



FI REAL ESTATE MANAGEMENT

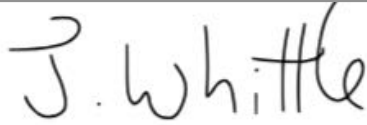
BRIDGEWAY, WREXHAM INDUSTRIAL ESTATE, WREXHAM

NOISE IMPACT ASSESSMENT

R2434-REP01-PC

5 DECEMBER 2025

REPORT DETAILS

Project	Bridgeway, Wrexham Industrial Estate, Wrexham
Client	FI Real Estate Management
Document Reference	R2434-REP01-PC
Date Issued	5 March 2025
Revision	Initial Version
Issued By	Paul Clark Pg. Dip. IOA MIOA Red Acoustics Limited Business First Millennium Road Preston PR2 5BL T: 01772 722 182 M: 07720 591650 paulclark@redacoustics.co.uk
Signed	
Checked By	Johnathan Whittle BSc (Hons), Pg. Dip. IOA AMIOA MCIEH
Signed	

The survey was conducted and this report has been prepared for the private and confidential use of FI Real Estate Management only and cannot be reproduced in whole or in part or relied upon by any third party for any use whatsoever without the express written authorisation of Red Acoustics Limited. If any third party whatsoever comes into possession of this report, they rely on it at their own risk and Red Acoustics Limited accepts no responsibility (including in negligence) to any such third party.

CONTENTS

1.0 INTRODUCTION	1
2.0 SITE DESCRIPTION & SURROUNDINGS	2
3.0 POLICY CONTEXT & ASSESSMENT GUIDANCE	4
4.0 ENVIRONMENTAL SOUND SURVEY	8
5.0 DETERMINATION OF OPERATIONAL SOUND LEVELS	10
6.0 SOUND PROPAGATION MODELLING	12
7.0 BS4142 IMPACT ASSESSMENT	16
8.0 PLANT SOUND EMISSION LIMITS	18
9.0 CONCLUSION	19
APPENDIX A: NOISE SURVEY DETAILS	20

1.0 INTRODUCTION

Red Acoustics Ltd has been commissioned by FI Real Estate Management to undertake an assessment of the potential impact of industrial activity on a nearby noise sensitive receptors (NSRs) including the nearby prison facility from the proposed employment development at Bridgeway, Wrexham Industrial Estate, Wrexham.

Environmental sound surveys have been carried out to establish existing ambient and background sound levels at the nearest noise sensitive receptors. The assessment has been conducted in accordance with the methodologies and guidance set out in Technical Advice Note (TAN) 11 and BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'.

The proposed development description for the purpose of seeking planning approval is:

A26N - TAN11 NOISE SURVEY ADVICE

The development site is in close proximity to HMP Berwyn, and residences on The Oval and Bridgeway East and the developer is therefore required to carry out a noise survey in order to determine noise levels for both day (07:00 – 23:00 hours) and night (23:00 – 07:00 hours) having regard to Planning Guidance (Wales), Technical Advice Note (TAN) 11 – Noise. The report of the noise survey findings shall include:

- a) Noise levels arising from day/night time activities in the vicinity of the proposed development site and the impact upon the proposed accommodation, and*
- b) A detailed scheme of noise insulation and / or attenuation measures so designed to safeguard the amenity of the future occupants of the proposed accommodation hereby approved.*

The proposal is to construct employment units with new vehicular access with car parking, HGV access for deliveries, landscaping and ancillary development on the existing Bridgeway Centre site.

It has been shown that predicted worst case sound levels at the nearest noise sensitive properties associated with the proposed new employment development result in low impact when rated in accordance with BS4142:2014+A1:2019.

