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CONWY COUNTY BOROUGH COUNCIL

NOISE IMPACT ASSESSMENT REPORT

LLANDUDNO JUNCTION WASTE CENTRE, FFORDD MAELGWN, LLANDUDNO JUNCTION LL31 9PN

Client: Conwy County Borough Council

Report Ref: P6464-R1-V1

Issue Date: 16th August 2023

Document Status: Version 1

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DATE ISSUED: **16th AUGUST 2023**

REPORT REFERENCE **P6464-R1-V1**

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REPORT VERSION CONTROL:

Document Reference	Date	Report Prepared by	Report Checked by	Report Authorised by
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		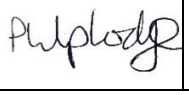		

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APPENDICES

1 INTRODUCTION

1.1.1 By instruction from TACP Architects ('the agent'), on behalf of Conwy County Borough Council ('the client'), NoiseAir was commissioned to conduct a noise impact assessment (NIA) for a proposal to develop a waste transfer site with associated depot buildings. The location for the proposal is: Llandudno Junction Waste Centre, Fford Maelgwn, Llandudno Junction LL31 9PN, herein referred to as the 'proposed development site'.

1.1.2 This acoustic assessment report has been prepared in support of a submitted pre application enquiry. The response from the local authority with respect to a noise impact assessment reads as follows:

> *'The following national planning policies and guidance are relevant to the assessment of the development proposal:-*
>
> *Planning Policy Wales 11th Edition, February 2021*
>
> *TAN11 Noise'*

1.1.3 General limitations with respect to this NIA are presented in **Appendix A**.

1.2 Site Description

1.2.1 At the time of writing, the development site is predominantly vacant however, the on-site consultant observed there to be an existing construction materials hire company operating at the east of the development site.

1.2.2 The proposed development site is located in a predominantly urban area of Llandudno Junction.

1.2.3 The site is flanked to the north by of vegetation/ shrubbery, beyond which lies what is understood to be offices. Further north runs a railway line providing trains in and out of Llandudno Junction station. North of the railway line is a residential housing estate.

1.2.4 To the west the site is flanked by vegetation/ shrubbery beyond which lies a retail park.

1.2.5 To the south lies what is understood to be a construction site accommodation and hiab hire business. Further south beyond the construction site accommodation and hiab hire business runs the North Wales Expressway (A55), a road accommodating all types of traffic travelling at up to 70 miles per hour.

1.2.6 To the east, it is understood that an existing recycling centre is operating at the time of writing.

1.2.7 **Figure 1** presents an aerial image of the proposed development site with respect to the local area and its context. **Figure 1** also indicates the likely noise sensitive receptors (NSRs) with respect to the potential noise impact from the development site.

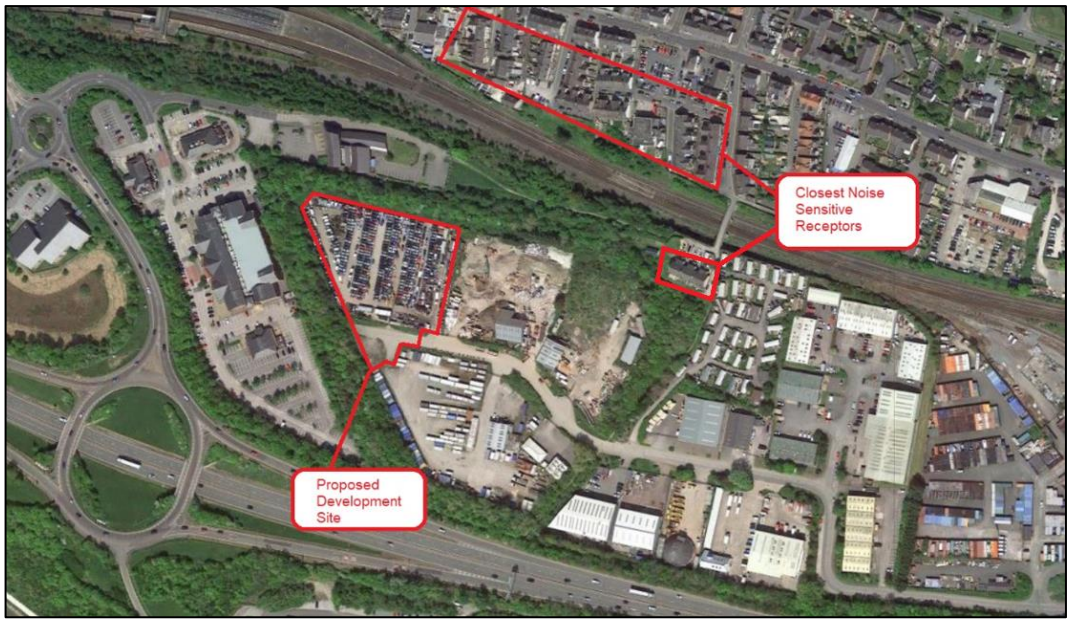

Figure 1: Site aerial photograph.

1.3 Development Proposals

1.3.1 The proposal for the development is to provide a waste recycling centre with associated depot buildings. Documentation provided at the time of writing indicates that the proposed depot will be constructed of profiled metal roof and wall panels with associated polycarbonate roof panels.

1.3.2 Documentation provided indicates the following operations which will be considered as noise sources for the subsequent NIA:

- Articulated delivery vehicles
- Various waste skips
- Baler machines
- Forklift truck operations

1.3.3 It is understood that the site will be operational as follows:

- Monday to Saturday 06:00 – 18:00; and,
- Sunday 08:00 – 17:00

1.3.4 **Figure 2** presents the proposed site plan received at the time of writing.

Figure 2: Proposed site plan view of the proposed development site

1.3.5 Further TACP Architects drawings received at the time of writing are presented in **Appendix B**.

2 ASSESSMENT METHODOLOGY AND SCOPE OF WORKS

2.1 Planning Guidance and Noise

2.1.1 This acoustic report has been prepared in support of a proposed planning application and therefore it is considered that reference should be made to the appropriate planning guidance documentation, specifically:

- Planning Policy Wales – Edition 11 (PPW), 2021; and,
- Planning Guidance (Wales) – Technical Advice Note 11 - Noise (TAN11), 1997.

2.1.2 A summary of the relevant planning documentation and its relevance with respect to noise is provided below.

Planning Policy Wales [PPW 2021]

2.1.3 Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales.

2.1.4 The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales, as required by the Planning (Wales) Act 2015, the Well-being of Future Generations (Wales) Act 2015 and other key legislation.

2.1.5 Section 6.7 of the PPW outlines planning policy with respect to Air Quality and Soundscape. PPW outlines that the planning system should maximise its contribution to achieving the well-being goals, and in particular a healthier Wales, by aiming to reduce average population exposure to air and noise pollution alongside action to tackle high pollution hotspots. In doing so, it should consider the long-term effects of current and predicted levels of air and noise pollution on individuals, society and the environment and identify and pursue any opportunities to reduce, or at least, minimise population exposure to air and noise pollution, and improve soundscapes, where it is practical and feasible to do so.

2.1.6 PPW also aligns with the agent of change principle which says that a business or person responsible for introducing a change is responsible for managing that change. In practice, for example, this means a developer would have to ensure that solutions to address air

quality or noise from nearby pre-existing infrastructure, businesses or venues can be found and implemented as part of ensuring development is acceptable.

2.1.7 In proposing new development, planning authorities and developers must, therefore:

- address any implication arising as a result of its association with, or location within, air quality management areas, noise action planning priority areas or areas where there are sensitive receptors
- not create areas of poor air quality or inappropriate soundscape; and
- seek to incorporate measures which reduce overall exposure to air and noise pollution and create appropriate soundscapes.

2.1.8 Furthermore, PPW states that the potential impacts of noise pollution arising from existing development (be this commercial, industrial, transport related or cultural venues i.e., music venues, theatres or arts centres), must be fully considered to ensure the effects on new development can be adequately controlled to safeguard amenity. Any necessary measures and controls should be incorporated as part of the proposed new development. This will help to prevent the risk of restrictions or possible closure of existing premises or adverse impacts on transport infrastructure due to noise and other complaints from occupiers of new developments. It will be important that the most appropriate level of information is provided, and assessment undertaken.

Technical Advice Note (Wales) - Noise [TAN 11 1997]

2.1.9 TAN 11 was introduced in 1997 and sets out guidance on the assessment of noise in Wales. It should be noted however that this document is currently under review.

2.1.10 TAN 11 sets out a series of Noise Exposure Categories (NECs) which have been derived to assist local planning authorities in their consideration of planning applications for residential development near transport related noise sources. The NECs are set out in Annex A of TAN 11.

2.1.11 Measures introduced to control the source of, or limit exposure to, noise should be proportionate and reasonable, and may include:

- engineering: reduction of noise at point of generation (e.g., using quiet machines and/or quiet methods of working); containment of noise generated (e.g., insulating buildings which house machinery and/or providing purpose-built barriers around sites); protection of surrounding noise-sensitive buildings (e.g., improving sound insulation in these buildings and/or screening them by purpose-built barriers);

- layout: adequate distance between noise source and noise-sensitive building or area; screening by natural barriers, other buildings, or non-critical rooms in a building;
- administrative: limiting operating time of noise source; restricting activities allowed on the site; specifying an acceptable noise limit.

