of the underlying sound climate. Notably, measured levels during a period of shut down are 2 dB higher than the levels across the two daytime 1h measurements. As a conservative approach, the analysis of measured levels considers all monitoring periods.

5.1.4 BS 4142 is not prescriptive regarding how a 'typical' background sound level is to be established, and therefore analysis of the measured background (L_{A90}) sound levels has been undertaken. The Mean, Mode and Median for the day are shown in **Table 5-1**. The adopted typical background sound level is based on the aligned Mean and Median metrics to provide a balanced and robust assessment.

Table 5-1: Analysis of Measured Sound Levels and Adopted Background Sound Levels

Measurement Location	Associated Assessment Location	Period	Measured $L_{Aeq,T}$ (dB)	Analysis of $L_{A90,T}$ (dB)			Adopted Background Sound Level $L_{A90,T}$ (dB)
				Mean	Mode	Median	
ML1	NSR1 – NSR4	Daytime (07:00 – 23:00)	59	43	41	43	43
		Early Morning (06:00 – 07:00)	56	40	39	40	40

5.2 Noise Modelling

5.2.1 A sound propagation model has been developed using DMGR iNoise® (v2024) computational sound modelling software, configured to calculate sound levels in accordance with ISO 9613-2:2024[5].

5.2.2 Geospatial data for the model was informed by publicly available mapping data[6], as well as the layout plans and drawings provided by the Client.

Calculation Parameters

5.2.3 The following calculation parameters were used in the noise modelling:

- Order of reflections = 1;

[5] ISO 9613-2:2024 Acoustics – Attenuation of sound during propagation outdoors. Part 2: Engineering method for the prediction of sound pressure levels outdoors
[6] DEFRA National LIDAR Programme – defra.gov.uk

- Topography = Obtained from Environment Agency's National LIDAR Programme[6];
- Ground absorption, G = 0.5 (representative of mixed ground between the Site and assessment locations, as noted in **Table 1-1**);
- Temperature / Humidity = 10 °C / 70%; and
- Building heights = based on a combination of site observations, development designs, and LIDAR DTM / DSM data[6].

5.2.4 External walls of process buildings have been modelled as vertical emitting planes. Operational sound levels have been calculated as free-field sound levels at each assessment location (for ease of comparison to the measured background sound levels), at 1.5m, aligning with the measurement height specified in **Table 1-1**.

Source Data – Fixed Plant, Equipment and Activities

5.2.5 Sound levels resulting from the operation of a large number of individual items of plant, equipment and activities can be calculated. However, this relies on a robust understanding of the sound emission, operating parameters and conditions, and location of each being considered. These details have been determined from the on-site sound source surveys and the details provided by Techemet on the existing and future plant and equipment. The details used in the modelling are summarised in **Table 5-3** and **Table 5-4** below.

5.2.6 To enable a comparison of rating levels from the existing operations of the Site against the proposed operations of the Site, two scenarios have been modelled:

- Existing Scenario: All sources summarised in **Table 5-3** in their respective buildings and **Table 5-4** within the Main Factory
- Proposed Scenario: All sources summarised in **Table 5-3** in their respective buildings, and sources in **Table 5-4** re-located to Unit 10.

5.2.7 Plant and equipment measured within the Main Factory, Sampler Area and Extension areas have been cumulated and modelled as area sources, accounting for indoor-outdoor losses.

5.2.8 The assumed building envelope Sound Reduction Index (SRI) performance is presented in **Table 5-2** below has been adopted based on in-house library data:

- External walls of the units have been assumed to perform similar to the 'Euroclad Elite 51' cladding system with 0.5 mm profiled steel inner liner, with a 240 mm cavity filled with Knauff Factory Clad 40 thermal quilt insulation.
- The roof SRI performance is assumed to be similar to the 'Euroclad Elite Plus' cladding system with 0.4 mm profiled steel inner liner, with a 240 mm cavity filled with Knauff Factory Clad 40 thermal quilt insulation, (85% of total roof area) with Zenon Pro 30 Outer Sheet Rooflights (15% of total roof area).

5.2.9 These construction details have been used to calculate (using Insul) the likely octave-band SRI for the envelope Main Factory, Sampler Area, Extension, and Unit 10. A correction of -3 dB of the calculated SRI has been applied to be within the stated uncertainty limits of Insul (in each octave-band) to reduce uncertainty.

5.2.10 An uprated roof cladding (Kingspan) has been assumed for the newer Unit 10 building (constructed 2007), and the north façade of Unit 10 is complete brick construction (SRI from in-house library data).

Table 5-2: Building Envelope Elements

Type	Sound Reduction Index (SRI) at Octave Centre Band Frequency (Hz)								Broadband dB Rw (C;Ctr)
	63	125	250	500	1K	2K	4K	8K	
Euroclad Elite 51	7	8	19	30	32	39	45	53	29 (-2;-8)
100mm Light-weight Brick Work	28	33	35	36	41	47	47	47	42 (-2;-3)
Euroclad 32/1000 Profiled Sheet	6	8	12	14	14	16	19	19	15 (0;-1)
Kingspan – KS1000 ZIP/90 + no lining	19	18	19	20	17	35	38	44	22 (-1;-3)

Table 5-3: Noise Modelling Inputs – Existing Sources

Source	Octave Band (Hz) Sound Power Level (dB)								Broadband L_w (dB(A))
	63	125	250	500	1K	2K	4K	8K	
Torit[1]	97	96	99	96	96	95	93	88	102
Cutting Platform[1]	106	103	108	107	106	105	102	96	111
Hopper Bin[1]*	93	95	96	97	95	94	91	85	101
Plasma and Angle Grinding[2] (Impact Excluded)	107	97	101	100	99	100	99	99	106
Plasma and Angle Grinding[2] (Impact Isolated – 6% On-time)	95	92	96	93	92	90	89	80	97
Sampler[2]*	100	91	93	92	90	86	84	79	95
Rear Cutting Platform[3]	102	106	107	107	105	104	100	91	110
Compressor	84	76	72	76	75	70	65	57	79
Extract Grille	92	84	83	77	76	70	65	60	81
External – South	89	86	86	87	80	77	70	63	87
Forklift Passby	87	91	88	92	92	91	85	74	99
HGV Passby	112	102	102	99	102	100	93	84	106
HGV Idling	101	91	90	89	87	82	79	73	92
Main Factory**	96	90	93	92	91	90	90	84	97
Sampler Area**	94	84	87	86	84	85	82	81	91
Extension**	83	86	86	86	84	83	78	67	89