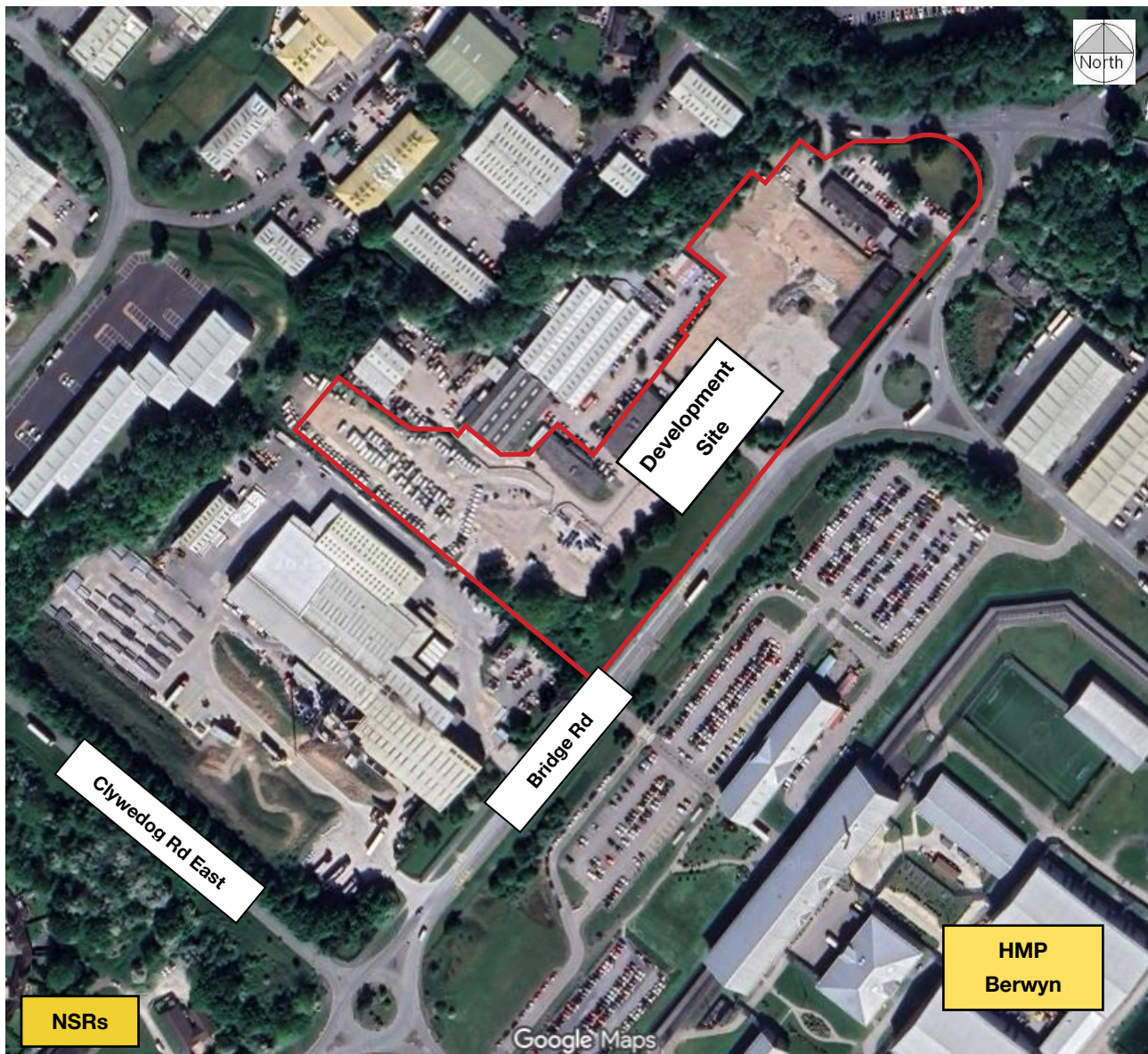
In line with the findings of this assessment, recommended mechanical plant sound emission limits have been established to ensure that future operations remain compliant with relevant guidance and maintain a low noise impact at the NSPs and prison facility.

2.0 SITE DESCRIPTION & SURROUNDINGS

The proposed development site comprises existing commercial and industrial land within the former Bridgeway Centre, located at the Wrexham Industrial Estate. The scheme proposes the creation of a new business park consisting of a series of blocks subdivided into smaller units, designed to accommodate a broad range of businesses across the employment site. In total, 52 new units are proposed as part of the development. The existing retail, service, and food and drink units situated along the northern elevation of the site, fronting Coed Aben Road, will be retained and refurbished as part of the redevelopment proposals.

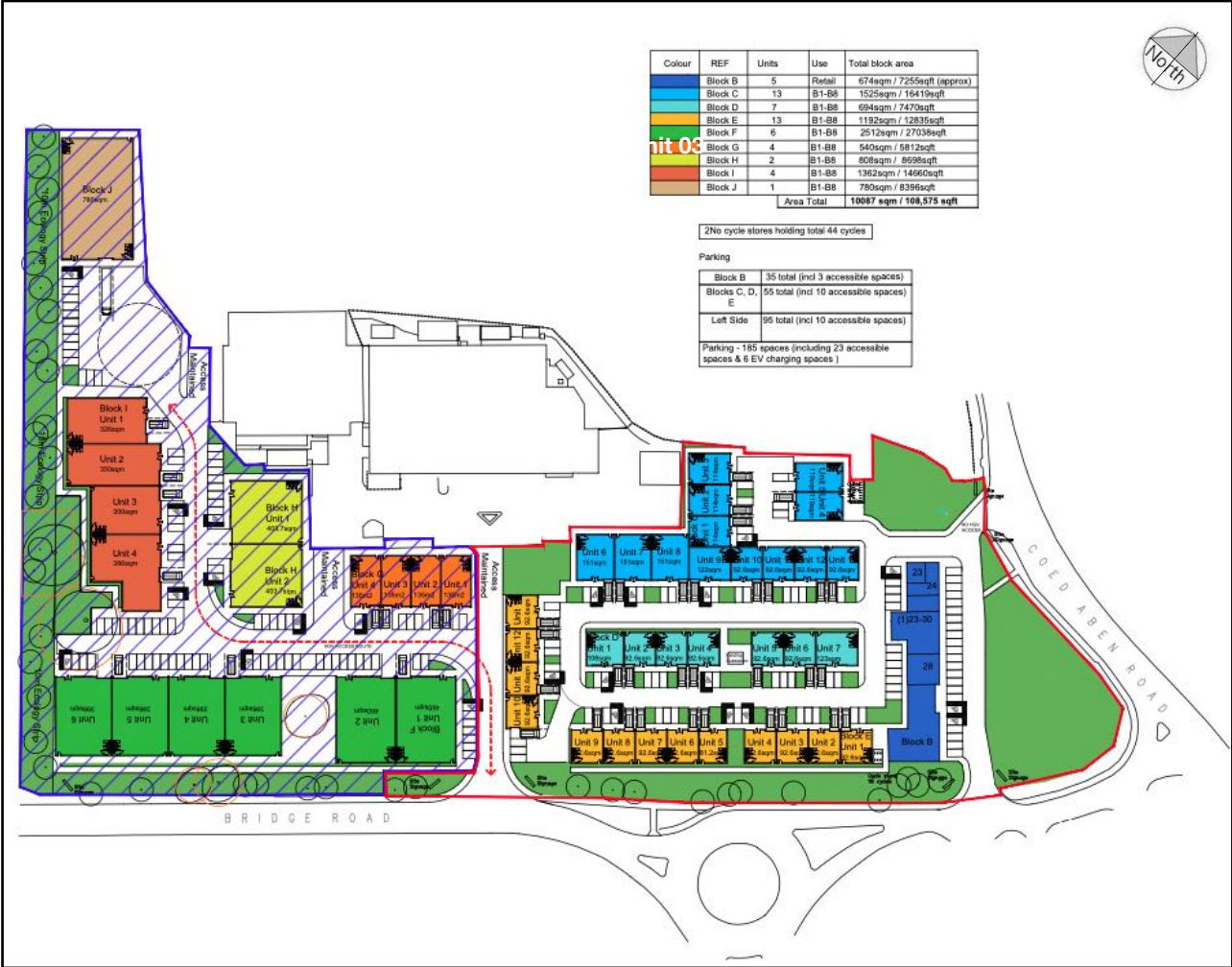
Figure 2.1 below shows the location of the site in relation to the surroundings and Figure 2.2 shows the proposed site layout.

