



Noise Impact Assessment

**Proposed Asphalt Plant,
Land at Hendre Mine,
Rhydymwyn, Flintshire**

HOGAN

**R26.12396/1/AP
Date of Report: 18 May 2026**

REPORT DETAILS

Client	Hogan
Report Title	Noise Assessment – Proposed Asphalt Plant
Site Address	Land at Hendre Mine, The Nant Rhydymwyn, Mold, CH7 5QD
Report Ref.	R26.12396/1/AP
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DOCUMENT CONTROL

Issue No.	Issue Date	Prepared by	Technical Review
1	18/05/26		
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1.0 INTRODUCTION

1.1 Overview

- 1.1.1 Vibrock Limited are commissioned to undertake a noise impact assessment in relation to a planning application for the siting of an asphalt plant and ancillary facilities on land at Hendre Mine in Rhydymwyn, Flintshire.
- 1.1.2 An assessment of the potential impact of the proposals at identified noise-sensitive premises in the vicinity of the site has been made with reference to local and national planning policy and the technical guidance presented within BS 4142 '*Methods for rating and assessing industrial and commercial sound*'.
- 1.1.3 Further explanation of the terminology used within this report is provided in Appendix A.

1.2 Proposed Development

- 1.2.1 The proposed development comprises of an asphalt plant with hot storage capacity of 300t, a RAP system, and aggregate storage bays. The 0.86 ha site is situated adjacent to the access road to the nearby Hendre Quarry with which the access is shared. A site location plan is provided in Figure 1 and the proposed site layout is shown in Figure 2.
- 1.2.2 The site has a long history of industrial use. The principle of the site being used for industrial purposes has previously been established by the granting of planning permission for metal processing and in February 2011 permission was granted on appeal (ref. APP/A6835/A/10/2140062) for the change of use of the site from general industrial to a recycling/waste transfer station.
- 1.2.3 The appeal was allowed subject to 18 conditions. Condition 13 specified operating hours for the site and it is understood that the operating hours of the proposed asphalt plant site are to be the same as those detailed in Condition 13 of the appeal decision namely 0800 – 1800 Monday to Fridays and 0800 – 1200 Saturdays. Also included was Condition 17 which specified a limit of 50 dB $L_{Aeq,1hr}$ (free-field) at the site boundary. The conditions attached to the appeal decision are included at Appendix B for reference.
- 1.2.4 The nearest noise-sensitive premise is a single residential dwelling (Hendre Villas) located approximately 55m to the east-north-east of the site boundary and around 110m from the proposed asphalt plant itself (See Figure 1). Due to the proximity of this residential premises, it is envisaged that asphalt would be manufactured during a daytime period (typically from 1400 – 1600). The asphalt would then be stored overnight to be loaded into HGVs from the 8am onwards the next day. It is anticipated that all aggregate and bitumen deliveries would also take place during the daytime only.

- 1.2.5 It is proposed that the plant would be clad with steel sheeting to enclose as much of the noise generated as possible. Acoustic covers/silencers will be provided to the exhaust fan and burner. Acoustic screening in the form of a gabion structure up to 4m in height will also be provided at the eastern boundary of the site (as shown in Figure 2) to minimise the propagation of noise towards the nearby residential premises. Whilst some existing buildings on the site would be removed it is understood that the large building located in the north of the site would be retained thus providing some level of screening of the new asphalt plant including the proposed aggregate bays and feed hoppers which would be located to the west of this building.

2.0 NOISE POLICY AND GUIDANCE

2.1 National Planning Policy

Planning Policy Wales (PPW)

- 2.1.1 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. PPW, the TANs, MTANs and policy clarification letters comprise national planning policy.
- 2.1.2 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.

Technical Advice Note (TAN) 11: Noise [including CL-01-15 Updates]

- 2.1.3 This note provides advice on how the planning system can be used to minimise the adverse impact of noise without placing unreasonable restrictions on development or adding unduly to the costs and administrative burdens of business.
- 2.1.4 It outlines some of the main considerations which local planning authorities should take into account in drawing-up development plan policies and when determining planning applications for development which will either generate noise or be exposed to existing noise sources.
- 2.1.5 In relation to noise generating development the note states that '*Local planning authorities must ensure that noise generating development does not cause an unacceptable degree of disturbance. They should also bear in mind that if subsequent intensification or change of use results in greater intrusion, consideration should be given to the use of appropriate conditions.*'
- 2.1.6 The note also makes reference to the guidance in BS 4142 when assessing industrial and commercial developments along with BS 8233 where general guidance on acceptable noise levels within buildings can be found.

2.2 Local Planning Policy

- 2.2.1 The Flintshire LDP was adopted by the Council in January 2023 and covers the period 2015 to 2030. It forms part of the statutory development plan alongside *Future Wales: The National Plan 2040*. Local policies relevant to this assessment are presented below.