* Average L_w calculated from multiple measurement positions
** Total reverberant sound level
[1] Main Factory (includes **Table 5-4** excluding plasma sources)
[2] Sampler Area
[3] Extension
Note – All other sources are external and have been modelled as point/moving point sources

Table 5-4: Noise Modelling Inputs – Proposed Sources

Source	Octave Band (Hz) Sound Power Level (dB)								Broadband L_w (dB(A))
	63	125	250	500	1K	2K	4K	8K	
Plasma and Angle Grinding* (Impact Excluded)	107	97	101	100	99	100	99	99	106
Plasma and Angle Grinding* (Impact Isolated – 6% On-time)	95	92	96	93	92	90	89	80	97
Air Compressor[1] (25% On-time)	89	89	88	91	94	94	92	89	100
Hand-held Welder[2]	95	96	97	96	97	94	89	84	101
Circular Bench Saw[3] (50% On-time)	110	99	97	95	97	101	107	102	110
Lathe[4]	84	85	86	85	86	83	78	73	90
Pillar Drill[5]	80	81	82	81	82	79	74	69	86
Unit 10**	103	94	95	93	94	94	96	91	101

* Measured during source survey, moved from Samler Area to Unit 10
** Total reverberant sound level
[1] 50 kW small air compressor calculated from sound pressure levels from Miller, L, '*Noise Control for Buildings and Manufacturing Plants*', Table 7-15
[2] BS 5228-1: 2014[7] Annex C ref. Table 3.31
[3] BS 5228-1: 2014[7] Annex C ref. Table 4.71
[4] JEE Vol.19[8], FU 251 Machine Tool
[5] PowerPlus POWX153[9] +3 dB L_{wA} for uncertainty adjusting spectra for Hand-held Welder
Note – all other sources are derived from empirical data/similar plant

Results and Assessment – Proposed Operations

An assessment has been undertaken based on modelling of the combined existing and proposed sources in **Table 5-3** and **Table 5-4**. The predicted sound levels are summarised in **Table 5-5**.

[7] BS 5228-1:2009+A1:2014 '*Code of practice for noise and vibration control on construction and open sites*'
[8] Journal of Ecological Engineering (JEE), Volume 19 Issue 1 p.83 – 93, Jozwik. J, et al., January 2018 (Accessed 29th July 2025)
[9] PowerPlus, POWX153 Manual (Accessed 29th July 20225)

Table 5-5: Assessment of Specific Sound Levels – Proposed

Description	Assessment Location (NSR Ref)			
	NSR1	NSR2	NSR3	NSR4
Daytime (07:00 – 23:00)				
Predicted Specific Sound Level dB $L_{Aeq,T}$	46	46	46	46
Character corrections, dB	+5	+5	+5	+5
BS 4142:2014 Sound Rating Level, rounded to nearest dB, dB $L_{Ar,Tr}$	51	51	51	51
Background Sound Level (BSL), dB L_{A90}	43	43	43	43
Exceedance (dB)	+8	+8	+8	+8
Initial Assessment Outcome	'Adverse Impact'			
Early Morning (06:00 – 07:00)				
Predicted Specific Sound Level dB $L_{Aeq,T}$	46	46	46	46
Character corrections, dB	+5	+5	+5	+5
BS 4142:2014 Sound Rating Level, rounded to nearest dB, dB $L_{Ar,Tr}$	51	51	51	51
Background Sound Level (BSL), dB L_{A90}	40	40	40	40
Exceedance (dB)	+11	+11	+11	+11
Initial Assessment Outcome	'Significant Adverse Impact'			

5.2.11 The existing operation is not readily discernible against the underlying sound climate, the audibility of the proposed operation is unlikely to be elevated against the existing. Accordingly, +5 dB of acoustic feature correction has been applied for tonality (just perceptible +2 dB – RWA only) and impulsivity (just perceptible +3 dB – material handling) based on a subjective assessment. The calculated rating sound levels (dB $L_{Ar,Tr}$) for the main operation of the existing and proposed plant are 8 and 11 dB above the background sound level (dB $L_{A90,T}$) during the day and early morning respectively. With reference to BS 4142:2014 and prior to consideration of context, this indicates that the operation of the new plant will have an 'adverse impact' and 'significant adverse impact' during the day and early morning respectively. As discussed above, however, in order to provide a reasoned assessment, it is important to consider context.

Consideration of Context

5.2.12 The following relevant factors affect the context of noise impacts from the Techemet site:

- The Techemet site has been under the same use, operating as a facility processing WEEE since 2015. No complaints have been received in the last 5 years.
- **Table 5-6** compares the calculated specific level of the existing and proposed operational scenarios. The proposed additional plant is not anticipated to produce a significant increase in specific sound level from existing operations.

Table 5-6: Change in Specific Sound Level – Existing and Proposed

Description	Assessment Location (NSR Ref)			
	NSR1	NSR2	NSR3	NSR4
Existing Scenario Sound Level dB $L_{Aeq,T}$	47.5	47.2	43.6	47.4
Proposed Scenario Specific Sound Level dB $L_{Aeq,T}$	46.1	46.1	45.7	45.5
Proposed - Existing	-1.4	-1.1	+2.1	-1.9

5.2.13 It should be noted that the scenarios compared above are during the peak operational period, and the predicted changes in sound level are a worst case, in that they assume all the proposed plant operates at full duty. When considering absolute levels, the rating level of the proposed scenario is still 8 dB below the measured ambient sound level at the NSRs.