2.1.12 Annex B of TAN 11 outlines guidance of assessment of noise from different sources. When considering noise from industrial and commercial developments TAN 11 outlines the following guidance.

2.1.13 The likelihood of complaints about noise from industrial development can be assessed, where the Standard is appropriate, using guidance in BS 4142: 1990. Tonal or impulsive characteristics of the noise are likely to increase the scope for complaints and this is taken into account by the "rating level" defined in BS 4142. This "rating level" should be used when stipulating the level of noise that can be permitted. The likelihood of complaints is indicated by the difference between the noise from the new development (expressed in terms of the rating level) and the existing background noise. The Standard states that, 'A difference of around 10 dB or higher indicates that complaints are likely. A difference of around 5 dB is of marginal significance'. Since background noise levels vary throughout a 24 hour period it will usually be necessary to assess the acceptability of noise levels for separate periods (e.g., day and night) chosen to suit the hours of operation of the proposed development. Similar considerations apply to developments that will emit significant noise at the weekend as well as during the week. In addition, general guidance on acceptable noise levels within buildings can be found in BS 8233:1987

2.1.14 It should be noted that the British standard documents referenced in TAN 11 have been superseded, specifically BS4142 the latest main issue being in 2014, BS4142:2014 is therefore considered the appropriate assessment document for assessment of noise from commercial and industrial sites.

2.2 Consultation and Scope of Works

2.2.1 This noise report has been prepared in support of a response to a pre-application from the local authority.

2.2.2 It is therefore considered that a detailed NIA is required to assess the likely impact on local NSRs with respect to noise breakout from the proposed development. The NIA presented in this report is based on site specific data collected at the development site. Where site specific data is not available, data is sought from other reputable sources.

2.2.3 Following correspondence with the agent on the 2nd of August 2023, it is understood that while the drawings indicate the proposal for a glass waste skip, the client does not propose to accept glass waste. Rather, provision is made on site to dispose of glass found mixed in with other waste. In other words, rather than vehicles arriving to offload glass, a glass bottle or similar may be found in a cardboard waste area, which would then be offloaded in the glass skip.

2.3 Assessment Criteria

2.3.1 While the response from the local authority specifies the guidance to be followed when assessing the noise impact, the response does not discuss any specific assessment criteria. Given the proposed operations of the development site is likely to be associated with commercial noise breakout, it is considered that an assessment in accordance with British Standard 4142:2014+A1:2019 (BS 4142:2014) is required. A summary of BS 4142:2014 is provided below.

British Standard 4142:2014 (BS 4142:2014)

2.3.2 British Standard 4142:2014 - Methods for rating and assessing industrial and commercial sound, sets the methodology for rating and assessing sound of an industrial and commercial nature, which includes sound from fixed installations such as mechanical and electrical plant and equipment.

2.3.3 In BS 4142:2014, a noise rating is determined and compared with the existing local background sound level based on several more cumulative acoustic feature corrections to apply where appropriate. For example, if the noise includes a distinguishable tone, impulse, intermittency or other readily distinguishable sound characteristic, then additional cumulative penalties individually ranging from 0 to 9 dB may be applied depending on the type of noise.

2.3.4 BS 4142:2014 seeks to determine a "representative" background sound level, stating that "…the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods".

2.3.5 The assessment of the impact depends upon the margin by which the rating level of the specific sound source exceeds the background sound level but also promotes a consideration of the context in which the sound occurs when making an assessment. BS 4142:2014 states that an initial estimate of the impact of the specific sound is made by subtracting the measured background sound level from the rating level, while considering the following points:

- 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; 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.

2.3.6 Therefore, a BS 4142:2014 assessment may deduce a low impact where the specific sound level is below the background sound level.

3 ACOUSTIC SURVEY

3.1 Acoustic Survey Details

3.1.1 NoiseAir conducted primarily unattended fixed position noise monitoring between the 29th of June 2023 and the 3rd of July 2023 at the development site (ML1).

3.1.2 ML1 is presented in **Figure 3** and described in **Table 1**.

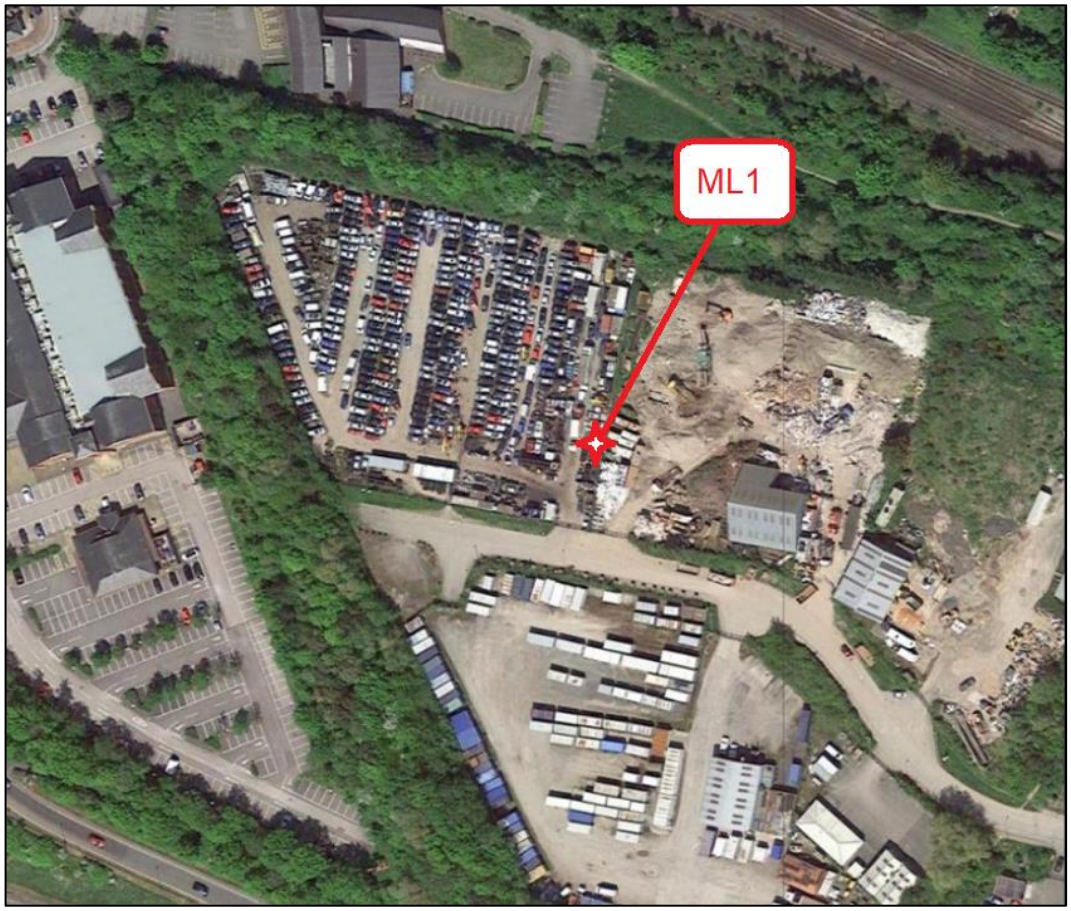

Figure 3: Site layout plan and noise monitoring location – ML1.

Table 1: Summary of Noise Monitoring Locations

Monitoring Location Number	Location Description	Time Period Monitored		Attended or Unattended Monitoring
		Start	End / Duration	
ML1	East boundary of the development site	10:00 29/06/2023	09:45 03/07/2023	Unattended

3.1.3 ML1 was positioned to be representative of the background noise levels at the approximate location of the closest NSRs and is considered a free field location in accordance with BS 4142:2014.

3.1.4 ML1 was the closest position to the NSR's where monitoring equipment could be left unattended to obtain a long-term dataset.

3.1.5 The noise measurements were made using a Class 1, integrating sound level meter (SLM).

3.1.6 The acoustic equipment was calibrated to comply with Section 4.2 of BS 7445-1:2003[1], before and after the noise monitoring periods.

3.1.7 Details of the SLM and associated field calibration are presented in **Table 2**.

Table 2: Summary of the SLM used for survey and associated field calibration

SLM (Serial Number)	Preamp (Serial Number	Microphone (Serial Number)	Start Calibration	End Calibration	Drift
NOR140 (1402826)	NOR1209 (15455)	NOR1225 (168289)	-25.6	-25.5	0.1

3.1.8 The weather conditions were noted to be as presented in **Table 3** during the site visits at the start and end of the monitoring period.

Table 3: Summary of weather conditions noted at the start and end of the monitoring duration.

Parameter	29th of June 2023	3rd of July 2023
Roads (Wet / Dry)	Dry	Wet
Temperature (˚C)	14	12
Wind speed (ms-1) / direction	< 5	< 5
Cloud Cover (Approx. %)	80	100
Humidity (%)	78	82

3.1.9 The weather was also monitored via www.timeanddate.com and reasoned that throughout the monitoring period there were no weather conditions that could have influenced the measurements.