Flintshire Local Development Plan 2015 – 2030 (Adopted Plan 24th January 2023)

STR14: Climate Change and Environmental Protection

The Council will seek to mitigate the effects of climate change and ensure appropriate environmental protection in the County through:

- I. Ensuring new development is sustainably located and designed so as to reduce the need for travel by private car;*
- II. Encouraging the use and development of appropriate or suitable brownfield land;*
- III. Adopting a sustainable approach to water resource management including supply, surface water run-off and waste water treatment;*
- IV. Directing development away from flood risk areas, assessing the implications of development in areas at risk of flooding and ensuring that new development does not increase the risk of flooding elsewhere;*
- V. Encouraging energy efficient development, environmentally acceptable renewable and zero / low carbon energy generation and combined heat and power and communal / district heating networks;*
- VI. Ensuring that new development has regard to the protection of the environment in terms of air, noise and light pollution, unstable and contaminated land and former landfill sites;*
- VII. Designing development to be adaptable and resilient to future effects of climate change.*

C2: General Requirements for Development

All development should:

- a. harmonise with or enhance the character, local distinctiveness and appearance of the site, existing building(s) and surrounding landscape/ townscape;*
- b. not have a significant adverse impact on the safety and living conditions of nearby residents, other users of nearby land/property, or the community in general, through increased activity, disturbance, noise, dust, vibration, hazard, or the adverse effects of pollution;*
- c. take account of personal and community safety and security in its design and layout;*
- d. maximise sustainable travel choice by having safe and convenient access by foot, cycle, public transport and vehicles;*

- e. not have an unacceptable effect on the highway network or highway safety as a result of problems arising from traffic generation, inadequate and poorly located parking spaces, servicing and manoeuvring;*
- f. not result in or be susceptible to problems related to foul and surface water drainage, land stability, contamination, flooding, or pollution of light, air and water, either on or off site.*

PC3: Design

All new development should:

- a. be of a high quality, distinctive and inclusive design which respects and enhances the site and its surroundings in terms of its siting, layout, scale, height, design, density, use of materials and landscaping, and creates a sense of place;*
- b. retain existing landscape and nature conservation features and incorporate opportunities to enhance biodiversity and ecological connectivity;*
- c. ensure that new materials are appropriate, durable and sympathetic to the character and context of the site;*
- d. protect and enhance the townscape, architectural, historic and cultural built environment;*
- e. incorporate suitable provision of space about dwellings, amenity space, landscaping and planting;*
- f. create attractive, accessible and safe and healthy places with natural surveillance, visibility and sensitive lighting;*
- g. incorporate Sustainable Urban Drainage Schemes to bring about multiple benefits as an integral part of the development;*
- h. protect the living conditions of nearby occupiers from any harmful effects of new development including overlooking, harm to outlook, increased activity/disturbance/noise.*

EN18: Pollution and Nuisance

New development which is sensitive to the effects of existing noise, vibration, odour, dust, light or other pollution or nuisance, will be permitted only if it can be demonstrated that appropriate measures can be taken to mitigate any potential adverse effects.

New development which would create an increased risk of noise, vibration, odour, dust, light or other pollution or hazard will only be permitted if:

- a. it would not unacceptably harm general amenity or living conditions; and*
- b. it would not impose significant restrictions on the use or development of surrounding land.*

If new external lighting is proposed, particularly in or near to the AONB, this should be considered as part of an overall landscaping scheme and kept to a minimum to avoid light pollution.

2.3 Technical Guidance

BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound

- 2.3.1 This British Standard was amended in June 2019. BS 4142:2014+A1:2019 supersedes BS 4142:2014, which is withdrawn.
- 2.3.2 This British Standard describes methods for rating and assessing sound of an industrial and/or commercial nature, which includes:
- 1) sound from industrial and manufacturing processes;
 - 2) sound from fixed installations which comprise mechanical and electrical plant and equipment;
 - 3) sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and
 - 4) sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and/or commercial site.
- 2.3.3 The methods described in this British Standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.
- 2.3.4 This standard is intended to be used for the purposes of:
- a) investigating complaints;
 - b) assessing sound from existing, proposed, new, modified or additional source(s) of sound of an industrial and/or commercial nature; and
 - c) assessing sound at proposed new dwellings or premises used for residential purposes.
- 2.3.5 This standard is not intended to be applied for the following purposes:
- d) The determination of noise amounting to a nuisance;
 - e) The assessment of indoor sound levels;
 - f) The assessment of low-frequency noise;
 - g) The assessment of sound from the passage of vehicles on public roads and railway systems;
 - h) The assessment of sound from recreational activities, including all forms of motorsport;

- i) music and other entertainment;
- j) shooting grounds;
- k) construction and demolition;
- l) domestic animals;
- m) people;
- n) public address systems for speech;
- o) The assessment of sound from other sources falling within the scopes of other standards or guidance.

2.3.6 The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs. When making assessments and arriving at decisions it is essential to place the sound in context.

2.3.7 The sound level from a source when determined as a discrete entity, distinct and free of other influences contributing to the ambient sound, is referred to as the 'specific sound level'. The specific sound level is evaluated, at an identified assessment location, over the appropriate reference time interval which is as follows:

- 1 hour during the daytime (07:00 – 23:00); and
- 15 minutes during the night-time (23:00 – 07:00).

[NB. The shorter reference time interval at night means that short duration sounds with an on time of less than 1 hour can lead to a greater specific sound level when determined over the reference time interval during the night than when determined during the day.]

2.3.8 The specific noise may be subject to an acoustic character correction if the noise level at the assessment location is subjectively considered to exhibit certain acoustic features that could increase the significance of impact over that expected from a basic comparison between the specific sound level and the background sound level. Where such features are present at the assessment location, add a character correction to the specific sound level to obtain the rating level.

2.3.9 This standard requires the assessor to consider the subjective prominence of the character of the specific sound at the noise-sensitive locations and the extent to which such acoustically distinguishing characteristics will attract attention. Such features are taken into account by applying corrections to the specific sound level to obtain the rating level as summarised in Table 1.