5.2.14 **Table 5-7** compares the change in ambient sound level of the proposed scenario, resulting in a difference of up to 1.3 dB, which is a minor increase in sound levels.

Table 5-7: Change in Sound Level – Proposed

Description	Assessment Location (NSR Ref)			
	NSR1	NSR2	NSR3	NSR4
Daytime (07:00 – 23:00)				
Proposed Scenario Rating Sound Level dB $L_{Ar,T}$	51.1	51.1	50.7	50.5
Baseline Sound Level dB $L_{Aeq,T}$	58.5	58.5	58.5	58.5
Cumulative Sound Level dB $L_{Aeq,T}$	59.2	59.2	59.2	59.1
Cumulative - Existing	+0.7	+0.7	+0.7	+0.6
Early Morning (06:00 – 07:00)				

Description	Assessment Location (NSR Ref)			
	NSR1	NSR2	NSR3	NSR4
Proposed Operation Rating Sound Level dB $L_{Ar,T}$	51.1	51.1	50.7	50.5
Baseline Sound Level dB $L_{Aeq,T}$	55.5	55.5	55.5	55.5
Cumulative Sound Level dB $L_{Aeq,T}$	56.8	56.8	56.7	56.7
Cumulative - Existing	+1.3	+1.3	+1.2	+1.2

Overall Outcome of the Assessment

5.2.15 As described above, the proposed scenario is expected to result in a reduction of specific sound level at NSR1, 2 and 4, and a worst-case increase at NSR3 of 2.1 dB, over the existing scenario specific sound levels at the nearest residential properties. However, the rating level of the proposed scenario is much lower than the baseline sound level and is anticipated to result in an immaterial change in sound level. As such, the impact of the proposed new plant and equipment is considered to be low.

6 Uncertainty

6.1.1 There are several potential sources of uncertainty associated with the assessment presented in this report. These include:

- Uncertainties associated with predicted sound levels;
- Uncertainties associated with measurements; and
- Uncertainties associated with the assessment methodology.

6.1.2 Some of these uncertainties can be quantified, whereas others cannot be quantified directly. In the latter case, assumptions are made that are likely to be conservative to result in an overall conservative assessment. The steps that have been taken to minimise uncertainty in each of these areas are summarised below.

6.2 Predictions

6.2.1 Uncertainties associated with predictions have been minimised in the following ways:

- Basing modelling on measurements of plant and equipment operating within the Site, where possible, as opposed to using manufacturer's data;
- Carrying out predictions using an internationally recognised standard[5]. For the particular situation modelled (i.e., downwind propagation between all sources and all receivers), the standard states an uncertainty of +/- 3 dB;
- The default assumption of downwind propagation from all sources to all receivers is an inherently conservative assumption, as it is not generally possible for all receivers to be directly downwind of all sources; and
- Modelling results have been confirmed by comparison with measurements within the Site, with adjustments made to the modelling where necessary for predictions to match the measurements.

6.2.2 The combined uncertainty associated with predictions is therefore estimated to be +/- 3 dB for downwind propagation, with the predictions likely to be conservative for other wind conditions.

6.3 Measurements

6.3.1 Measurement uncertainties have been minimised in the following ways:

- All measurements have been carried out using fully calibrated Class 1 sound level meters, the calibration of which was checked before and after all measurement periods with a Class 1 acoustic field calibrator. The expected uncertainty associated with measurements obtained using calibrated Class 1 measurement equipment is approximately +/- 1 dB;
- Measurements of background sound were taken at times that were expected to result in lower levels of background sound than would be expected at other times (e.g., daytime measurements were taken at a location where Site operations were not discernible against the existing sound climate, and during periods of shut down). This is likely to result in a conservative assessment of background sound levels; and

- Measurements taken when weather conditions were such that they could have increased the measured sound levels (e.g., during periods when wind speeds were greater than 5 ms^{-1} or during periods of rain) were excluded from the assessment.

6.3.2 The overall uncertainty associated with the measurements is therefore expected to be of the order of +/- 2 to 3 dB.

6.4 Assessment Methodology

6.4.1 Uncertainty associated with the assessment methodology has been minimised in the following ways:

- The assessment methodology set out in BS 4142 has been followed as the recognised methodology for assessing sound from industrial plant; and
- A correction of +5 dB has been applied to predicted sound levels, to account for +2 dB "just perceptible" tonal and +3 dB "just perceptible" impulsive sound characteristics for the daytime assessment. Whether the sound from the Site is readily identifiable at all receptor locations, during the day, is subjective, therefore the correction has been applied as a conservative measure.

6.4.2 The uncertainties associated with the assessment methodology are therefore not precisely quantified but are expected to result in a conservative assessment.

6.5 Overall Uncertainty

6.5.1 Based on the above, the overall uncertainty in the assessment would be of the order of +/- 4 dB, for situations where receptors are downwind of all sources within the Site and for factors for which the uncertainty can be quantified numerically. This assumption is, however, inherently conservative during times when the receptors are not downwind of the Site. In addition, the inherent conservatism in the assessment assumptions means that it is more likely that the assessment will overestimate impacts rather than underestimate impacts. As such, the uncertainty of the current assessment is unlikely to materially change the outcome of the assessment.

7 Conclusions

7.1.1 This report describes a noise assessment prepared by Noise Consultants Ltd (NCL), part of Logika Group, on behalf of Techemet Ltd ('Techemet'), to support the permit variation for the Techemet site at the Vanguard Industrial Estate in Tamworth, that falls within the administrative district of Tamworth Borough Council (TBC).

7.1.2 Baseline surveys have been undertaken to quantify existing background sound levels at the nearest identified noise sensitive receptors under acceptable conditions, and the results analysed to establish a 'typical' background sound level for use in the assessment.