Figure 2.1: Site Location



The NSRs are located to the southwest at an approximate distance of 280m, while the nearest residential block within the nearby prison facility lies approximately 270m away.

Figure 2.2: Site Layout



3.0 POLICY CONTEXT & ASSESSMENT GUIDANCE

Planning Policy Wales

Planning Policy Wales (PPW) Edition 11¹ is the latest version of PPW and was published in February 2021². The document sets out the context for planning in Wales and outlines the main policy objectives and principles. PPW emphasises sustainability as a key driver in land use planning and introduces the concept of placemaking.

PPW introduces four themes into the Welsh land use planning framework:

- Strategic and Spatial Choices
- Active and Social Places
- Productive and Enterprising Places
- Distinctive and Natural Places

PPW outlines policy on the main issues affecting development planning in Wales such as housing, transport, commercial and retail use, energy, minerals, infrastructure and services, economic development, electronic communications, tourism, biodiversity, environmental risk, coastal issues, the historic environment and recreation.

The Welsh National Development Framework (NDF) is Future Wales: the National Plan 2040 (Future Wales)³ which was published in February 2021. The document sets out a 20 year land use framework which forms a material consideration in planning decision making and local planning policy must be produced in line with the framework.

Both PPW and Future Wales are supported by Technical Advice Notes (TANs) which are intended to provide detailed guidance on specific technical issues such as noise.

¹ Planning Policy Wales Edition 11 February 2021 - Welsh Government: https://www.gov.wales/sites/default/files/publications/2021-02/planning-policy-wales-edition-11_0.pdf

² The Planning Series 1 - National planning policy December 2021 - Welsh Parliament: <https://senedd.wales/media/w1bdruqf/21-27-national-planning-policy.pdf>

³ Future Wales: the National Plan 2040 February 2021 - Welsh Government <https://www.gov.wales/sites/default/files/publications/2021-02/future-wales-the-national-plan-2040.pdf>

Welsh planning policy in relation to Noise makes reference to TAN 11: Noise 1997⁴. The document provides advice to planners on how the planning system can be used to minimise the impact of noise without placing unreasonable demands on business or unreasonable restrictions on development.

With regard to development control for noise generating development (as in the case of the development considered in this noise impact assessment), local planning authorities must ensure that noise generating development does not cause an unacceptable degree of disturbance.

To achieve this, reasonable and proportionate measures to limit the impact of new noise sources may include:

- Engineering - Reduction of noise at its source such as using quieter machinery, containment of noise or screening using barriers.
- Layout - Adequate distance between sources and receivers and adoption of the principle of good acoustic design to make use of site layout and features to minimise noise impact.
- Administration - Managing activities in terms of limits on produced noise or hours of operation.

Although TAN 11 discusses noise impact in a number of scenarios, the relevant scenario to this noise impact assessment is that of noise from industrial and commercial developments. Paragraph B17 in Appendix B of TAN 11 makes reference to the appropriate British Standard BS4142, though this document has been updated since the 1990 version referenced specifically.

BS4142:2014+A1:2019 is the most up to date version of the British Standard referred to in Tan 11 and as the relevant method of assessing noise in the specific scenarios considered in this noise impact assessment, this is discussed in more detail below.

⁴ Planning Guidance (Wales) Technical Advice Note (Wales) 11, Noise - October 1997 - Welsh Government <https://www.gov.wales/sites/default/files/publications/2018-09/tan11-noise.pdf>

British Standard 4142

BS 4142:2014+A1:2019⁵ presents methods for rating and assessing the potential impact of commercial and industrial sound upon noise sensitive receptors. In order to assess impact using BS 4142, the Rating Level of the new sound source is compared with the existing contextual Background Sound Level.

- Typically, the greater this difference, the greater the magnitude of the 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.
- 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 Rating Level is determined by assessing the Ambient Sound Level, distinguishing the Specific Sound Level from the Residual Sound Level and applying any sound specific penalties for acoustic features that would subjectively cause the sound to be perceived differently.