[1] BS 7445-2003 "Description and measurement of environmental noise – Part 1: Guide to quantities and procedures.

3.1.10 A-weighted[2] L_{90}[3] was measured to satisfy the requirements of BS 4142:2014. A-weighted[4] L_{eq}[5] and L_{Fmax}[6] noise levels were measured at ML1 to provide further information. A table of the measured noise levels can be provided on request.

3.2 Measured Sound Levels

3.2.1 Data presented in **Figure 4** details a level vs time graph of the recorded $L_{Aeq,T}$, L_{AFMax} and $L_{AF90,T}$ sound levels over 15-minute time periods for the entire monitoring duration at ML1.

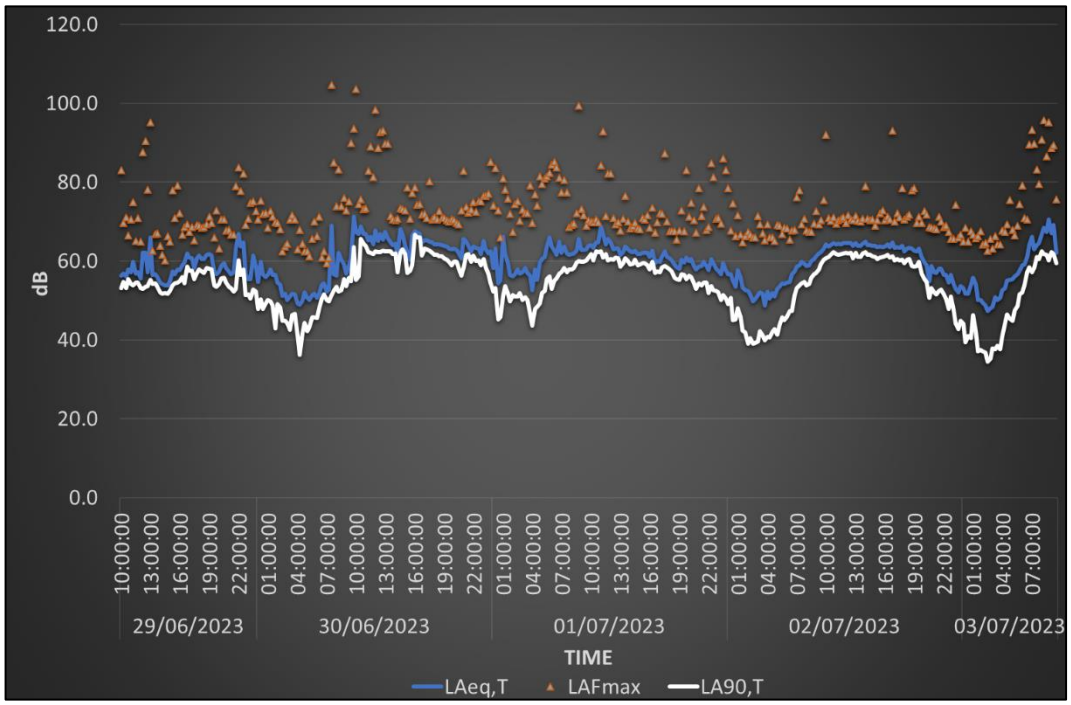

Figure 4: Level vs. time graph presenting $L_{Aeq,T}$, L_{AFMax} and $L_{AF90,T}$ sound levels – ML1.

3.2.2 The results for ML1 are presented in **Table 4**.

Table 4: Range of Average Measured Daytime / Night-time Noise Levels

Monitoring Location	Time	Range of Measured Noise Level	
		dB $L_{Aeq,1hour}$ / $L_{Aeq,15mins}$	dB $L_{AF90,1hour}$ / $L_{AF90,15\ mins}$
ML1	07:00-23:00	54.1 – 68.5	50.2 – 65.0
	23:00-07:00	47.3 – 66.1	34.5 – 60.5

[2] An electronic filter in a sound level meter which mimics the human ear's response to sounds at different frequencies under defined conditions.
[3] The noise level which is exceeded for 90% of the measurement period.
[4] An electronic filter in a sound level meter which mimics the human ear's response to sounds at different frequencies under defined conditions.
[5] Equivalent continuous noise level; the steady sound pressure which contains an equivalent quantity of sound energy as the time-varying sound pressure levels.
[6] The instantaneous maximum noise level recorded for a measurement period.

3.3 Typical Measured Background Sound Levels

3.3.1 Given it has been identified that a BS 4142: 2014 assessment is required with respect to the noise breakout from the development site, background sound levels are presented below.

3.3.2 We understand that the adjacent waste aggregate site operates Monday to Saturday. This appears to be the cause of the higher L_{AFmax} events and the various spikes in L_{Aeq} levels during the daytime periods of the survey. On Sunday 02/07/2023 the L_{Aeq} and L_{AFmax} levels are far more consistent, indicating that road traffic noise was the dominant noise source on that day.

3.3.3 Given that the adjacent site was not operational, and the Sunday dataset represents a weekend period, Background Sound Levels from the weekend have been analysed.

3.3.4 **Figure 5** and **Figure 6** detail the results of the data analyses on the daytime and night-time background sound levels, respectively in terms of the frequency of occurrence of each value at measuring location ML1.

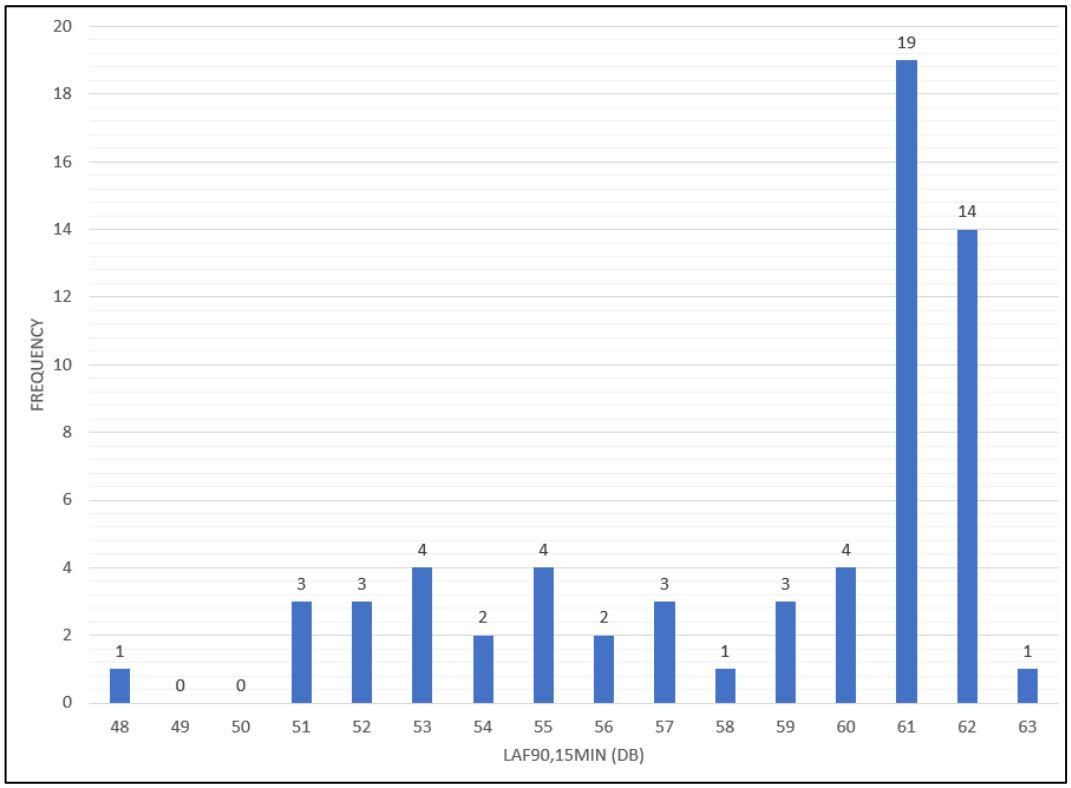

Figure 5: Data analysis of the daytime background sound level results – ML1 (07:00 to 23:00)

3.3.5 Based on analysis of the data for daytime at ML1, 61 dB(A) has been selected to represent background levels at ML1.