Table 1: Summary of BS 4142 Acoustic Feature Corrections

Subjective Prominence	Tonality	Impulsivity	Intermittency	Other Sound Characteristic (neither tonal, nor impulsive, nor intermittent)
Just Perceptible	+2 dB	+3 dB	-	-
Clearly Perceptible	+4 dB	+6 dB	-	-
Highly Perceptible	+6 dB	+9 dB	-	-
Readily Distinctive Against Residual Environment	-	-	3 dB	3 dB

2.3.10 If characteristics likely to affect perception and response are present in the specific sound, within the same reference period, then the applicable corrections ought normally to be added arithmetically. However, if any single feature is dominant to the exclusion of the others then it might be appropriate to apply a reduced or even zero correction for the minor characteristics. The rating level is equal to the specific sound level if there are no such features present or expected to be present.

2.3.11 An initial estimate of the impact of the specific sound is obtained by subtracting the measured background sound level from the rating level, and consider the following.

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

2.3.12 Where the initial estimate of the impact needs to be modified due to the context, take all pertinent factors into consideration, including the following.

- 1) The absolute level of sound.
- 2) The character and level of the residual sound compared to the character and level of the specific sound.

3) The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.

- i) façade insulation treatment;
- ii) ventilation and/or cooling that will reduce the need to have windows open so as to provide rapid or purge ventilation; and
- iii) acoustic screening.

2.3.13 Response to sound can be subjective and is affected by many factors both acoustic and non-acoustic. The significance of its impact, for example, can depend on such factors as the margin by which a sound exceeds the background sound level, its absolute level, time of day and change in the acoustic environment, as well as local attitudes to the source of the sound and the character of the neighbourhood. This edition of the standard recognises the importance of the context in which a sound occurs.

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

2.3.14 This Standard provides guidance for the control of noise in and around buildings and is applicable to the design of new buildings, or refurbished buildings undergoing a change of use, but does not provide guidance on assessing the effects of changes in the external noise levels to occupants of an existing building.

2.3.15 For dwellings, the main considerations are:

- a) for bedrooms, the acoustic effect on sleep; and
- b) for other rooms, the acoustic effect on resting, listening and communicating.

2.3.16 It is desirable that the internal ambient noise level does not exceed the guideline values detailed in Table 2 below.

Table 2: Indoor ambient noise levels for dwellings (From Table 4 of BS 8233)

Activity	Location	07:00 – 23:00	23:00 – 07:00
Resting	Living room	35 dB $L_{Aeq,16hour}$	-
Dining	Dining room/area	40 dB $L_{Aeq,16hour}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

2.3.17 For traditional external areas that are used for amenity space, such as gardens, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$.

World Health Organisation (WHO)

- 2.3.18 The World Health Organisation ‘*Guidelines for Community Noise*’ 1999 aims to provide environmental health authorities and professionals with guidance on the adverse health effects of community noise on people.
- 2.3.19 This document presents a summary of research and opinions on the impacts of noise and recommends guideline values for avoidance of particular effects e.g. annoyance and sleep disturbance. It is the primary reference point for other guidance value based documents, such as BS 8233.
- 2.3.20 The following guideline values have been derived according to specific environments. The values relevant to residential development are shown in Table 3 below.

Table 3: Guideline values for community noise in specific environments. (From Table 4.1 of WHO Guidelines)

Specific Environment	Critical Health Effect(s)	L _{Aeq} (dB)	Time base (hrs)	L _{Amax,f} (dB)
Outdoor living area	Serious annoyance, daytime and evening	55	16	-
	Moderate annoyance, daytime and evening	50	16	-
Dwelling, indoors	Speech intelligibility and moderate annoyance, daytime and evening	35	16	
Inside bedrooms	Sleep disturbance, night-time	30	8	45
Outside bedrooms	Sleep disturbance, window open (outdoor values)	45	8	60

3.0 BACKGROUND NOISE SURVEY

3.1 Survey Methodology

- 3.1.1 Sound levels were measured over a 6 day period from 31 October – 5 November 2024 at a location selected to represent the closest noise-sensitive premises to the application site.
- 3.1.2 Measurements were undertaken with reference to the guidance presented within BS 7445 and BS 4142 which provide advice in relation to methods and procedures for environmental noise monitoring along with guidance on measurement parameters, instrumentation and the information to be reported.

3.2 Instrumentation

- 3.2.1 Monitoring was undertaken using the equipment detailed in Table 4.

Table 4: Noise Monitoring Equipment

Manufacturer	Type	Serial No.
Cirrus	Class 1 Integrating Sound Level Meter CR:171	G300481
Cirrus	Acoustic Calibrator CR:515	78059

- 3.2.2 During the survey the microphone was protected with a suitable outdoor windshield and mounted on a tripod. The monitoring position was 'free field' (no vertical reflective surfaces within 3.5 metres of the microphone) and at a height of between 1.2 – 1.5 metres above ground level.
- 3.2.3 The following set-up parameters were used:
- Time Weighting: Fast
 - Frequency Weighting: A
 - Averaging-Integrating Period: 15 min
 - Data Logging: Repeat (Contiguous)
- 3.2.4 Field calibration checks were performed on site immediately before and after the survey period using a sound calibrator. No significant drift (i.e. no greater than ± 0.5 dB, and in this case +0.37 dB) in the calibration value of 93.7 dB was observed between the initial and final checks.