The Specific Sound Level of the commercial / industrial sound source is determined by either; measurement or calculation with regard to the appropriate reference time interval (for daytime or night-time periods). The standard requires separate analysis for daytime and night-time periods, evaluating the Rating Level over an appropriate reference time interval (T_r) of: 1hr for daytime (07:00 - 23:00 hrs) and 15min for night time (23:00 - 07:00 hrs). The Specific Sound Level is defined as equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, T (determined either by calculation or deducting the measured Residual Sound Level from the measured Ambient Sound Level).

‘Ambient sound’ is defined as the totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far (The ambient sound comprises the residual sound and the specific sound when present).

‘Residual sound’ is defined as the ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound.

⁵ BS4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound

Where appropriate, a rating penalty can be applied to the specific sound level to account for the character of the sound, namely: tonality, impulsivity and intermittency. Such acoustic feature corrections can be added together linearly.

Tonality can be determined objectively (using adjacent third octave band analysis or the Joint Nordic method) or subjectively as described below:

- +2dB penalty: Just perceptible
- +4dB penalty: Clearly perceptible
- +6dB penalty: Highly perceptible

Impulsivity can be determined objectively (using Fast Fourier Transform analysis) or subjectively as described below:

- +3dB penalty: Just perceptible
- +6dB penalty: Clearly perceptible
- +9dB penalty: Highly perceptible

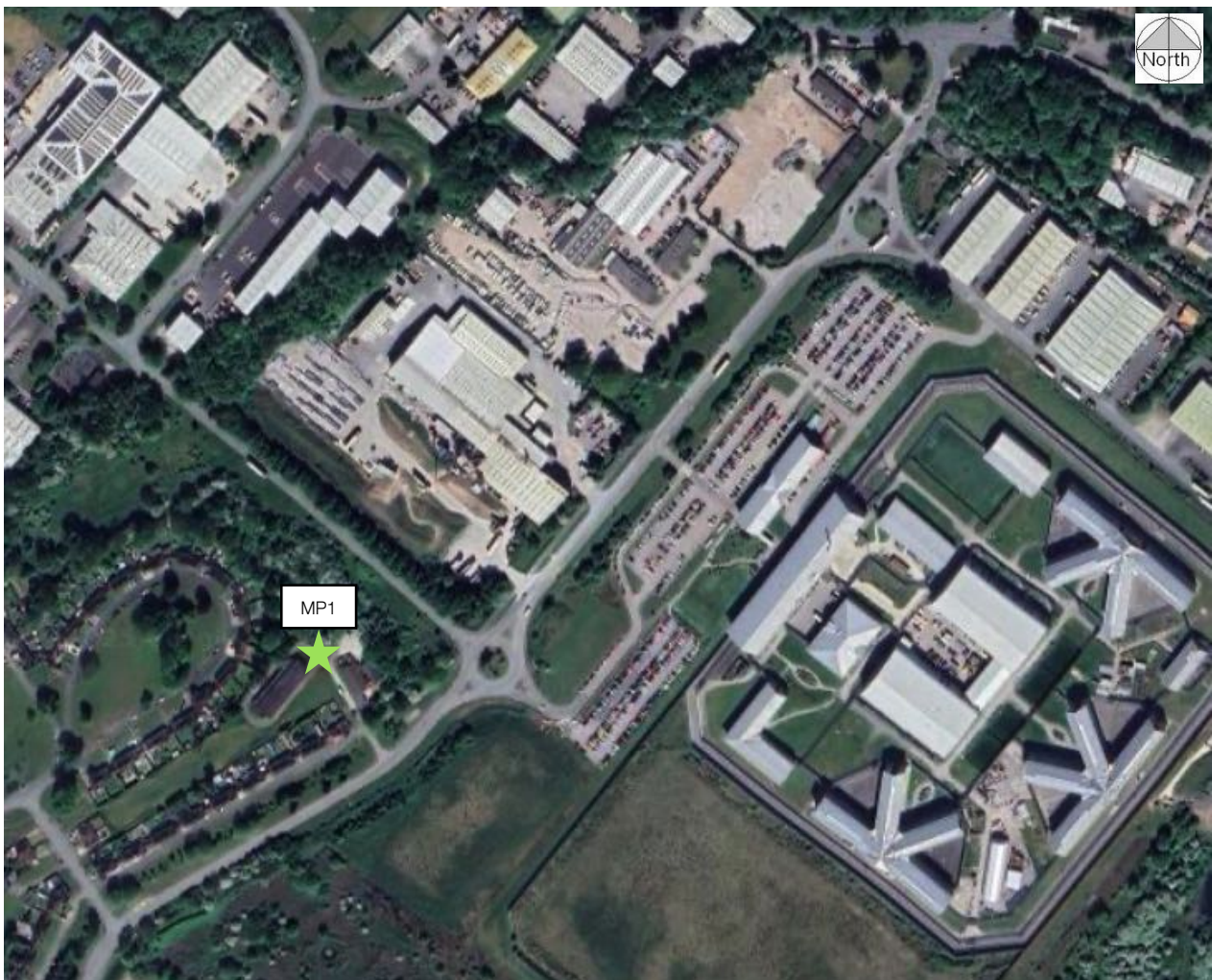
Where intermittency is present, a +3dB penalty can be applied. Where the acoustic feature characteristics are neither tonal nor impulsive, but are clearly distinguishable against the residual sound, a +3dB penalty can be applied.

4.0 ENVIRONMENTAL SOUND SURVEY

An environmental sound survey has been carried out by Red Acoustics to determine the prevailing sound climate at the proposed development site. At this stage the proposed operational hours of the employment development are unknown and 24 hour use is assumed for the purpose of the assessment.