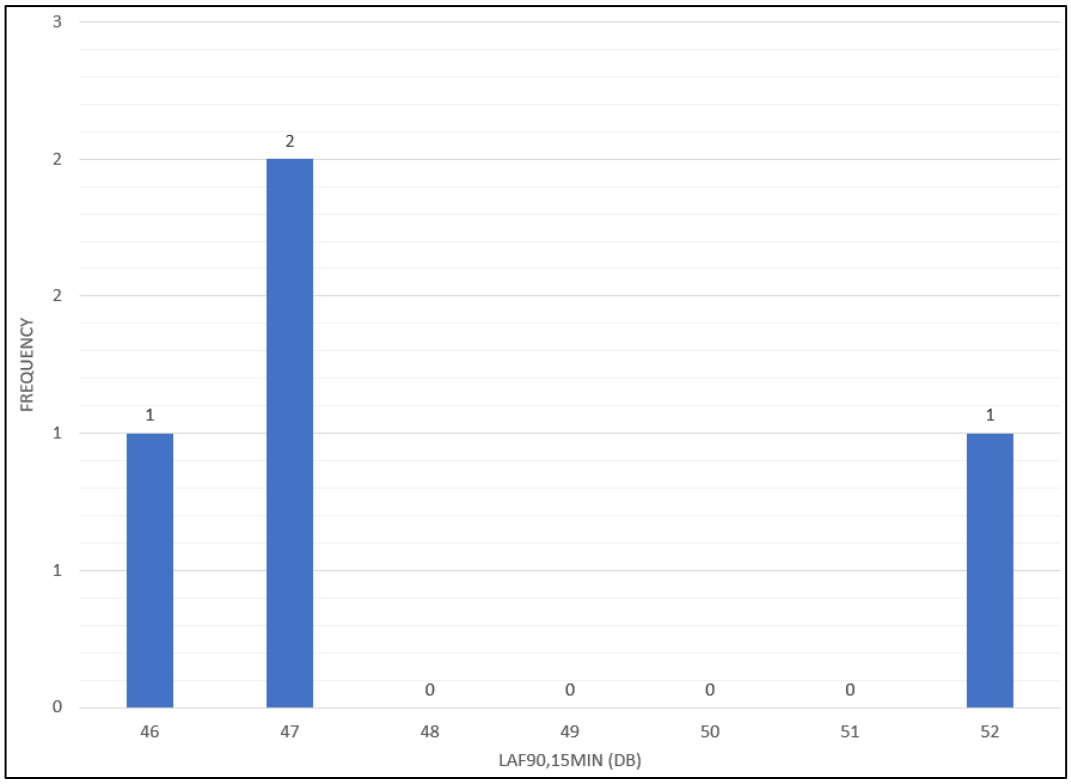

Figure 6: Data analysis of the night-time background sound level results– ML1 (06:00 to 07:00)

3.3.1 The mode background for the daytime period is 61 dB $L_{AF90,15min}$. At 07:00 the background level is 53 dB $L_{AF90,15min}$ and steadily rises until approximately 10:00, when the background level stays around 60-62 dB $L_{AF90,15min}$ for the remainder of the assessment period.

3.3.2 This means that during the morning period between 07:00-10:00 there is greater potential for noise impact, and this will need to be considered within the assessment.

3.3.3 For the night-time operational period (06:00-07:00) the background sound level rises from 46 dB $L_{AF90,15min}$ to 52 dB $L_{AF90,15min}$. Given the relatively small dataset between 06:00-07:00, 46 dB $L_{AF90,15min}$ will be treated as typical within the assessment.

4 3D SOUND MODEL

4.1 Introduction

4.1.1 A 3D sound model has been constructed in SoundPLAN™ to calculate the predicted sound pressure levels at selected potential receiver locations. The model uses the calculation method from ISO 9613-2:1996[7] to account for the distance between the source and receiver and any screening or reflections provided by the surrounding buildings.

4.1.2 Given the proposed development is at planning stage, the noise sources are not in situ and therefore, the model is based on and calibrated predominantly against data collected by NoiseAir from previous sites that are considered to be representative of the proposed operations at the development site. Where data was not available, alternative sources were adopted based on reputable sources, such as the SoundPLAN™ library data.

4.2 3D Sound Model

4.2.1 Given the subsequent BS 4142:2014 assessment is based on the noise impact during reference periods of 1 hour and 15 minutes for daytime and night-time, respectively, it is reasoned that the noise sources proposed at the development site are not likely to be operating continuously throughout these periods.

4.2.2 It is therefore considered necessary to present on-time calculations for each source. **Table 5** presents all the modelled noise sources and indicates a correction to the noise level based on the time on / off time during the reference period.

Table 5: On time corrections

Source	On Time (minutes)	Noise level correction for on time		Reasoning
		Daytime dB ($L_{Aeq,1hour}$)	Night-time dB ($L_{Aeq,15mins}$)	
Vehicle movements to and from site	5	-11	-5	1 no. articulated vehicle and 3 no. waste delivery vehicles accessing and egressing
Noise from Depositing waste into skips	3	-13	-7	Each skip emitting noise for 3 minutes per reference period

[7] ISO9613-2:1996 "Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation"

Table 5: On time corrections				
Source	On Time (minutes)	Noise level correction for on time		Reasoning
		Daytime dB ($L_{Aeq,1hour}$)	Night-time dB ($L_{Aeq,15mins}$)	
Vehicle movement internally	1	-18	-12	Articulated vehicle accessing the building through the roller shutter and then egressing the building through the roller shutter. Vehicle engine off when stationary.

4.2.3 The 3D noise model specifically includes noise from the following sources and accounts for the corrections presented in **Table 5**:

- **Noise from the articulated vehicles accessing and egressing the site –** modelled as a line source at 1.0 m from local ground level and calibrated to SoundPLAN™ 8.2 library noise level of 96.0 dB L_W for an 'articulated dump truck' and on-time correction presented in **Table 5**.
- **Noise from the jet wash** - modelled as a point source at 1.0 m from local ground level to represent a handheld jet wash and calibrated to 72.0 dB L_W adopted from SoundPLAN™ library data for 'C3.13 Water jet pump'.
- **Noise from the depositing of waste in the rubble skips –** modelled as a point source at 1.0 m from local ground level to represent the opening of the skip and calibrated to an estimated sound power of 110.3 dB L_W and on-time correction presented in **Table 5**.
- **Noise from the depositing of waste in the mattress skips –** modelled as a point source at 1.0 m from local ground level to represent the opening of the skip and calibrated to an estimated sound power of 78.0 dB L_W and on-time correction presented in **Table 5**.
- **Noise from the depositing of waste in the wood skips –** modelled as a point source at 1.0 m from local ground level to represent the opening of the skip and calibrated to an estimated sound power of 88.0 dB L_W and on-time correction presented in **Table 5**.
- **Noise from the depositing of waste in the TV skips –** modelled as a point source at 1.0 m from local ground level to represent the opening of the skip and calibrated

to an estimated sound power of 83.0 dB L_W and on-time correction presented in **Table 5**.

- **Noise from the depositing of waste in the street sweeping waste skips –** modelled as a point source at 1.0 m from local ground level to represent the opening of the skip and calibrated to an estimated sound power of 83.0 dB L_W and on-time correction presented in **Table 5**.
- **Noise from the depositing of waste in the garden waste skips –** modelled as a point source at 1.0 m from local ground level to represent the opening of the skip and calibrated to an estimated sound power of 83.0 dB L_W and on-time correction presented in **Table 5**.
- **Noise from card baler inside proposed waste recycling building –** modelled as a point source at a height of 1.0 m from local ground level and calibrated to library data sound power for the operation of a baler of 110.6 dB L_W.
- **Noise from plastic baler inside proposed waste recycling building –** modelled as a point source at a height of 1.0 m from local ground level and calibrated to library data sound power for the operation of a baler of 110.0 dB L_W.
- **Noise from the articulated vehicles accessing inside the waste recycling building –** modelled as a line source at 1.0 m from local ground level and calibrated to SoundPLAN™ 8.2 library noise level of 96.0 dB L_W for an 'articulated dump truck' and on-time correction presented in **Table 5**.
- **Noise breakout from the facades and roof of the building –** modelled as an area source per unit to all exposed facades. The sound reduction across the facades and the roof is based on 23 dB $R_W + C_{tr}$ for a Kingspan system - KS1000 TS + no lining with sound reduction spectrum as presented in **Table 6**. The Perspex rooflights are modelled as transmissive areas and calibrated to SoundPLAN™ 8.2 library data for 'single window, plastic, closed'. The roller shutter doors are modelled as area sources and calibrated to SoundPLAN™ 8.2 library data for 'opening'.

Table 6: Façade and Roof Reduction Octave Spectrum

Façade and Roof Material	Octave band Sound Reduction in Centre Frequency (dB)							
	63	125	250	500	1000	2000	4000	8000
KS AWP/70 + no lining	20	16	15	23	29	39	45	53

4.2.4 Noise contour plots illustrating the propagation of sound from source to receptor during the daytime and night-time ($L_{Aeq,1hour}$ / $L_{Aeq,15mins}$) condition is presented in **Figure 7** and **Figure 8**.