3.3 Observations

- 3.3.1 The acoustic environment in the vicinity of the site predominantly comprises noise from distant road traffic along with localised vehicle movements associated with Hendre Quarry. The quarry access road from the A541 runs immediately adjacent to the southern boundary of the application site. Occasional aircraft and birdsong also contributed to the noise climate at the monitoring location.
- 3.3.2 Weather conditions during the survey were measured using a portable Davis Vantage Vue Precision Weather Station located adjacent to the sound level meter. The data obtained is shown in Figure 3. Conditions were mostly dry and settled with average wind speeds of less than 1 ms^{-1} and predominantly from the west-south-west. Relative humidity varied between 80 – 95% and temperatures ranged from 8 – 12°C.
- 3.3.3 The weather during the survey was considered suitable for environmental noise monitoring and it is not considered necessary to exclude any of the measured background noise level data due to potential interference from the prevailing meteorological conditions.

3.4 Results

- 3.4.1 The measurement data collected during the survey is presented in Figure 4 and summarised in Table 5 below.

Table 5: Measured Sound Levels

Time Period	Average Ambient Sound Level Average $L_{Aeq,T}$ (free-field) dB	Typical Maximum Sound Level Average $L_{Aeq,T}$ (free-field) dB	Background Sound Level $L_{A90,T}$ (free-field) dB	
			Mean	Mode
Daytime (Mon – Fri 0800 – 1800 and Sat 0800 – 1200)	51.7	70 – 75	42.3	44

- 3.4.2 Statistical analysis in line with the example approach presented in Section 8 (Fig. 4) of BS 4142 was performed to provide further information on the background sound levels at the assessment location. This analysis is presented in Figure 5 and shows the most commonly occurring background noise levels.
- 3.4.3 Taking all factors into consideration the representative background noise level for the purposes of this assessment is considered to be within the range of 42 – 44 dB.

4.0 POTENTIAL NOISE EMISSIONS

4.1 Introduction

4.1.1 The level of noise in the local environs that arises from a site will depend on a number of factors. The more significant of which are:

- (a) the sound level output of the plant or equipment used on site;
- (b) the periods of operation of the plant on site;
- (c) the distance between the source noise and the receiving position;
- (d) the presence of screening due to barriers;
- (e) the reflection of sound;
- (f) soft ground attenuation.

4.1.2 Noise levels from operations associated with the proposed development have been calculated at the identified assessment locations based on the following methodologies and assumptions.

4.2 Calculation Methodology

4.2.1 In order to assist in the calculation of predicted noise levels from the site, CadnaA noise modelling software has been used. The noise prediction software has been configured to undertake the noise calculations in accordance with ISO 9613 'Acoustics - Attenuation of sound during propagation outdoors'. Noise model configuration details are outlined in Table 6 below.

Table 6: Noise Model Configuration Details

Parameter	Input
Software	DataKustik GmbH CadnaA v.2026 MR1 (build: 215.5625)
Calculation Standards/Guidelines	ISO 9613-2:2024
Model of Terrain	Triangulation
Max. Order of Reflection	2
Ground Attenuation	Spectral
Frequency Band Calculation	Octave Bands (63Hz – 8kHz)
Temperature	10°C
Relative Humidity	70%
Topographic data	3D contour data – 1.0m DTM EA LiDAR
Ground Absorption	Default 1.0 (Resolution 1.0m) / Site = 0.25 (Hard-standing)
Receiver Heights	Daytime 1.5m – ground floor/gardens

- 4.2.2 Within the model, HGVs movements have been modelled as moving point sources and conveyors have been modelled as line sources. Point sources have been used to represent stationary or quasi-stationary activities such as fixed plant and the unloading/loading of materials.
- 4.2.3 For all noise prediction calculations, the ground absorption coefficient has been estimated according to the combination of soft and hard ground conditions present between the source and receiver position. 'Soft' ground is taken to refer to surfaces which are absorbent to sound, e.g. grassland, cultivated land or plantations as opposed to 'hard' ground surfaces which reflect sound such as paving, asphalt and surface water.
- 4.2.4 The modelling software predictions assume conditions favouring sound propagation from source to receiver. The ISO 9613 calculation methodology assumes wind direction with $\pm 45^\circ$ of the direction connecting the centre of the dominant sound sources and the centre of the specified receptor region, together with wind speeds of between 1 – 5 ms⁻¹. It should therefore be noted that in practice the eventual longer-term measured levels are invariably lower than predicted levels due to the temporal variation in meteorological conditions.
- 4.2.5 The predictions made by the modelling software are for 'free-field' sound levels to allow for an appropriate comparison with the free-field background sound levels measured during the survey.
- 4.2.6 The convention applied within BS 4142, and throughout this report, is that all measured or calculated numbers are rounded to the nearest whole number with 0.5 being rounded up.

4.3 Noise Source Details

- 4.3.1 Information regarding potential operations at the proposed site has been based on discussions with the applicant and proposed development plans.
- 4.3.2 The sound levels used within this assessment are based on recent sound pressure level measurements made by Vibrock at asphalt plants (similar to that proposed) which are currently in operation at a number of sites in England and Wales.

4.4 Calculation Results

- 4.4.1 Table 7 summarises the results of the noise level modelling at the identified assessment location (Hendre Villas).
- 4.4.2 In addition, predicted site noise levels at the boundary have also been calculated with reference to the 50 dB limit detailed within Condition 17 of the previous planning permission. The appeal decision conditions are presented in Appendix B for reference.