Measurements were undertaken by Red Acoustics at monitoring position MP1 during typical daytime and nighttime periods. The measurements were manned between 05:00hrs to 08:00hrs with further measurements conducted between 09:00hrs to 12:00hrs on 28 October 2025. Measurements were undertaken to determine the typical sound climate at a position representative of the nearest NSRs to the proposed development. The area is of a highly industrial context with a large number of commercial and industries activities. Figure 4.1 below shows the location of the monitoring position.

Figure 4.1: Survey Monitoring Position



The sound survey was undertaken using a Class 1 Sound Level Meter (SLM) positioned on a tripod at a height of 1.5 m above ground level, in free field conditions, with the SLM logging data in 15 minute intervals. During the surveys, the noted weather conditions were, dry, calm with wind speeds typically below <5m/s. Table 4.1 present survey measurement result summary.

Table 4.1: Measured External Sound Levels

Measurement Location	Measured Sound Pressure Level, dB (re: 2x10 ⁻⁵ Pa)			
	Daytime Period 07:00hrs to 23:00hrs		Nighttime Period 23:00hrs to 07:00hrs	
	L _{Aeq,t}	L _{A90,t}	dB L _{Aeq,t}	L _{A90,t}
MP1	43 - 65	39 - 57	36 - 49	34 - 47

The statistical background L_{A90} distribution sound level measured at position MP1 was 42dB(A) during the daytime period and 36dB(A) during the nighttime period.

5.0 DETERMINATION OF OPERATIONAL SOUND LEVELS

The final occupants of the proposed employment units are not known at this stage. For assessment purposes we have assessed a worst case commercial park usage. Operational usage for the proposed use classes can vary from low impact office and storage type spaces to typically higher operational sound levels, though the use classes do not typically include high noise uses. For the purposes of a worst case assessment, typical sound levels for a vehicle repair workshop have been assumed as it would not be anticipated that higher sound levels would be associated with the proposed use classes.

In order to assess impact from typical internal operating sound levels within the proposed commercial units, an assumed typical internal sound level has been taken from measured library data held on file by Red Acoustics for a vehicle repair and servicing workshop. Measured typical levels for a vehicle repair workshop are presented in Figure 5.1 and Table 5.1 below. These were measured at Complete Vehicle Maintenance in Preston during a busy daytime period during vehicle repair operations. The loudest 1 hour period has been used as the typical internal level for the proposed units.

Figure 5.1: Measured Internal Operating Level (Complete Vehicle Maintenance Preston)

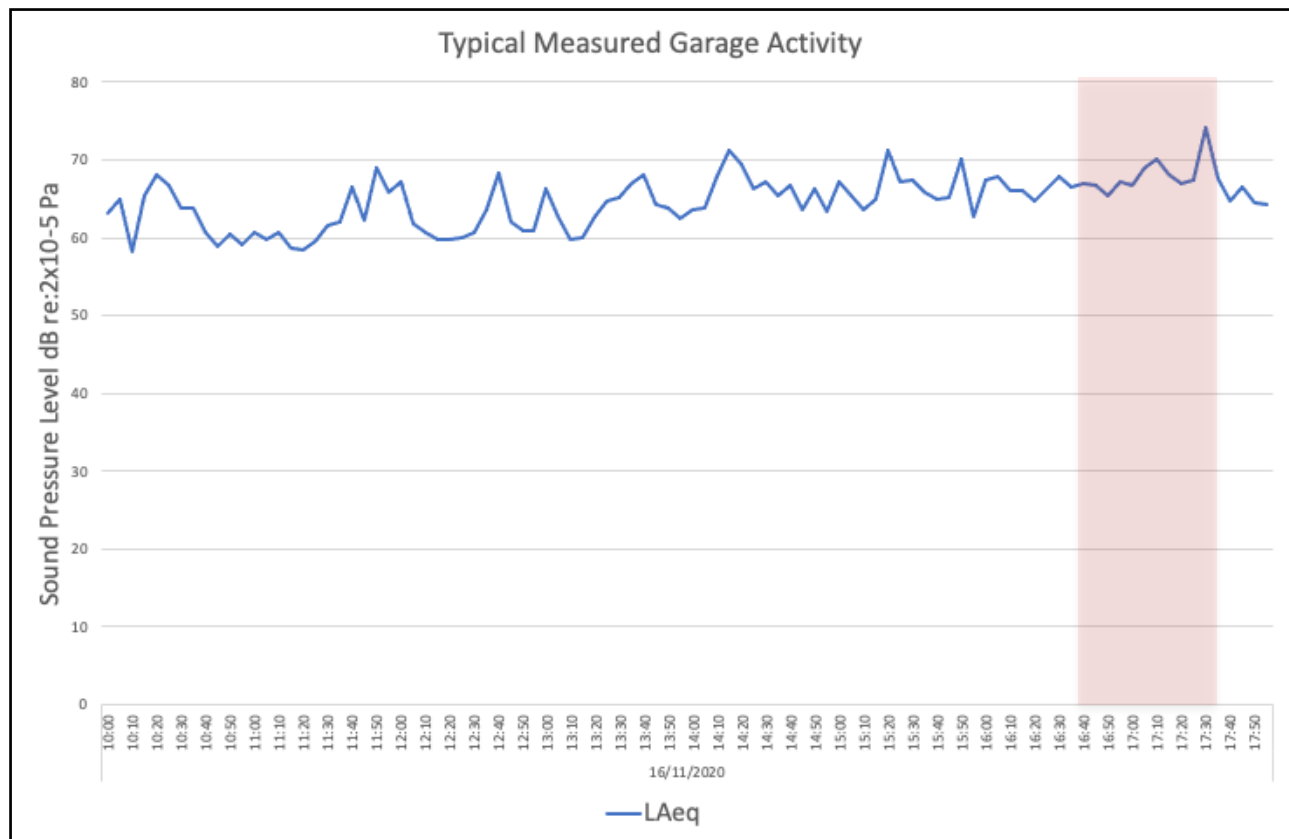


Table 5.1: Measured Internal Operating Level (1 Hour Period Highlighted in Figure 5.1 Above)