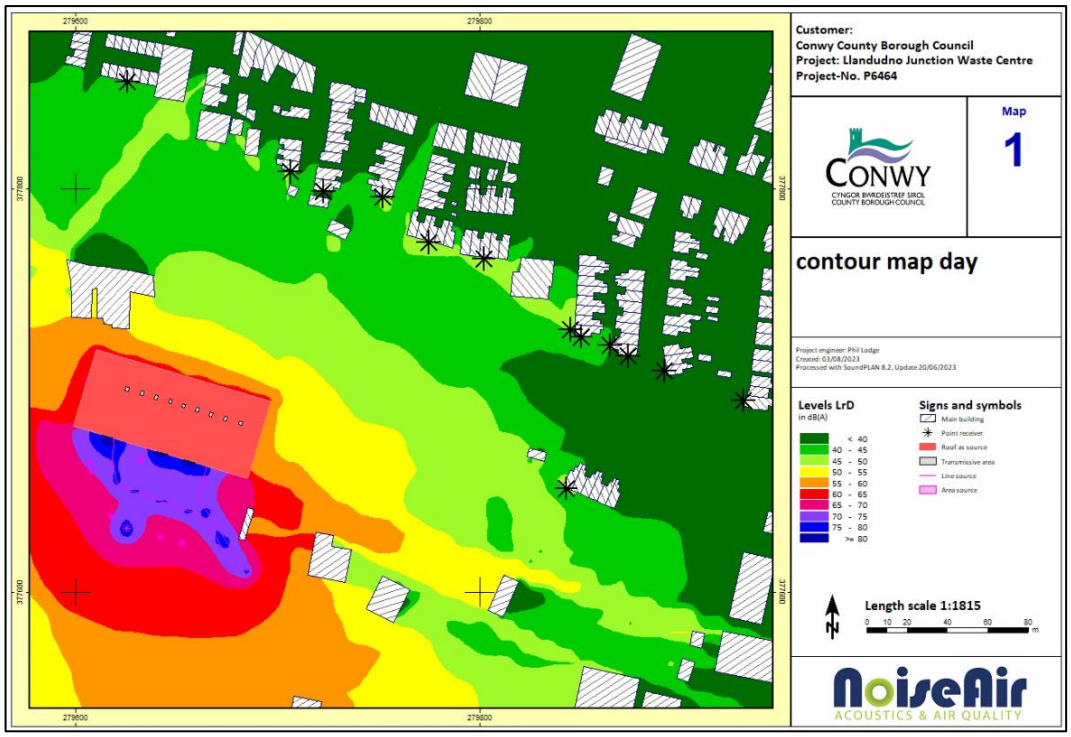

Figure 7: Noise contour plot illustration of the predicted propagation of sound from the development site - Daytime.

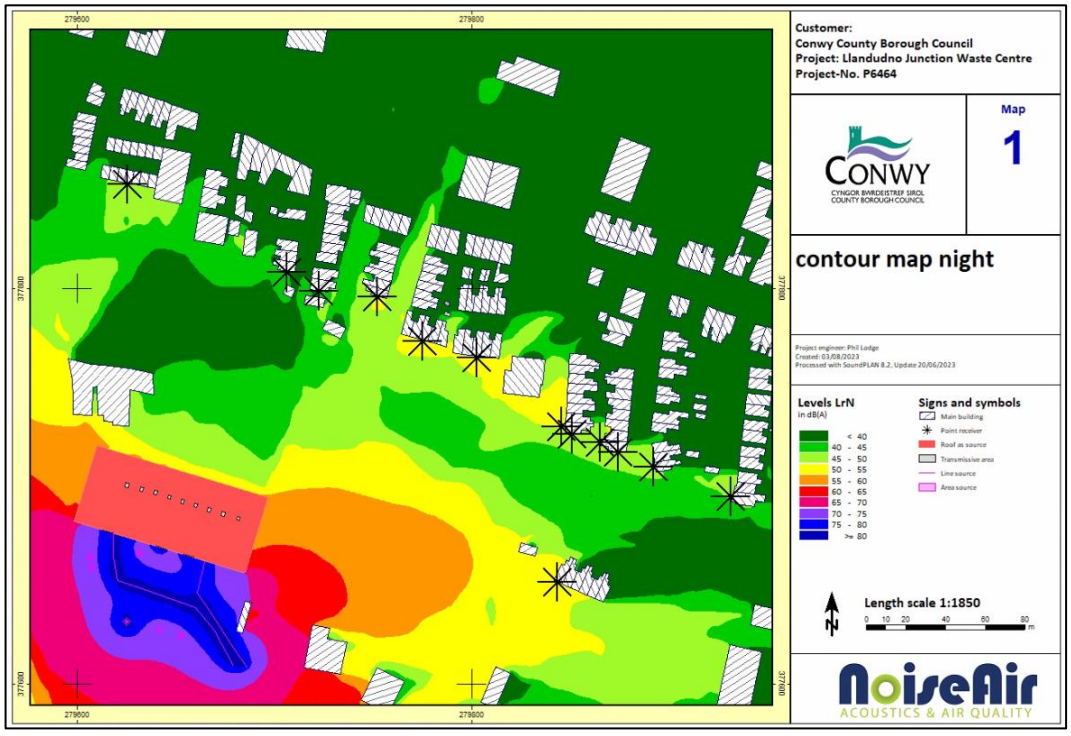

Figure 8: Noise contour plot illustration of the predicted propagation of sound from the development site – Night-time.

4.2.5 Selected façade receptors sound pressure levels are presented in **Figure 9**.

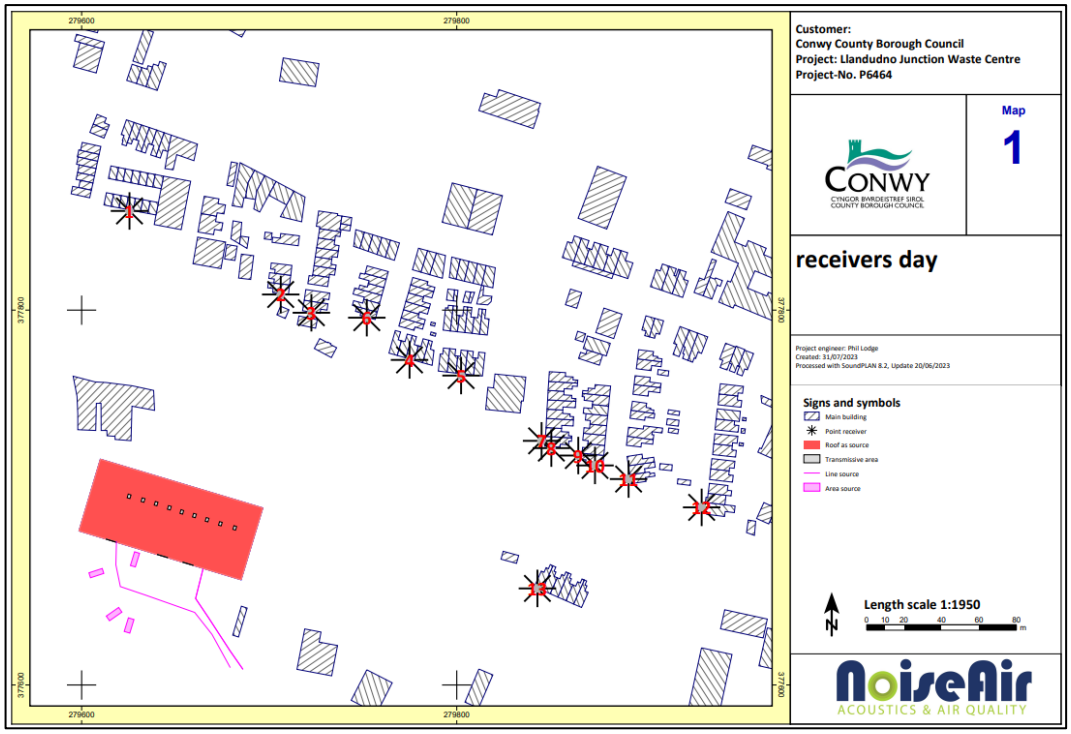

Figure 9*:* Illustration of the 3D sound model selected facades receptors*.*

4.2.6 Predicted noise levels at the selected NSRs are detailed in **Table 7**.

Table 7: Predicted Façade Receptor Noise Levels

Receptor Number	Floor	Sound Pressure Level dB $L_{Aeq,1hour}$	Sound Pressure Level dB $L_{Aeq,15mins}$
1	GF	42.3	45.1
	1.FI	43.2	48.1
2	GF	44.7	41.4
	1.FI	45.3	41.8
3	GF	37.0	39.3
	1.FI	37.4	39.5
4	GF	44.3	49.6
	1.FI	45.9	50.9
5	GF	45.3	51.1
	1.FI	46.6	52.6
6	GF	42.9	48.0
	1.FI	44.9	49.5

Table 7: Predicted Façade Receptor Noise Levels			
Receptor Number	**Floor**	**Sound Pressure Level dB $L_{Aeq,1hour}$**	**Sound Pressure Level dB $L_{Aeq,15mins}$**
7	GF	44.9	51.1
	1.Fl	46.2	52.8
8	GF	41.7	47.0
	1.Fl	43.7	50.2
9	GF	43.3	48.5
	1.Fl	45.3	50.9
10	GF	42.5	48.0
	1.Fl	43.7	48.5
11	GF	39.6	44.8
	1.Fl	42.0	47.3
12	GF	38.9	44.1
	1.Fl	40.5	45.8
13	GF	41.6	48.1
	1.Fl	46.9	54.5

5 SITE NOISE RISK ASSESSMENT

5.1 BS 4142:2014 Assessment for the commercial noise impact from the proposed development site

5.1.1 It is considered necessary that a BS 4142:2014 assessment is conducted to account for the potential noise impact of the commercial operations at the proposed development site.

Background Sound Levels

5.1.2 The measured background sound levels are presented within Section 3 of this report.

5.1.3 The daytime and night-time background sound level for ML1 of 61 dB and 46 dB, have been adopted for this assessment.