Table 7: Calculation Results

Assessment Location	Calculated Specific Sound Level $L_{Aeq,Tr}$ (free-field) dB
Hendre Villas (to the east of the site)	42.2
Eastern Boundary Locations	45 – 50

- 4.4.3 The results of the noise modelling suggest that noise levels associated with the operation of the asphalt plant site could be up to 42 dB $L_{Aeq,1h}$ at Hendre Villas and in the region of 45 – 50 dB at the eastern boundary of the site. The model therefore provides an indication that, with effective acoustic screening in place, noise levels beyond the site boundary to the east could be 50 dB or lower.

5.0 ASSESSMENT

5.1 Technical Guidance (BS 4142)

5.1.1 This assessment has been undertaken with reference to the guidance provided within BS 4142.

5.1.2 This standard requires the following levels to be established:

- The Background Sound Level
- The Specific Sound Level
- The Rating Level

Background Sound Level

5.1.3 BS 4142 requires the quantification of typical background sound levels at locations representing the noise-sensitive receptors. The results of the survey are presented in Section 3 of this report.

Specific Sound Level

5.1.4 The specific sound level has been determined by calculation following the guidance within Section 7 of BS 4142. The method of calculation is explained in Section 4 of this report.

Rating Level

5.1.5 In determining the Rating Level it is recognised that certain acoustic features can increase the significance of noise impact over that expected from a basic comparison between the specific sound level and the background sound level.

5.1.6 Noise emissions associated with operations at the site are not considered to contain any significant tonal or intermittent features, however, it is considered that the sound could contain occasional impulsive features that would be discernible at the assessment location.

5.1.7 In accordance with BS 4142 it is therefore considered appropriate to apply a correction of + 3 dB to the calculated specific sound levels to account for the presence of these characteristics which could at times be perceptible at the assessment location.

Estimate of Impact

5.1.8 Table 8 presents an initial estimate of the potential impact of the proposals in accordance with BS 4142.

Table 8: Estimate of Impact (BS 4142)

Assessment Location	Background Sound Level ($L_{A90,1h}$ dB)	Specific Sound Level ($L_{Aeq,1h}$ dB)	Acoustic Feature Correction (dB)	Rating Level ($L_{Ar,Tr}$ dB)	Excess of rating over background sound level (dB)
Hendre Villas	42 – 44	42	+3	45	+1 to +3

5.1.9 Typically, the greater the difference between the rating level and the background sound level, the greater the magnitude of the impact.

5.1.10 BS 4142 states that where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a ‘low impact’. A difference of around +5 dB is likely to be an indication of an ‘adverse’ impact. A difference of around +10 dB or more is likely to be an indication of a ‘significant adverse’ impact, depending on the context.

5.1.11 It should be noted that the above assessment is not to be considered in isolation and due regard to the following sections on context and uncertainty should also be made.

Context

5.1.12 In addition to the estimate of noise impact which has determined the excess of rating level over background sound level, the following should also be considered as part of the impact assessment process:

- *Operational Period* – The noise sources under assessment will operate during the daytime only when there is a lower likelihood of adverse impact compared to operations during more sensitive periods such as the night-time.
- *Character of the Sound* – As part of the assessment the potential character of the sound has been assessed and an acoustic feature correction applied accordingly in accordance with BS 4142. The existing acoustic environment around the site is influenced predominantly by road traffic but also comprises a range of other industrial and commercial sound sources including HGV movements. Overall, the character of the sound from the site under assessment is not considered incongruous with the residual acoustic environment which is characterised by industrial use.

- *Absolute Level of Sound* – In some circumstances, absolute noise levels can be as, or more, relevant than the margin by which the rating level exceeds the background. With reference to the guide values recommended by BS 8233 and WHO (which both reference daytime limits of 50 – 55 dB), worst-case external noise levels from the site are expected to be in the region of 42 dB and noise emissions from the site are therefore considered likely to have a low impact on residents using living spaces and private external amenity areas.
- *Comparison to the Residual Sound* – Noise emission levels from the site are expected to be lower than the residual sound levels which are in the region of 51 dB during the daytime.
- *Location / Site History* – The site has a long history of industrial use and benefits from planning permission for a recycling/waste transfer station.

Uncertainty

5.1.13 Whilst it is accepted that uncertainty can occur throughout all aspects of the noise measurement and assessment process, the approach undertaken at all stages has been adopted with the aim of reducing uncertainty via the implementation of good practice. During this process reference has been made to BS 4142 Annex B '*Consideration of uncertainty and good practice for reducing uncertainty*'.

5.1.14 The following list details the key steps taken to reduce uncertainty:

- Background sound level measurements were made over a long duration to ensure that the acoustic environment was accurately characterised;
- Measurement procedures were in accordance with Section 6 of BS 4142 including precautions against interference such as unsuitable weather conditions;
- Site noise levels were determined by calculation with reference to Section 7 of BS 4142 and utilising the methodology outlined within ISO 9613 which is a widely accepted standard for the calculation of outdoor sound propagation;
- Operations during the sample measurements at a similar site were considered to be representative of typical operating conditions and the measurement durations were considered to be representative of any longer-term fluctuations in the specific sound. The influence of sound from other sources was minimised by measuring at times when the residual sound had subsided to a relatively low level;
- The instrumentation used was in accordance with Section 5 of BS 4142. Use of digital transfer methods and equipment whose conformity and calibration have been checked periodically.