7.1.3 A sound source survey has been undertaken of the existing plant to quantify sound levels that are likely to be present in the noisiest areas of the Site, and operational sound has been calculated at the nearest noise sensitive receptors. Source emission levels for some plant have been adopted from other sources (e.g. empirical data) as it was not possible to measure sound from some items/activities such as the proposed sources which will be introduced under this permit variation.

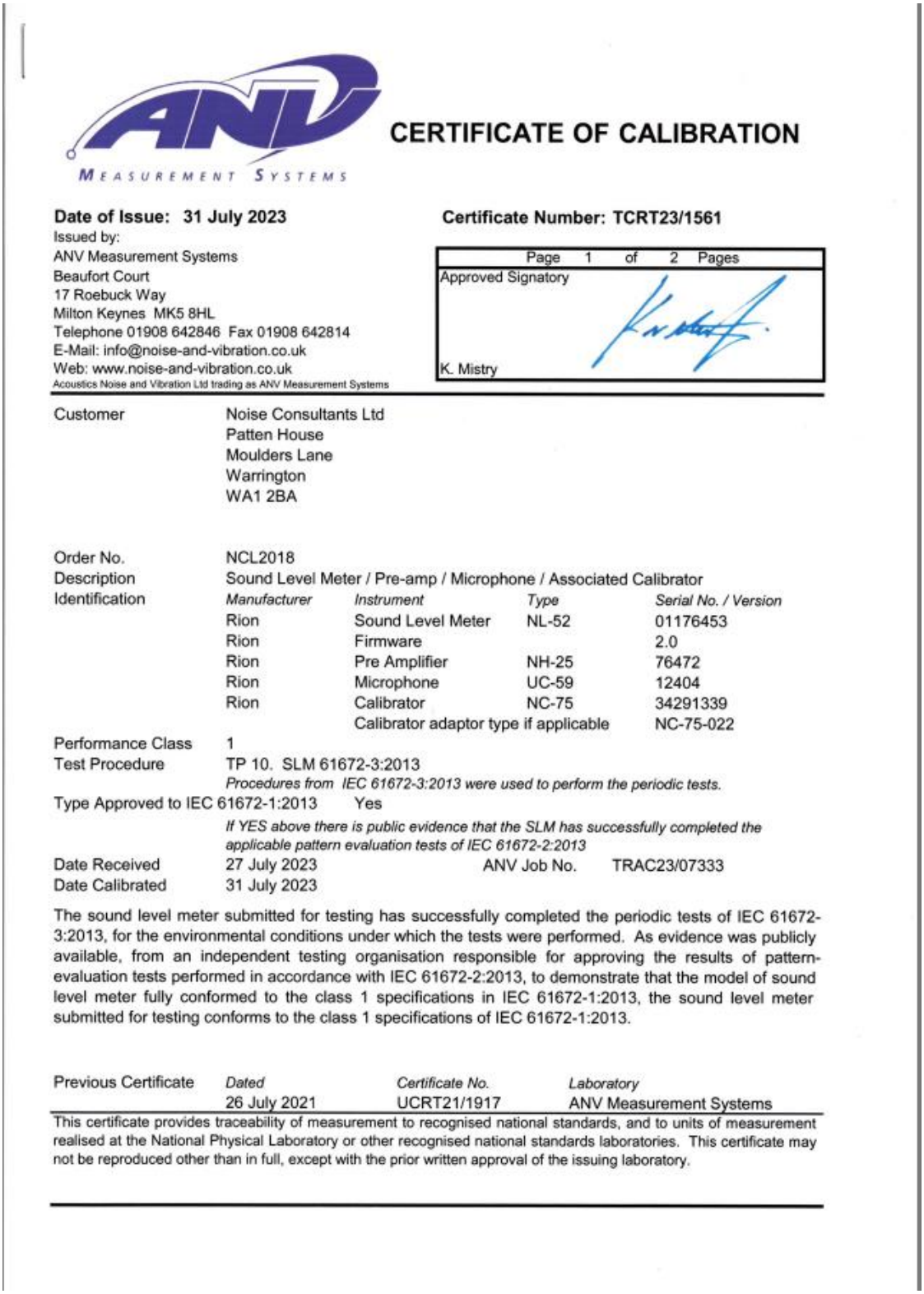
7.1.4 The calculation of operational sound from the Site has been undertaken by a noise modelling exercise, and the results assessed in accordance with BS 4142:2014. The assessment found that the rating level from the Site is likely to exceed the 'typical' background sound levels by more than 5 dB during the daytime period (07:00 – 23:00), an indication of an 'adverse impact'. During the early morning period (between 06:00 and 07:00), a worst-case assessment has indicated that the rating level from the Site is likely to exceed the 'typical' background sound levels by more than 10 dB, an indication of 'significant adverse impact'.

7.1.5 Whilst the proposed scenario has the potential to increase in operational sound levels (≤2.1 dB), an additional assessment of context has indicated that the rating level of the proposed scenario are 7 and 5 dB below the existing baseline sound level during the day (07:00 – 23:00) and early morning (06:00 – 07:00) periods respectively. Therefore, the change in ambient sound level is considered negligible (≤0.7 and ≤1.3 dB during the day and early morning respectively) so the change in magnitude of the noise impact of the Proposed Development is likely to be low at the nearest noise sensitive receptors.