Character Corrections

5.1.4 Given this acoustic report has been prepared in support of a registered planning application, the noise sources assessed are not operating at the time of writing and therefore a subjective assessment of the character of the noise breakout was not possible.

5.1.5 NoiseAir have recently conducted a subjective assessment of noise character from delivery vehicles at waste recycling centres, this has therefore been adopted and corrections applied as follows:

- **Tonality**: +2 dB has been applied. Tonal noise would be associated with the operations of the site, however, given the design of the site layout, some of the main noise sources are shielded. It is therefore reasoned that tonal components are likely to be just perceptible at the NSR against the existing ambient noise climate.
- **Intermittency**: +3 dB has been applied. Given the operations are subject to on-time corrections, it is reasoned that intermittency is likely to be a character of the noise at the NSR.
- **Impulsivity**: +6 dB has been applied. Operations such as the depositing of certain materials into the skip can be impulsive however these operations are shielded somewhat. It is however likely that impulsivity character is likely to be clearly perceptible at the NSR.

Initial Assessment

5.1.6 The preliminary BS 4142:2014 assessment presented in **Table 8** details the assessment at the worst affected NSR.

Table 8: Preliminary BS 4142:2014 Assessment of the Commercial Noise Breakout		
Quantity	**Sound level dB**	
	Daytime	**Night-time**
Background sound level, L_{AF90}	61	46
Worst case receptor	13	13
Worst case specific sound level $L_{Aeq,T}$	47	55
Tonality	+2	+2
Impulsivity	+6	+6
Intermittency	+3	+3
Rating Level	58	66
Excess Rating Level	-3	+20
Initial estimate of impact	Low Impact	Significant Adverse

BS 4142:2014 Assessment Context, Uncertainty and Outcome

Context and Outcome

5.1.7 **Table 8** indicates that based on the excess of the rating level above background sound level the initial estimate of impact during the daytime is low impact and 'significant adverse' for the night-time.

5.1.8 On review of the noise sources, it is the external waste skips that are the dominant contributors to the noise level at the worst affected NSR. It is clear that use of these skips would not be appropriate between 06:00-07:00. An excess of +4 may be low impact, and this threshold is typically reached between 07:00-08:00.

5.1.9 We would therefore recommend that use of external waste skips and on-site vehicle wash facility does not take place until 08:00 daily. Between 06:00-08:00, we would recommend that the site is restricted to internal activities and vehicle movements.

5.1.10 Given that the night-time excess is +20 dB, and that a barrier may achieve between 5-10 dB of attenuation depending on placement, the outcome of this assessment is unlikely to change unless the processes are relocated within a building.

5.1.11 Given the above, recommendations for a noise management plan (NMP) are also included in this report, which provides recommendations to minimise on-site noise.

6 OUTLINE NOISE MANAGEMENT PLAN

6.1 Alternative Site Design and Management

6.1.1 Without the introduction of a NMP the impact at the worst case receptor is likely to be significant adverse. The assessment has identified the sources of noise within the proposal that are likely to pose the greatest impact with respect to noise.

6.1.2 A simple hierarchy for the management of the noise impact is suggested as follows:

- Prevent generation of noise at source by introducing a good design and maintenance plan;
- Minimise or contain noise at source by adopting good operational techniques and management practice;
- Increase the distance between the source and receiver; and,
- Sympathetic timing and control of unavoidable noisy operations.

6.1.3 We would recommend that external skips are not used until 08:00 hrs daily, unless a fundamental redesign of the site enables them to be located within buildings.

6.2 Noise Complaints Procedure

6.2.1 A dedicated complaints number should be set up to allow affected members of the public a place to register comments or complaints with respect to noise.

6.2.2 Staff should be trained on the complaints / actions procedure.

6.2.3 A log of complaints and actions taken should be kept at the premises.

6.2.4 All complaints should be addressed in a timely manner responses to the complaint should include planned actions and improvements that can be introduced.

7 CONCLUSIONS

7.1.1 NoiseAir has conducted a noise impact assessment with respect to the proposed development of a waste recycling centre at the location: Llandudno Junction Waste Centre, Fford Maelgwn, Llandudno Junction LL31 9PN.

7.1.2 A BS 4142:2014 assessment has been conducted on the mitigated noise breakout from the proposed development site with respect to noise impact on local noise sensitive receptors. It demonstrated that provided external skips are not used until 08:00 hrs daily, a low impact could be achieved at the site.

7.1.3 Given the initial impact during the night-time likely to be significant adverse, a noise management plan has been provided which recommends that external skips are not used before 08:00 unless a fundamental redesign of the site means they can be relocated inside a building. The noise management plan also recommends the introduction of a noise complaints procedure.

APPENDIX A - REPORT LIMITATIONS

This Report is presented to Conway County Borough Council and may not be used or relied on by any other person or by the client in relation to any other matters not covered specifically by the scope of this report.

Notwithstanding anything to the contrary contained in the report, NoiseAir Limited is obliged to exercise reasonable skill, care and diligence in the performance of the services required by Conwy County Borough Council and NoiseAir shall not be liable except to the extent that it has failed to exercise reasonable skill, care and diligence, and this report shall be read and construed accordingly.

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The conclusions and recommendations contained in this report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from who it has been requested and that such information is accurate. Information obtained by NoiseAir Limited has not been independently verified by NoiseAir Limited unless otherwise stated in the report and should be treated accordingly.