5.2 Noise Policy and Guidance

- 5.2.1 The proposed development is considered to be consistent with the aims of national planning policy and guidance which seek to mitigate and minimise potential adverse impacts resulting from noise from new development and avoid noise giving rise to significant adverse impacts on health and the quality of life.
- 5.2.2 At a local level the proposed development also accords with the policies contained within the Flintshire Local Development Plan which seek to ensure that any potential adverse impacts are minimised and the development does not cause an unacceptable degree of disturbance on neighbouring land uses.

6.0 NOISE CONTROL RECOMMENDATIONS

- 6.1 Given the close proximity of the nearest residential premises to the site, potential noise impacts have been considered at an early stage in the planning of the proposed development.
- 6.2 In addition to the cladding, enclosure and silencing of the plant, restricted operating hours and the provision of boundary screening, the following noise control measures should be considered during the operation of the proposed development to demonstrate best practice and minimise the potential impact at noise-sensitive receptor locations within the vicinity of the site:
- (a) Audible reversing warning systems on mobile plant and vehicles should be of a type which, whilst ensuring that they give proper warning, has a minimum noise impact on persons outside sites;
 - (b) Ensure machinery is regularly well maintained and where appropriate fitted with exhaust silencers. Any defective items should not be used. Regular inspections of plant should be undertaken to identify any faults or wear and tear that may be resulting in excessive noise;
 - (c) Unnecessary horn usage, revving of engines and aggressive accelerating/braking should be avoided.
 - (d) Equipment should be switched off or throttled down to a minimum when not required. Any covers, panels or enclosure doors to engines should be kept closed when the equipment is in use;
 - (e) Where reasonably practicable, noisy equipment should be located as far from sensitive premises as possible. Plant from which the noise generated is known to be particularly directional should, wherever practicable, be orientated so that the noise is directed away from noise-sensitive areas;
 - (f) Keep internal vehicle routes clear and well maintained. Regularly inspect routes for potholes and repair as necessary. Avoid the use of speed humps;
 - (g) Ensure that any cladding or enclosures around noise-generating plant is regularly inspected for defects/damage/weathering that may negatively impact upon the sound insulation performance of the structure. Once identified any repairs should be carried in a timely manner;
 - (h) Operatives should be trained to employ appropriate techniques to keep site noise to a minimum, and should be effectively supervised to ensure that best working practice in respect of noise minimisation is followed. All operational staff and contractors should be responsible for reporting any noise problems immediately to the site supervisor.

7.0 SUMMARY

- 7.1 An assessment of potential noise impact associated with the proposed development has been made following the guidance presented within BS 4142 which is the most appropriate means of assessing noise from industrial/commercial developments of this type.
- 7.2 Following an initial estimate of noise impact, along with consideration of the context and any potential effects of uncertainty, the development is considered not likely to result in 'adverse' or 'significant adverse' impacts.
- 7.3 In addition to restricted operating hours and the inclusion of acoustic screening, a range of recommendations have been made to minimise potential noise emissions associated with the proposed development. The overall noise impact of the development is therefore considered to be in line with current national and local planning policy which seeks to prevent and avoid any significant or unacceptable adverse impacts and, where necessary, mitigate and reduce to a minimum other adverse impacts.

8.0 REFERENCES

1. ANC Guidelines: *Environmental Sound Measurement Guide*. ANC. May 2021.
2. BS 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound*, British Standards Institution 2019.
3. BS 7445-1:2003 *Description and measurement of environmental noise – Part 1 Guide to quantities and procedures*. British Standards Institution 2003.
4. BS 8233:2014 *Guidance on sound insulation and noise reduction for buildings*, BSI February 2014.
5. *Guidelines for Community Noise*. World Health Organization (WHO) 1999.
6. *Guidelines for Environmental Noise Impact Assessment*, v1.2. Institute of Environmental Management & Assessment. November 2014.
7. ISO 9613-2:2024 *Acoustics – Attenuation of sound during propagation outdoors. Part 2: Engineering method for the prediction of sound pressure levels outdoors*. Edition 2, 2024.
8. Planning Policy Wales (PPW) Edition 12. Welsh Government, February 2024.
9. Technical Advice Note (TAN) 11: Noise. Welsh Government. October 1997 + CL-01-15 Updates to TAN 11: Noise - Noise Action Plan (2013-18) Commitments