8 Glossary

Term	Definition
dB	Decibel. The logarithmically scaled measurement unit of sound.
A-weighting	Frequency weighting applied to measured sound in order to account for the relative loudness perceived by the human ear.
$L_{Aeq,T}$	A-weighted equivalent continuous sound level over a given time period. It is the sound level of a steady sound that has the same energy as a fluctuating sound over the same time period.
$L_{A90,T}$	The A-weighted sound level exceeded for 90% of the measurement period. Often referred to as the background sound level.
L_{Amax}	The A-weighted maximum recorded sound level during a measurement period.
Sound Power Level	The sound power level (L_w) of a source is a measurement of the total acoustic power that it radiates. The sound power level is an intrinsic characteristic of a source (analogous to its volume or mass), which is not affected by the environment within which the source is located.
Ambient sound level, $L_a = L_{Aeq,T}$	The A-weighted equivalent continuous sound level of the totally encompassing sound for a given situation and time interval, T.
Residual sound level	The A-weighted equivalent continuous ambient sound level remaining when the specific sound level has decreased to a degree in which it does not contribute to the ambient sound level.
Specific sound level, $L_s = L_{Aeq,Tr}$	The A-weighted equivalent continuous sound pressure level produced by the specific sound source at the reference location over a reference time interval, T
Rating level, $L_{Ar,Tr}$	The specific sound level plus any adjustment for the characteristic features of the sound.
R_w	The weighted Sound Reduction Index which characterises the airborne sound insulation of a building element over a range of frequencies with a single number quantity.

A1 Sound Instrumentation Calibration Certificates



ANV MEASUREMENT SYSTEMS

CERTIFICATE OF CALIBRATION

Date of Issue: 31 July 2023 **Certificate Number: TCRT23/1561**

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

Page 1 of 2 Pages
Approved Signatory
K. Mistry

Customer	Noise Consultants Ltd Patten House Moulders Lane Warrington WA1 2BA			
Order No.	NCL2018			
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator			
Identification	*Manufacturer*	*Instrument*	*Type*	*Serial No. / Version*
	Rion	Sound Level Meter	NL-52	01176453
	Rion	Firmware		2.0
	Rion	Pre Amplifier	NH-25	76472
	Rion	Microphone	UC-59	12404
	Rion	Calibrator	NC-75	34291339
		Calibrator adaptor type if applicable		NC-75-022
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	27 July 2023	ANV Job No.	TRAC23/07333	
Date Calibrated	31 July 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*
	26 July 2021	UCRT21/1917	ANV Measurement Systems

This certificate provides traceability of measurement to recognised national standards, and to units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

8.1.2

CERTIFICATE OF CALIBRATION

Certificate Number
TCRT23/1561
Page 2 of 2 Pages

Sound Level Meter Instruction manual and data used to adjust the sound levels indicated.

SLM instruction manual title	NL-52/NL-42 Description for IEC 61672-1		
SLM instruction manual ref / issue	No. 56034 21-03	Source	Rion
Date provided or internet download date	19 March 2021		

	Case Corrections	Wind Shield Corrections	Mic Pressure to Free Field Corrections
Uncertainties provided	Yes	Yes	Yes

Total expanded uncertainties within the requirements of IEC 61672-1:2013	YES		
Specified or equivalent Calibrator	Specified		
Customer or Lab Calibrator	Customers Calibrator		
Calibrator adaptor type if applicable	NC-75-022		
Calibrator cal. date	31 July 2023		
Calibrator cert. number	TCRT23/1556		
Calibrator cal cert issued by Lab	ANV Measurement Systems		
Calibrator SPL @ STP	94.05	dB	Calibration reference sound pressure level
Calibrator frequency	1000.00	Hz	Calibration check frequency
Reference level range	Single	dB	

Accessories used or corrected for during calibration - Wind Shield WS-10

Environmental conditions during tests	Start	End	
Temperature	23.50	23.18	± 0.30 °C
Humidity	40.3	37.1	± 3.00 %RH
Ambient Pressure	99.22	99.22	± 0.03 kPa

Indication at the Calibration Check Frequency				
Initial indicated level	94.1 dB	Adjusted indicated level	94.1	dB
Uncertainty of calibrator used for Indication at the Calibration Check Frequency ±			0.10	dB

Self Generated Noise				
Microphone installed -	Less Than	17.7	dB	A Weighting
Microphone replaced with electrical input device -				UR = Under Range indicated

Weighting	A			C			Z		
	10.3	dB	UR	14.3	dB	UR	19.6	dB	UR

Self Generated Noise reported for information only and not used to assess conformance to a requirement

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with the Guide to the Expression of Uncertainty in Measurement published by ISO.

Additional Comments

None

END

Calibrated by: K. Zablocki R 1

8.1.3

MEASUREMENT SYSTEMS

CERTIFICATE OF CALIBRATION

Date of Issue: 26 January 2023

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

Certificate Number: TCRT23/1087

Page 1 of 2 Pages

Approved Signatory

K. Mistry

Customer	Noise Consultants Ltd Patten House Moulders Lane Warrington WA1 2BA
Order No.	256
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator

Identification

Manufacturer	*Instrument*	*Type*	*Serial No. / Version*
Rion	Sound Level Meter	NL-52	01009670
Rion	Firmware		2.0
Rion	Pre Amplifier	NH-25	09975
Rion	Microphone	UC-59	18145
Rion	Calibrator	NC-75	34212937
	Calibrator adaptor type if applicable		NC-75-022

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 January 2023 ANV Job No. TRAC23/01047
Date Calibrated	26 January 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*
	10 March 2021	UCRT21/1332	0653

8.1.4

CERTIFICATE OF CALIBRATION

Certificate Number
TCRT23/1087

Page 2 of 2 Pages

Sound Level Meter Instruction manual and data used to adjust the sound levels indicated.