Item	L _{Aeq,1hr}	Octave Band Centre Frequency (dB)								
		31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1.0 kHz	2.0 kHz	4.0 kHz	8.0 kHz
Loudest 1 Hour Period	68.7	63.2	62.1	65.3	65.1	64.2	63.2	62.0	59.9	54.5

The measured levels have been taken for input into a CadnaA 3D sound propagation model as an internal sound level within all the proposed units. Noise breakout is then predicted to the nearby noise sensitive uses. This level assumed to be the case for the entire one hour assessment period in all of the proposed units simultaneously for a typical worst case assessment. This is discussed further in section 6.0 below.

In order to establish typical vehicle movements, these have been split into HGV and car movements which are based on previously measured pass-by data, as described in Section 6 below.

6.0 SOUND PROPAGATION MODELLING

CadnaA 3D sound propagation modelling software has been used to predict specific sound levels from the proposed commercial units and vehicular access across the local environment. The software implements the calculation procedure specified within ISO9613-2.

The information summarised below, together with the typical Internal operating source sound level presented in Section 5.0 above has been used to establish a sound breakout level from the relevant areas of the proposed buildings, based on drawn for the building elements and the predicted sound reduction indices for the building facade elements. Worst case vehicle movements have also been assumed as summarised below.

For the purpose of the assessment and calculation, the building envelope has been modelled as a portal framed design which includes a standard single skin insulated cladding material for the wall and roof areas. The assumed sound reduction performance of a standard single skin insulated cladding material is $\leq 24\text{dB } R_w$. This is based on manufacturer data. Roller shutter doors were also accounted for and are assumed to be fully open for the entire assessment period.

The vehicle movements are based on individual moving point sources for both HGV and car movements. Vehicle movements are set as follows:

- Movements of HGVs set to 2 per hour per unit door and car movements set to 1 per hour per space for all spaces - distributed to account for the arrival of cars to all spaces (arriving or leaving). This is assumed to be more than worst case for deliveries and staff/customer movements per hour.
- Sound power for delivery vehicles and cars are set at 94dBA and 78dBA respectively based on previously measured vehicle pass-by events for HGV and cars at Universal Products (Lytham) Kirkham. All cars are set to travel at 15kph and all HGVs are set to travel at 10kph within the sound propagation model.

The modelling software utilises 1m resolution LIDAR topography data from the Defra Data Service Platform. The existing buildings, and the surroundings are modelled using Google Earth imagery and the proposed buildings are based on details provided by the client. Buildings were set as reflective surfaces in the model and the ground was set to 50% reflective to account for mixed ground. It was assumed that the proposed building location ground levels will be commensurate with the existing site levels.

The CadnaA 3D sound propagation model has been used to calculate the specific sound level from the combined sound sources, taking into account reflections and attenuation from distance, ground, barriers etc. The specific sound level is predicted to the nearest noise sensitive dwellings. Figures 6.1 and 6.2 below presents the result of the model calculation.