FIGURE 1

Site Location Plan

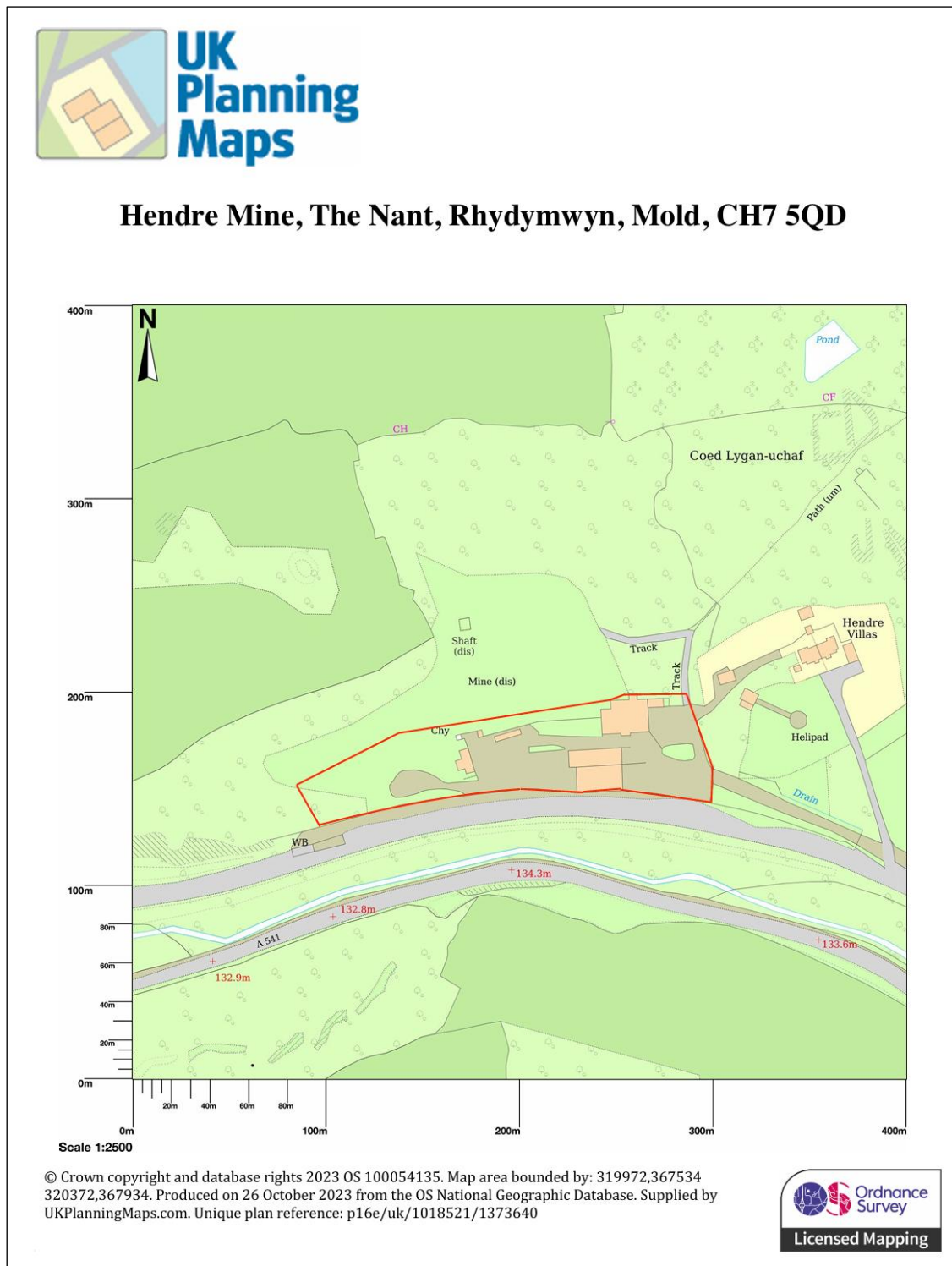


FIGURE 2

Proposed Site Layout

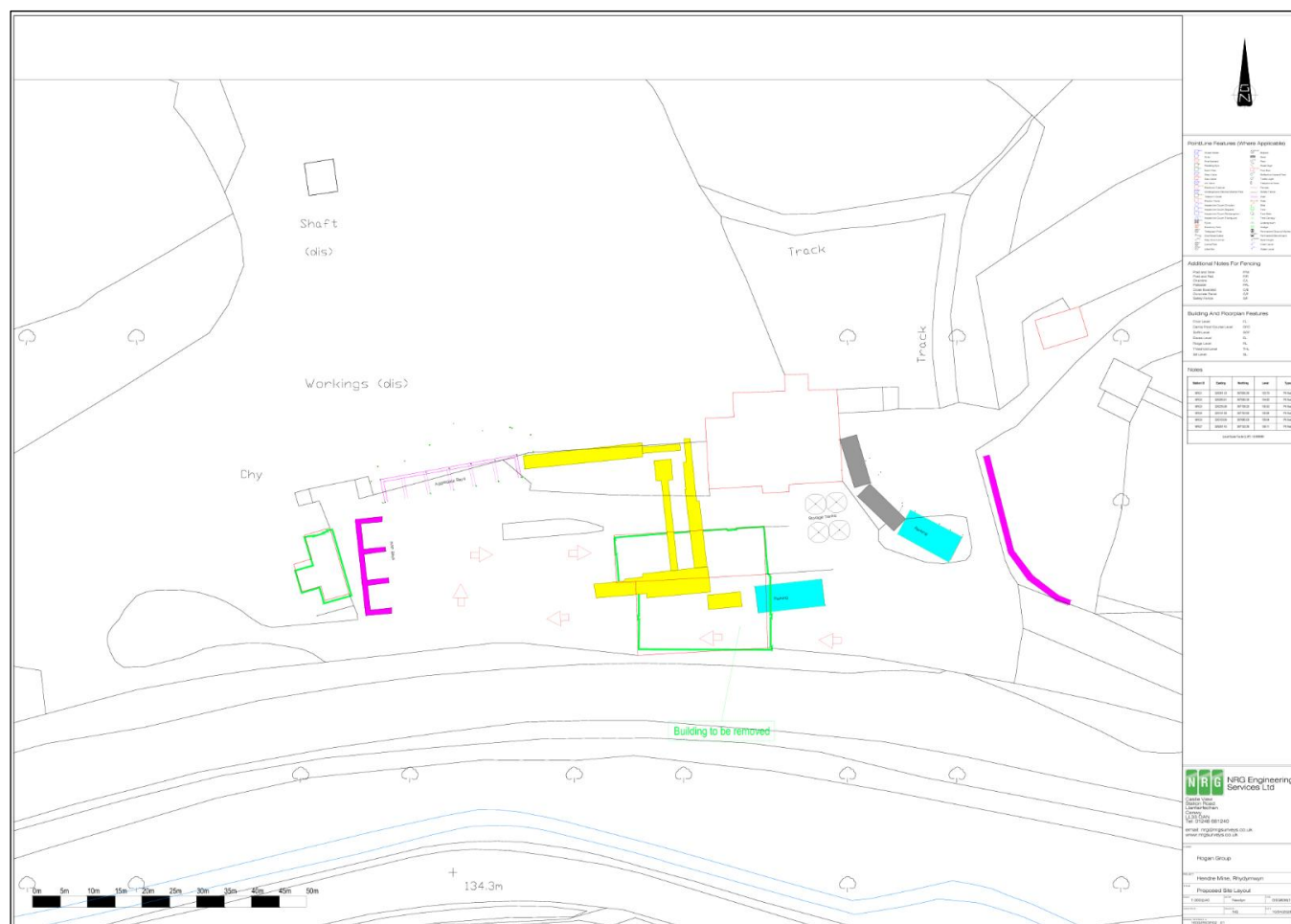