SLM instruction manual title	NL-52/NL-42 Description for IEC 61672-1		
SLM instruction manual ref / issue	No. 56034 21-03	Source	Rion
Date provided or internet download date	19 March 2021		

	Case Corrections	Wind Shield Corrections	Mic Pressure to Free Field Corrections
Uncertainties provided	Yes	Yes	Yes

Total expanded uncertainties within the requirements of IEC 61672-1:2013	YES	
Specified or equivalent Calibrator	Specified	
Customer or Lab Calibrator	Customers Calibrator	
Calibrator adaptor type if applicable	NC-75-022	
Calibrator cal. date	26 January 2023	
Calibrator cert. number	TCRT23/1084	
Calibrator cal cert issued by Lab	ANV Measurement Systems	
Calibrator SPL @ STP	94.00 dB	Calibration reference sound pressure level
Calibrator frequency	1000.00 Hz	Calibration check frequency
Reference level range	Single dB	
Accessories used or corrected for during calibration -	Wind Shield WS-10	

Environmental conditions during tests	Start	End	
Temperature	24.40	24.19	± 0.30 °C
Humidity	32.1	37.2	± 3.00 %RH
Ambient Pressure	102.09	102.10	± 0.03 kPa

Indication at the Calibration Check Frequency			
Initial indicated level	94.1 dB	Adjusted indicated level	94.0 dB
Uncertainty of calibrator used for Indication at the Calibration Check Frequency ±			0.10 dB

Self Generated Noise			
Microphone installed -	Less Than	17.1 dB	A Weighting
Microphone replaced with electrical input device -		UR = Under Range indicated	

Weighting	A			C			Z		
	12.7	dB	UR	18.1	dB	UR	23.5	dB	UR

Self Generated Noise reported for information only and not used to assess conformance to a requirement

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with the Guide to the Expression of Uncertainty in Measurement published by ISO.

Additional Comments

None

END

Calibrated by: PB

R 1

8.1.5

CERTIFICATE OF CALIBRATION

Date of Issue: 19 December 2024

Certificate Number: TCRT24/1906

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	Noise Consultants Ltd Patten House Warrington WA1 2BA
Order No.	NCL2098
Test Procedure	Procedure TP 14 Calibration of Sound Calibrators (60942:2017)
Description	Acoustic Calibrator

Identification	*Manufacturer*	*Instrument*	*Model*	*Serial No.*
	Rion	Calibrator	NC-75	34212937

Public evidence of Type Approval Yes Approved by PTB

The calibrator has been tested as specified in Annex B of IEC 60942:2017. As public evidence was available, from a testing organisation responsible for approving the results of pattern evaluation tests, to demonstrate that the model of sound calibrator fully conformed to the requirements for pattern evaluation described in Annex A of IEC 60942:2017, the sound calibrator tested is considered to conform to all the class 1 requirements of IEC 60942:2017.

ANV Job No.	TRAC24/12534	
Date Received	18 December 2024	
Date Calibrated	19 December 2024	
Previous Certificate	*Dated*	21 December 2023
	Certificate No.	TCRT23/1948
	Laboratory	ANV Measurement Systems

8.1.6

CERTIFICATE OF CALIBRATION

Certificate Number
TCRT24/1906
Page 2 of 2 Pages

Measurements

The sound pressure level generated by the calibrator (averaged over a 20 to 25 second period) in its WS2 configuration was measured five times (rotating the calibrator on the microphone each time) by the Insert Voltage Method using a microphone as detailed below. The mean of the results obtained is shown below.

The frequency of the sound from the calibrator was measured five times over a 20 to 25 second period and the average frequency calculated.

The total distortion + noise of the sound from the calibrator was measured, using a rejection filter distortion factor meter, five times over a 20 to 25 second period and the average distortion + noise calculated.

Test Microphone — *Manufacturer*: Brüel & Kjær — *Type*: 4134

Nominal Setting dB / Hz	Mean Level dB rel 20 µPa	Frequency	Distortion + Noise
94 / 1000	94.04 ± 0.10	1000.00 ± 0.12Hz	(0.15 ± 0.03) %

Environmental conditions during tests	Start	End		
Temperature	22.30	22.26	± 0.30	°C
Humidity	46.7	48.1	± 3.0	%RH
Ambient Pressure	99.693	99.702	± 0.030	kPa

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with the Guide to the Expression of Uncertainty in Measurement published by the International Organisation for Standards (ISO).

The uncertainties refer to the measured values only with no account being taken of the ability of the instrument to maintain its calibration.

A small correction factor may need to be applied to the sound pressure level quoted above if the device is used to calibrate a sound level meter which is fitted with a free-field response microphone. See manufacturers handbook for details.

Note: Calibrator adjusted prior to calibration? NO

Additional Comments: The results on this certificate only relate to the items calibrated as identified above.
None

Calibrated by: B. Bogdan R 1

..... END .....