Figure 6.1: Predicted Specific Sound Level (dB LAeq,t) - HMP Berwyn

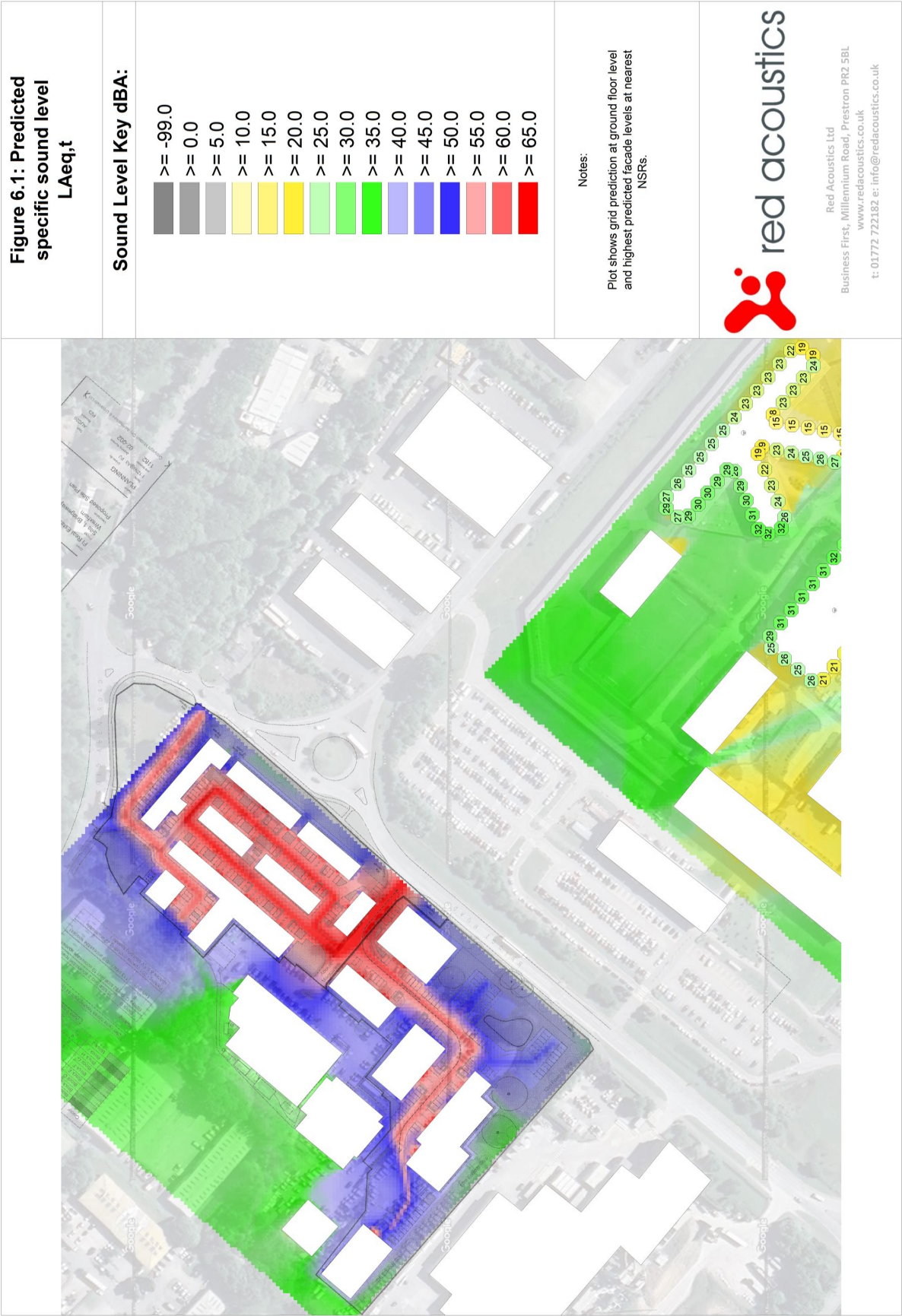
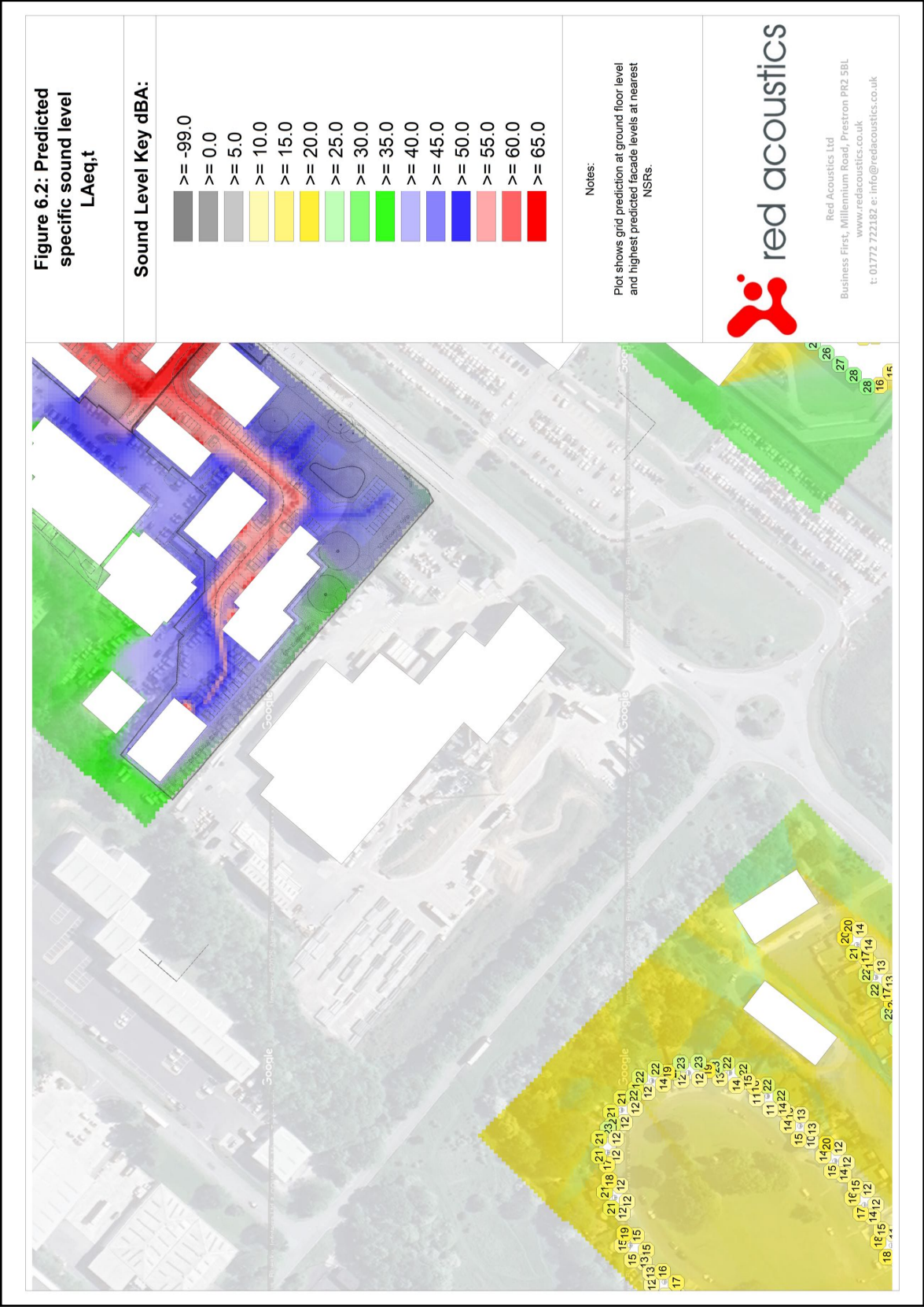