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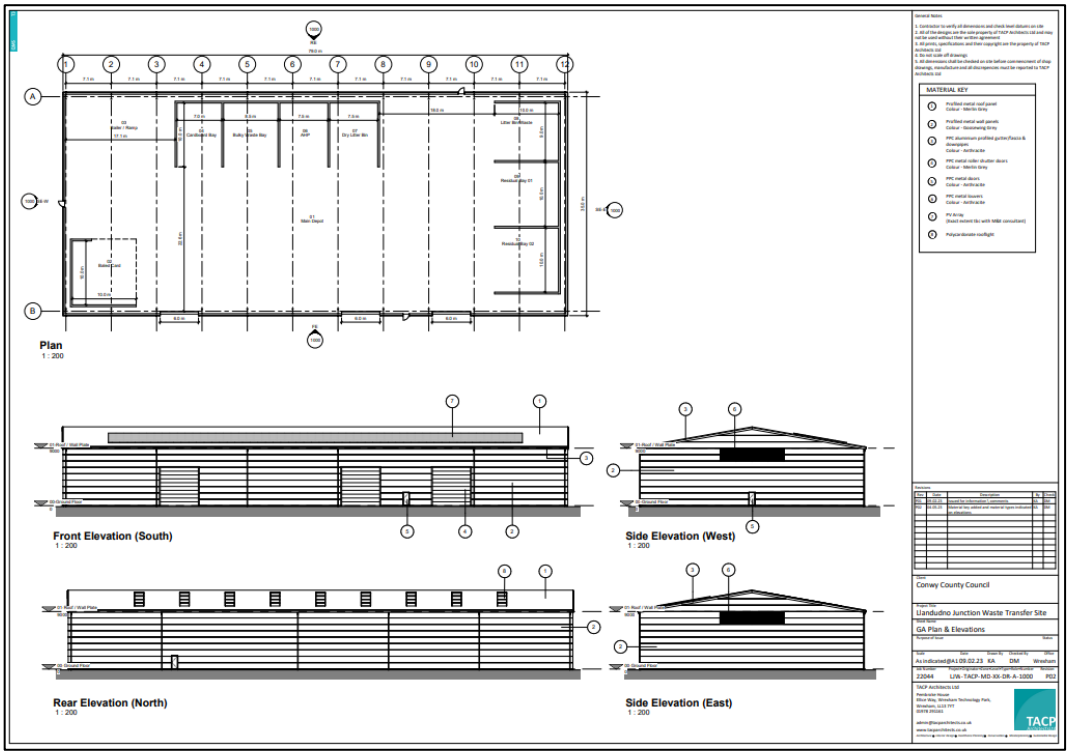
APPENDIX B – DRAWINGS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1 : 200
Side Elevation (West)
1 : 200
Rear Elevation (North)
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Side Elevation (East)
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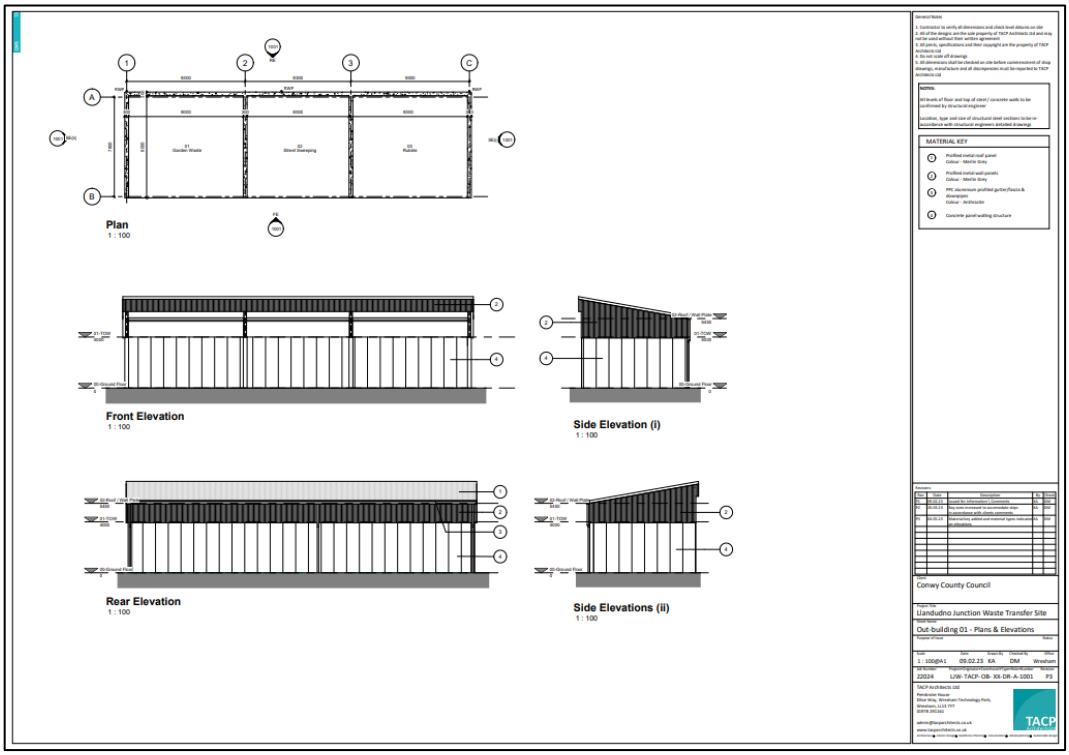
MATERIAL KEY
Conwy County Council
Llandudno Junction Waste Transfer Site
GA Plan & Elevations
TACP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Side Elevations (ii)
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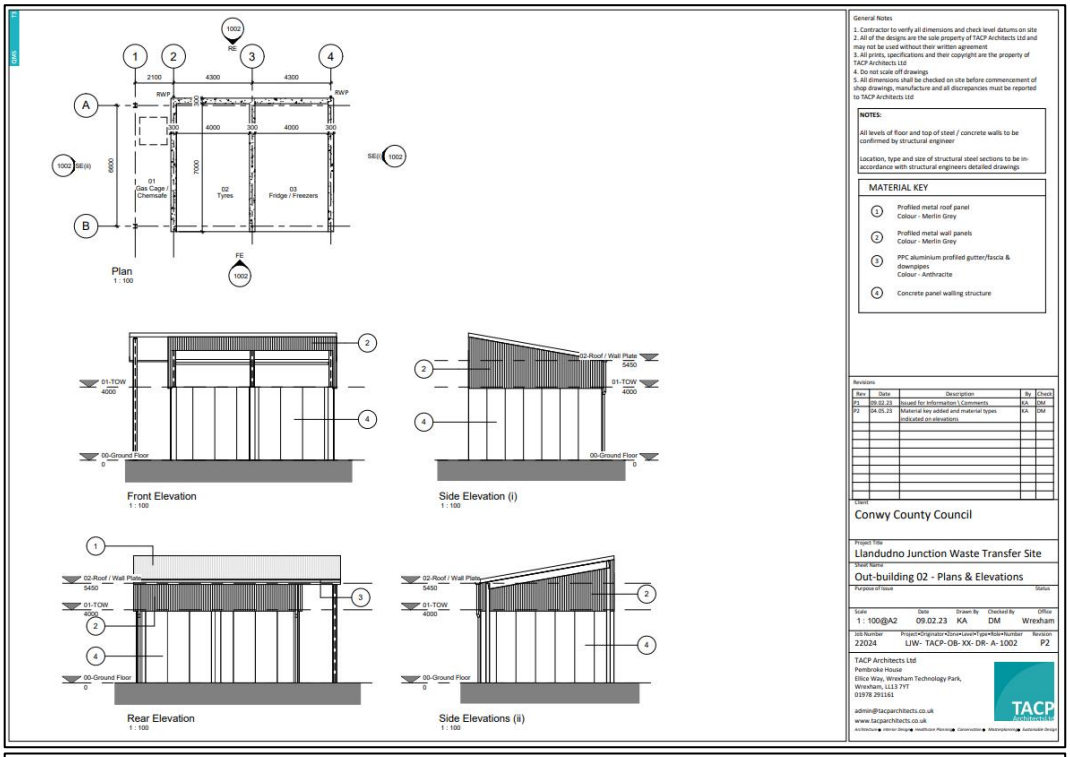
MATERIAL KEY
Conwy County Council
Llandudno Junction Waste Transfer Site
Out-building 01 - Plans & Elevations
TACP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Front Elevation
1 : 100
Side Elevation (i)
1 : 100
Rear Elevation
1 : 100
Side Elevations (ii)
1 : 100
01 Gas Cage / Chemsafe
02 Tyres
03 Fridge / Freezers
01-TOW 4000
00-Ground Floor 0
02-Roof / Wall Plate 5450
General Notes
1. Contractor to verify all dimensions and check level datums on site
2. All of the designs are the sole property of TACP Architects Ltd and may not be used without their written agreement
3. All prints, specifications and their copyright are the property of TACP Architects Ltd
4. Do not scale off drawings
5. All dimensions shall be checked on site before commencement of shop drawings, manufacture and all discrepancies must be reported to TACP Architects Ltd
NOTES:
All levels of floor and top of steel / concrete walls to be confirmed by structural engineer
Location, type and size of structural steel sections to be in-accordance with structural engineers detailed drawings
MATERIAL KEY
1 Profiled metal roof panel Colour - Merlin Grey
2 Profiled metal wall panels Colour - Merlin Grey
3 PPC aluminium profiled gutter/fascia & downpipes Colour - Anthracite
4 Concrete panel walling structure
Revisions
Rev Date Description By Check
P1 09.02.23 Issued for Information \ Comments KA DM
P2 04.05.23 Material key added and material types indicated on elevations KA DM
Client
Conwy County Council
Project Title
Llandudno Junction Waste Transfer Site
Sheet Name
Out-building 02 - Plans & Elevations
Purpose of Issue
Status
Scale 1 : 100@A2
Date 09.02.23
Drawn By KA
Checked By DM
Office Wrexham
Job Number 22024
Project•Originator•Zone•Level•Type•Role•Number LJW- TACP-OB- XX- DR- A- 1002
Revision P2
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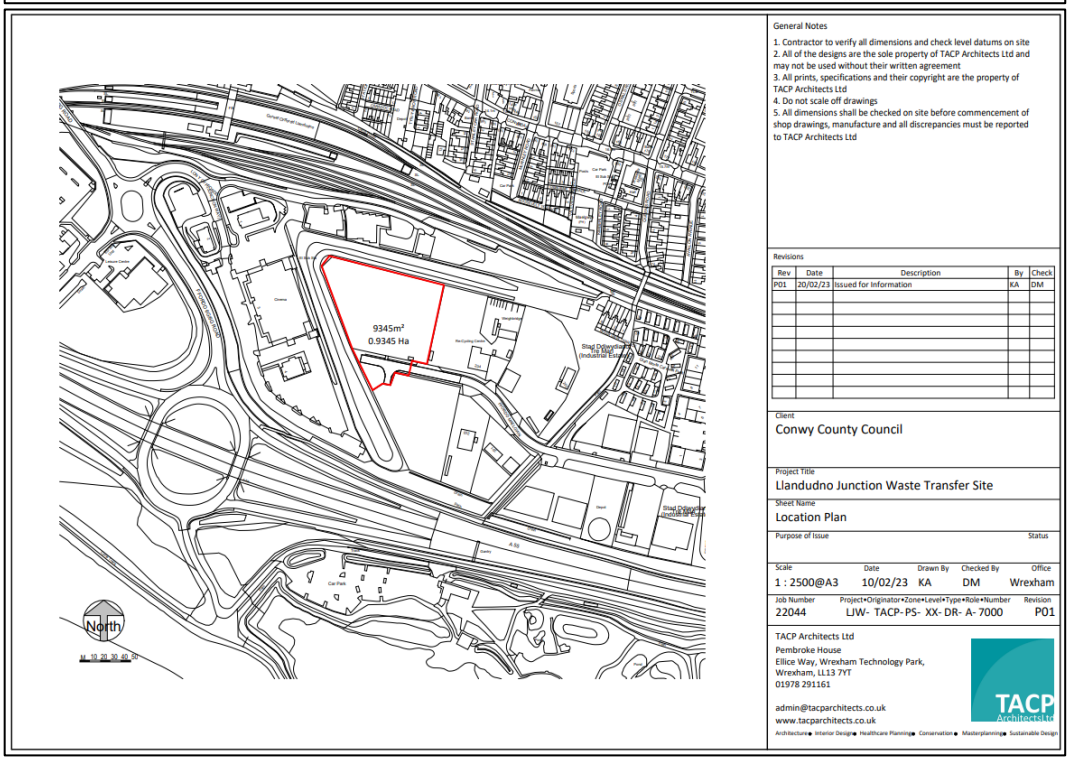
Architecture • Interior Design • Healthcare Planning • Conservation • Masterplanning • Sustainable Design