8.1.7

A2 Survey Data

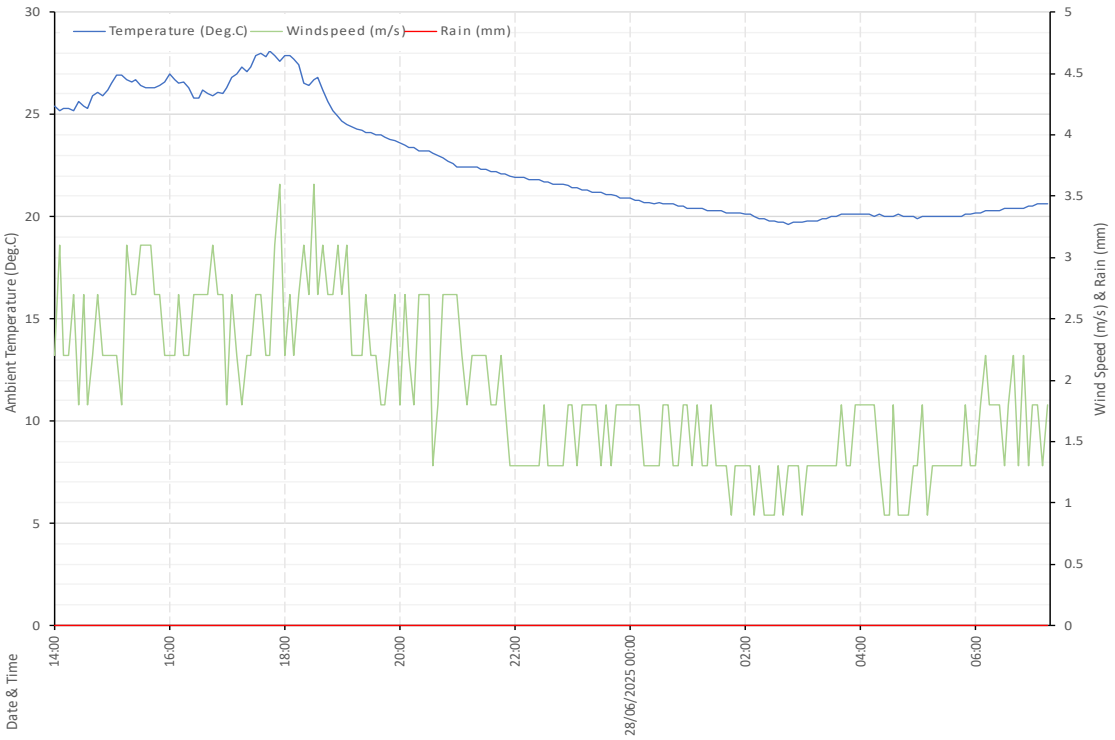


Figure A2-1: Measured Weather Data

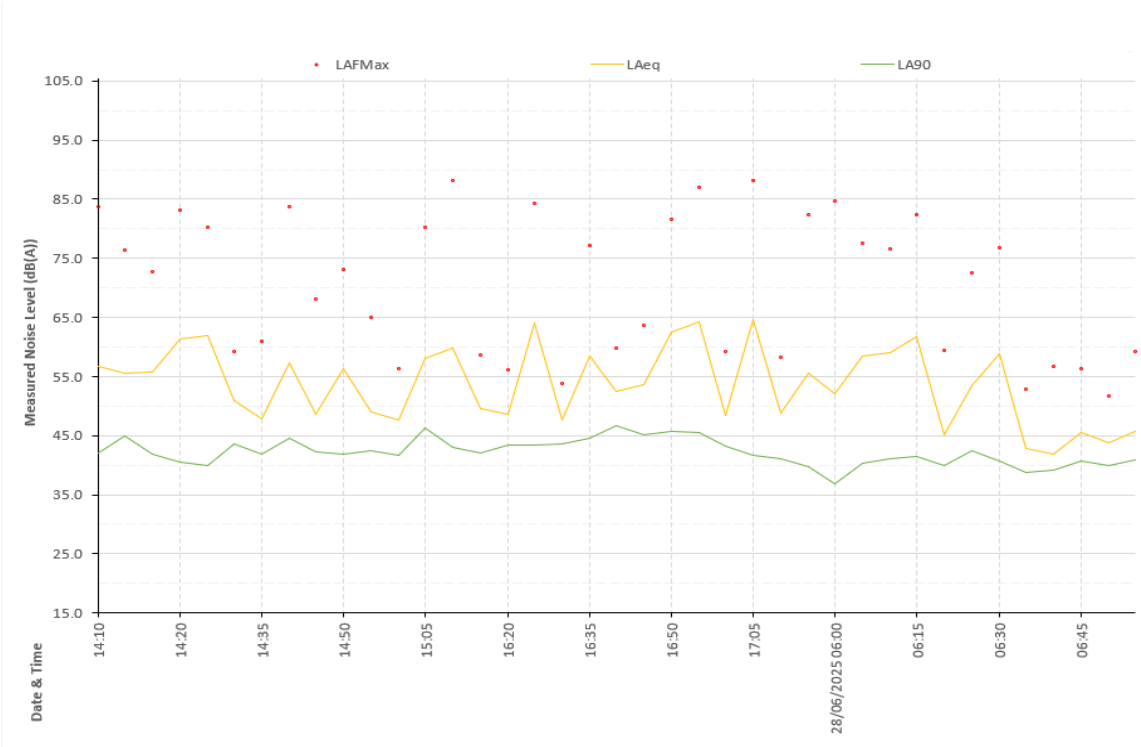


Figure A2-2: Measured Sound Data, ML1

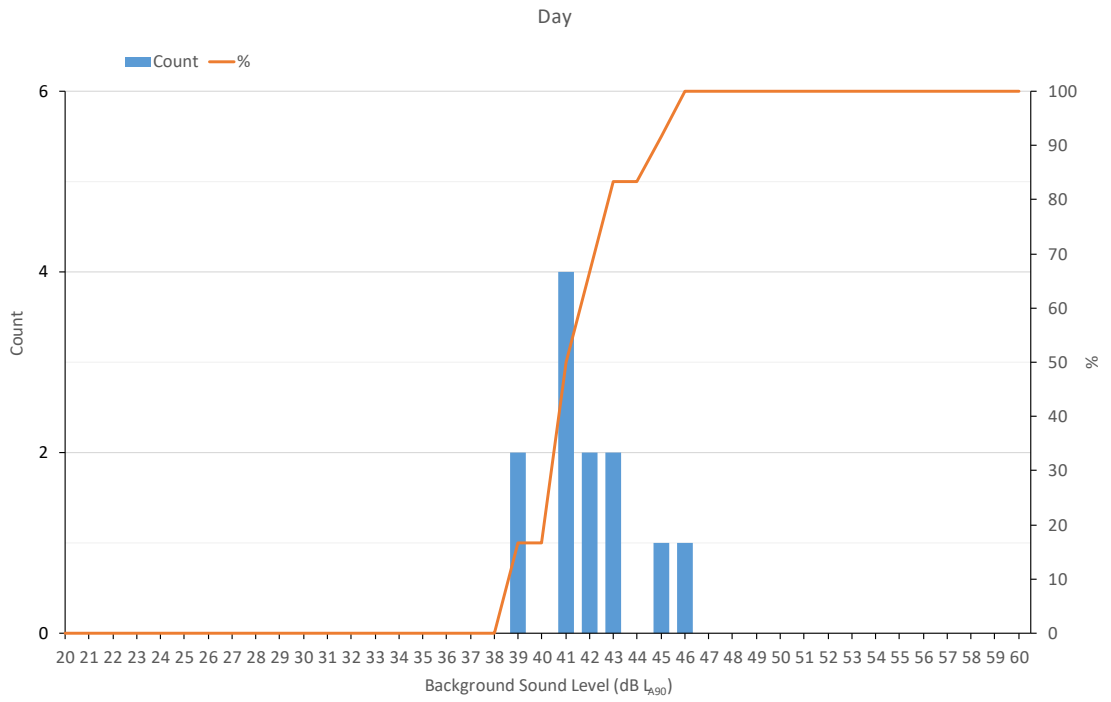


Figure A2-3: Statistical Analysis of Measured L_{A90} Sound Data, ML1

Table A2-1: Measured Sound Data, ML1

Period	Start Time (hh:mm)	Duration (hh:mm)	L_{AFmax}	L_{Aeq}	L_{A90}	Comment / Observations
Day	14:10	15:00.0	83.2	58.5	41.4	Industrial noise audible from the east (i.e., Reverse Warning Alarm (RWA) and conversation). Rail x3
Day	14:25	15:00.0	80.2	57.6	41.7	Rail x2
Day	14:40	15:00.0	83.7	55.4	42.4	Moped on Manta Rd and Rail
Day	14:55	15:00.0	80.3	54.2	42.5	Hand tool use at residence. Rail
Day	16:15	15:00.0	84.4	59.5	43.1	Rail
Day	16:30	15:00.0	77.2	55.0	44.7	Rail x2
Day	16:45	15:00.0	87.0	62.0	45.6	Rail x3
Day	17:00	15:00.0	88.1	60.1	41.3	Rail x2
Day	06:00	15:00.0	77.5	57.2	38.8	Impact noise faintly audible. Rail x2

Period	Start Time (hh:mm)	Duration (hh:mm)	L_{AFmax}	L_{Aeq}	L_{A90}	Comment / Observations
Day	06:15	15:00.0	82.3	57.8	40.7	Tone and impact faintly audible. RWA faintly audible. Rail x3
Day	06:30	15:00.0	76.8	54.3	39.2	Impact and RWA audible, material handling audible. Rail
Day	06:45	15:00.0	59.2	45.1	40.6	Impact and RWA audible. Dog barking south

Table A2-2: Measured Sound Data, Source Survey

Plant Item – Measurement Ref	Location	Start time (hh:mm:ss)	Duration (hh:mm:ss)	L_{AFmax}	L_{Aeq}	Comment / Observation
Torit	ST1	11:26:00	00:02:00	105.4	87.6	Torit machine containing oil reserves. Hydraulic hiss every 10s.
Cutting Platform	ST2	11:34:00	00:03:00	96.4	83.2	Cutting operations dominant. Location 2.5m east of steps, 10m east of operator point.
Cutting Platform	ST3	11:39:00	00:01:30	96.3	82.5	7.5m east of bag collection point beneath platform.
Hopper Bin	ST4	11:45:30	00:05:00	104.2	86.5	2m south of bin beneath conveyor hopper. Impact noise from material. M-HF tonal component from cutting platform.
Plasma and Angle Grinding	ST5a	11:53:30	00:02:00	91.3	81.5	7m south of plasma cutting area. Angle grinder use 6m south. Impact