Figure 6.2: Predicted Specific Sound Level (dB LAeq,t) - The Oval / Bridgeway East



It can be seen in Figures 6.1 & 6.2 above that the specific sound level from the combined sound sources impacting the nearest noise sensitive receptors are 32dB $L_{Aeq,t}$ and 23dB $L_{Aeq,t}$ respectively. The highest predicted specific sound level has then been used in the BS4142 assessments presented in Section 7 below.

7.0 BS4142 IMPACT ASSESSMENT

To undertake the impact assessment in accordance with BS4142 a 3D sound propagation model has been generated to accurately predict the combined specific sound level for typical commercial operation and vehicle movements.

Based on typical internal reverberant operational sound pressure levels and the predicted sound reduction from a lightweight single skin cladding on steel frame construction as well as vehicle movements, impact on to the nearby noise sensitive property has been predicted using CadnaA.

This assessment considers 24hr daytime and nighttime noise impact though final occupier hours of operation are not known at this stage. Tables 7.2 & 7.3 below present the BS4142 assessments based on impact at the most affected noise sensitive properties.

Table 7.2: BS4142 Assessment Period - Nearest NSRs Daytime

	Daytime Period (07:00 - 23:00)
Specific Noise Level (Predicted)	32 dB
Corrections	Internal sound level assumed to be the case for the entire 1 hour assessment period in all units simultaneously. Vehicle movements assessed as discussed in Section 6.0 above with vehicle movements per hour built into the sound propagation model. No further corrections necessary.
Rating Level dB	32dB
Typical Background $L_{A90,t}$	42dB
Difference	-10 dB
Conclusion	Low Impact

It can be seen that the noise impact is predicted to be low as the rating level is 10dB below the typical daytime background sound level.

Table 7.3: BS4142 Assessment Period - Nearest NSRs Nighttime

	Nighttime Period (19:00 - 23:00)
Specific Noise Level (Predicted)	32 dB
Corrections	Internal sound level assumed to be the case for the entire 1 hour assessment period in all units simultaneously. Vehicle movements assessed as discussed in Section 6.0 above with vehicle movements per hour built into the sound propagation model. No further corrections necessary.
Rating Level dB	32dB
Typical Background $L_{A90,t}$	36dB
Difference	-4 dB
Conclusion	Low Impact

It can be seen that the noise impact is predicted to be low as the rating level is 4dB below the typical nighttime background sound level.

8.0 PLANT SOUND EMISSION LIMITS

As the final occupiers of the proposed units are not known at this stage and may vary, the nature of any plant items that may be installed in future is unknown. At this stage therefore, based on the measured survey data, plant sound emission limits are proposed to enable future design targets. Table 8.1 below presents the proposed plant sound emission limits at the nearest noise sensitive dwellings when assessed in accordance with BS4142:2014+A1:2019.

In line with expected requirements from the Local Planning Authority, the targets represent a level 5dBA below the existing measured typical background sound level.

Table 8.1: Proposed Commercial Sound (Plant) Target Limits

Measurement Location	Sound Pressure Level, dB			
	Daytime Period 07:00hrs to 23:00hrs		Nighttime Period 23:00hrs to 07:00hrs	
	Existing L _{A90,1hr}	Proposed L _{Aeq,1hr}	Existing. L _{A90,15min}	Proposed L _{Aeq,15min}
Nearest NSR	42	37	36	31

9.0 CONCLUSION

An assessment of sound impact from operation of a proposed new employment development at Bridgeway, Wrexham Industrial Centre, Wrexham has been undertaken in line with the guidance in (TAN) 11 and BS 4142:2014+A1:2019.

Impact from internal operational activities and vehicle movements is predicted to be low. No additional mitigation measures are proposed at this stage.

APPENDIX A: NOISE SURVEY DETAILS

Location

Bridgeway, Wrexham Industrial Estate, Wrexham.

Survey Dates

28 October 2025

Weather

Conditions during the surveys were dry with wind speeds $<5\text{ms}^{-1}$

Personnel

Paul Clark Pg. Dip. IOA MIOA.

Johnathan Whittle BSc (Hons), Pg. Dip. IOA AMIOA MCIEH

Instrumentation

Table A1 below presents the instrumentation used during the surveys.

Methodology

Before and after the measurements the sound level meters were check calibrated to an accuracy of $\pm 0.3\text{dB}$ using their associated Class 1 Calibrators. No drift in the instruments' sensitivities were noted across any of the survey periods.

Calibration Certificates

Copies of all calibration certificates are kept on file by Red Acoustics Ltd and can be supplied if requested.

Table A1: Survey Instrumentation

Kit No	Equipment Description	Type Number	Manufacturer	Serial Number	Date of Last Calibration	Calibration Certificate Number
RED08	Sound Level Meter	XL2	Nti Audio	A2A-22062-F0	16/03/2023	UK-23-033
	Sound Calibrator	Type 1251 Class 1	Norsonic	34390	01-May-24	47685