9345m²
0.9345 Ha
North
General Notes
1. Contractor to verify all dimensions and check level datums on site
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3. All prints, specifications and their copyright are the property of TACP Architects Ltd
4. Do not scale off drawings
5. All dimensions shall be checked on site before commencement of shop drawings, manufacture and all discrepancies must be reported to TACP Architects Ltd
Revisions
Rev Date Description By Check
P01 20/02/23 Issued for Information KA DM
Client
Conwy County Council
Project Title
Llandudno Junction Waste Transfer Site
Sheet Name
Location Plan
Purpose of Issue
Status
Scale 1 : 2500@A3
Date 10/02/23
Drawn By KA
Checked By DM
Office Wrexham
Job Number 22044
Project•Originator•Zone•Level•Type•Role•Number LJW- TACP- PS- XX- DR- A- 7000
Revision P01
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APPENDIX C - GLOSSARY

A-weighted sound pressure, p_A	Value of overall sound pressure, measured in pascals (Pa), after the electrical signal derived from a microphone has been passed through an A-weighting network. *NOTE: The A-weighting network modifies the electrical response of a sound level meter with frequency in approximately the same way as the sensitivity of the human hearing system.*
A-weighted sound pressure level, L_{pA}	Quantity of A-weighted sound pressure in decibels (dBA).
Acoustic environment	Sound from all sound sources as modified by the environment [BS ISO 12913-1:2013].
Ambient sound	Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far. *NOTE: The ambient sound comprises the residual sound and the specific sound when present.*
Ambient sound level, $L_a = L_{Aeq,T}$ (BS 4142:2014)	Equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T *NOTE: The ambient sound level is a measure of the residual sound and the specific sound when present.*
Background sound	Underlying level of sound over a period, *T*, which might in part be an indication of relative quietness at a given location.
Background sound level, $L_{A90,T}$ (BS 4142:2014)	A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels.
Break-in	Noise transmission into a structure from outside.
Break-out	Noise transmission from inside a structure to the outside.
Cross-talk	Noise transmission between one room and another room or space via a duct or other path.
C_{tr}	Correction term applied against the sound insulation single-number values (R_w, D_w, and $D_{nT,w}$) to provide a weighting against low frequency performance. *NOTE: The reference values used within the C_{tr} calculation are based on urban traffic noise.*
Equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$	Value of the A-weighted sound pressure level in decibels (dB) of a continuous, steady sound that, within a specified time interval, T, has the same mean-squared sound pressure as the sound under consideration that varies with time.
Equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$ (BS 4142:2014)	Value of the A-weighted sound pressure level in decibels of continuous steady sound that, within a specified time interval, $T = t_2 - t_1$, has the same mean-squared sound pressure as a sound that varies with time.
Equivalent sound absorption area of a room, A	Hypothetical area of a totally absorbing surface without diffraction effects, expressed in square metres (m2), which, if it were the only absorbing element in the room, would give the same reverberation time as the room under consideration
Facade level	Sound pressure level 1 m in front of the façade. *NOTE: Facade level measurements of L_{pA} are typically 1 dB to 2 dB higher than corresponding free-field measurements because of the reflection from the facade.*
Free-field level	Sound pressure level away from reflecting surfaces. *NOTE: Measurements made 1.2 m to 1.5 m above the ground and at least 3.5 m away from other reflecting surfaces are usually regarded as free-field. To minimize the effect of reflections the measuring position has to be at least 3.5 m to the side of the reflecting surface (i.e., not 3.5 m from the reflecting surface in the direction of the source). Estimates of noise from aircraft overhead usually include a correction of 2 dB to allow for reflections from the ground.*

Impact sound pressure level, L_i	Average sound pressure level in a specific frequency band in a room below a floor when it is excited by a standard tapping machine or equivalent.
Indoor ambient noise	Noise in a given situation at a given time, usually composed of noise from many sources, inside and outside the building, but excluding noise from activities of the occupants. *NOTE: The location(s) within the room at which the ambient indoor noise is to be measured or calculated ought to be considered.*
Measurement time interval, T_m (BS 4142:2014)	Total time over which measurements are taken. *NOTE: This may consist of the sum of a number of non-contiguous, short-term measurement time intervals.*
Noise criteria	Numerical indices used to define design goals in a given space.
Noise rating, NR	Graphical method for rating a noise by comparing the noise spectrum with a family of noise rating curves.
Normalised impact sound pressure level, L_n	Impact sound pressure level normalized for a standard absorption area in the receiving room. *NOTE: Normalised impact sound pressure level is usually used to characterize the insulation of a floor in a laboratory against impact sound in a stated frequency band.*
Octave band	Band of frequencies in which the upper limit of the band is twice the frequency of the lower limit.
Percentile level, $L_{AN,T}$	A-weighted sound pressure level obtained using time-weighting “F”, which is exceeded for N% of a specified time interval.
Reference time interval, T_r (BS 4142:2014)	Specified interval over which the specific sound level is determined. *NOTE: This is 1 h during the day from 07:00 h to 23:00 h and a shorter period of 15 min at night from 23:00 h to 07:00 h.*
Residual sound (BS 4142:2014)	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.
Residual sound level, $L_r = L_{Aeq,T}$ (BS 4142:2014)	Equivalent continuous A-weighted sound pressure level of the residual sound at the assessment location over a given time interval, T.
Rating level, $L_{Ar,Tr}$	Equivalent continuous A-weighted sound pressure level of the noise, plus any adjustment for the characteristic features of the noise. *NOTE: This is used in BS 7445 and BS 4142 for rating industrial noise, where the noise is the specific noise from the source under investigation.*
Reverberation time, T	Time that would be required for the sound pressure level to decrease by 60 dB after the sound source has stopped.
Sound exposure level, LAE	Level of a sound, of 1 s duration, that has the same sound energy as the actual noise event considered.
Sound level difference, D	Difference between the sound pressure level in the source room and the sound pressure level in the receiving room.
Sound pressure, p	Root-mean-square value of the variation in air pressure, measured in pascals (Pa) above and below atmospheric pressure, caused by the sound.
Sound pressure level, L_p	Quantity of sound pressure, in decibels (dB).
Sound reduction index, R	Laboratory measure of the sound insulating properties of a material or building element in a stated frequency band.

Specific sound level, $L_s = L_{Aeq,Tr}$ (BS 4142:2014)	Equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, T_r.
Specific sound source (BS 4142:2014)	Sound source being assessed.
Standardised impact sound pressure level, L'_{nT}	Impact sound pressure level normalized to a reverberation time in the receiving room of 0.5 s.
Standardised level difference, D_{nT}	Difference in sound level between a pair of rooms, in a stated frequency band, normalized to a reference reverberation time of 0.5 s for dwellings.
Groundborne noise	Audible noise caused by the vibration of elements of a structure, for which the vibration propagation path from the source is partially or wholly through the ground. *NOTE Common sources of ground-borne noise include railways and heavy construction work on adjacent construction sites.*
Structure-borne noise	Audible noise caused by the vibration of elements of a structure, the source of which is within a building or structure with common elements. *NOTE Common sources of structure-borne noise include building services plant, manufacturing machinery and construction or demolition of the structure.*
Third octave band	Band of frequencies in which the upper limit of the band is 2% times the frequency of the lower limit.
Weighted level difference, D_w	Single-number quantity that characterizes airborne sound insulation between rooms, but which is not adjusted to reference conditions. *NOTE Weighted level difference is used to characterize the insulation between rooms in a building as they are. Values cannot normally be compared with measurements made under other conditions (see BS EN ISO 717-1).*
Weighted normalised impact sound pressure level, $L'_{n,w}$	Single-number quantity used to characterize the impact sound insulation of floors over a range of frequencies.
Weighted sound reduction index, R_w	Single-number quantity which characterizes the airborne sound insulating properties of a material or
Weighted standardised impact sound pressure level $L'_{nT,w}$	Single-number quantity used to characterize the impact sound insulation of floors over a range of frequencies.
Weighted standardised level difference, $D_{nT,w}$	Single-number quantity that characterizes the airborne sound insulation between rooms.

Symbols

D_w	Weighted level difference (dB)
D_{nT}	Standardized level difference (dB)
$D_{nT,w}$	Weighted standardized level difference (dB)
L_{Amax}	Maximum noise level (dB)
$L_{Ar,Tr}$	Rating level (dB)
L_n	Normalised impact sound pressure level (dB)
L'_{nT}	Standardised impact sound pressure level (dB)
$L'_{nT,w}$	Weighted standardised impact sound pressure level (dB)
$L'_{n,w}$	Weighted normalised impact sound pressure level (dB)
L_p	Sound pressure level (dB)
L_{pA}	A-weighted sound pressure level (dB)
$L_{AN,T}$	Percentile level (dB)
L_{AE}	Sound exposure level (dB)
$LAeq,T$	Equivalent continuous A-weighted sound pressure level (dB)
p	Sound pressure (Pa)
p_A	A-weighted sound pressure (dB)
$p_{A(t)}$	Instantaneous A-weighted sound pressure (Pa)

R	Sound reduction index (dB)
R_w	Weighted sound reduction index (dB)
T	Time interval (also used for reverberation time) (s)
t_0	Reference time interval (s)

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UNIT 14, CHAPEL COURT, WERVIN, CHESTER. CH2 4BT

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