Plant Item – Measurement Ref	Location	Start time (hh:mm:ss)	Duration (hh:mm:ss)	L_{AFmax}	L_{Aeq}	Comment / Observation
						from material in bins once cut. (Excluded)
Plasma and Angle Grinding	ST5b	11:53:30	00:02:00	110.4	95.7	7m south of plasma cutting area. Angle grinder use 6m south. Impact from material in bins once cut. (Isolated)
Sampler	ST6	11:57:00	00:03:00	90.1	80.3	2m east of sampler. LF hum dominant.
Sampler	ST7	12:01:00	00:02:00	87.8	79.0	2.5m south of Sampling Platform. Winch unloading bag. Air compressor on unit.
Rear Cutting Platform	ST8	12:05:30	00:03:00	99.2	82.7	10m west of rear cutting platform. 3 operators, 1 sorting input material, 2 feeding the cutter, material deposited in bins. Metallic squeak when empty bin tips. Extension used as storage.
External Northwest - Extract	ST9	12:17:00	00:03:00	91.6	73.6	Outside RSD of extension. Exhaust 10m southeast. Rear cutting platform and FLT movements audible.
Car Park - South of Gate 2	ST10	12:23:30	00:05:00	75.7	57.3	West boundary north of Unit 10. FLT unloading HGV opposite Gate 2. Music audible from units west.
Cutting Platform	ST11	12:31:00	00:06:00	97.9	81.8	16m north of main platform. Tonal noise from

Plant Item – Measurement Ref	Location	Start time (hh:mm:ss)	Duration (hh:mm:ss)	L_{AFmax}	L_{Aeq}	Comment / Observation
						cutting platform dominant. FLT movements audible on occasion. Occasional impact noise from material deposit.
External - Compressor	ST12	12:41:00	00:03:00	74.0	70.5	1m south of compressor. RTN audible. HF whine audible.
Extract Grille	ST13	12:45:00	00:04:00	71.9	60.8	3m south of main factory. Breakout from elevated vent dominant.
External - South	ST14	12:50:00	00:03:00	75.9	69.3	3m south of main factory (west of ST13). Exhaust noise dominant. Impact noise breakout audible.
External - Sampler Area	ST15	12:54:30	00:02:00	68.1	62.1	3m east of sampler area building. Breakout faintly audible. RTN audible on occasion.
Cutting Platform	ST16	12:57:50	00:00:30	76.6	63.2	3m south of open fire exit into extension. Rear cutting operations dominant.

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