FIGURE 3
Weather Conditions

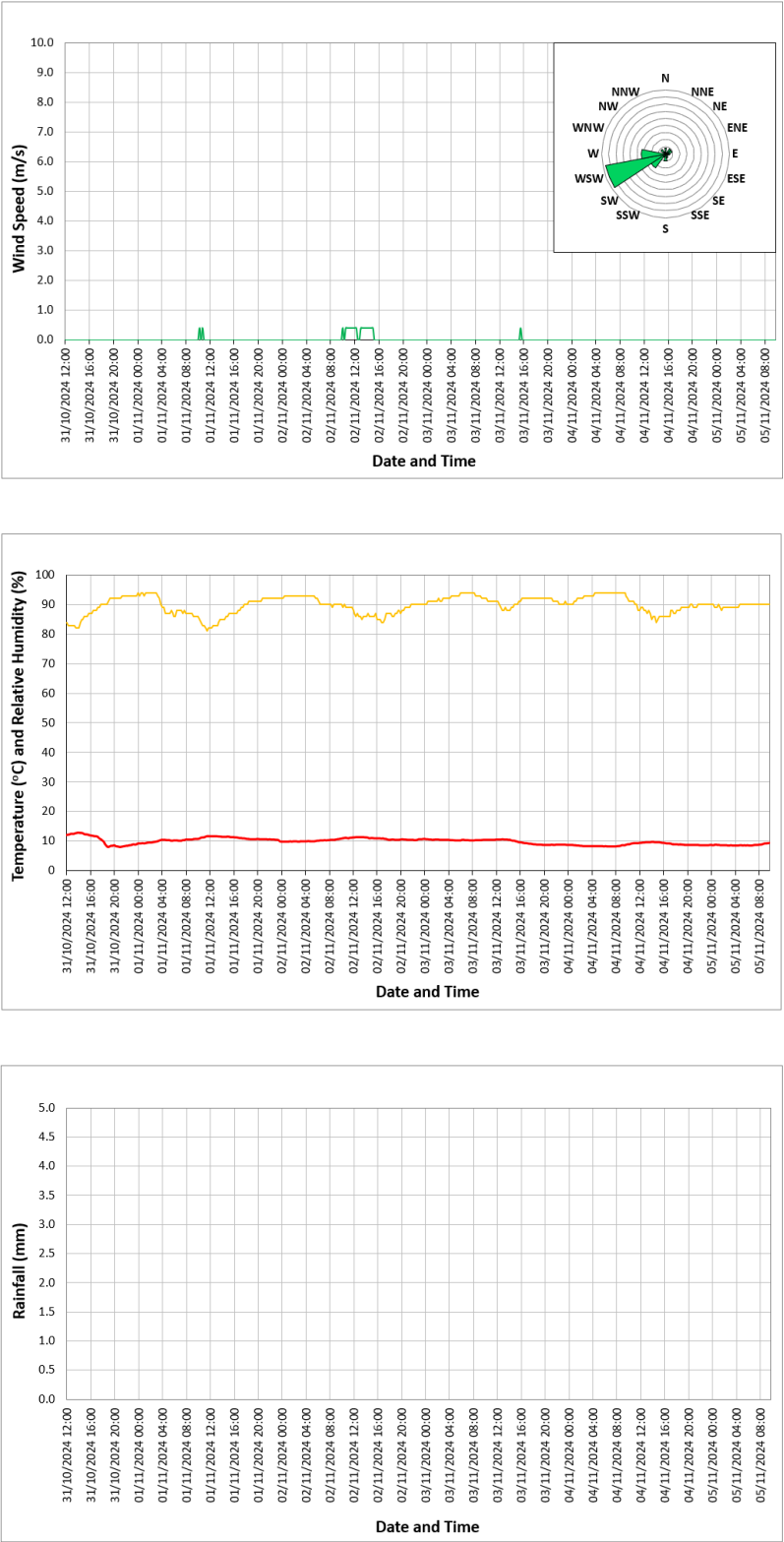


FIGURE 4

Measured Baseline Sound Levels

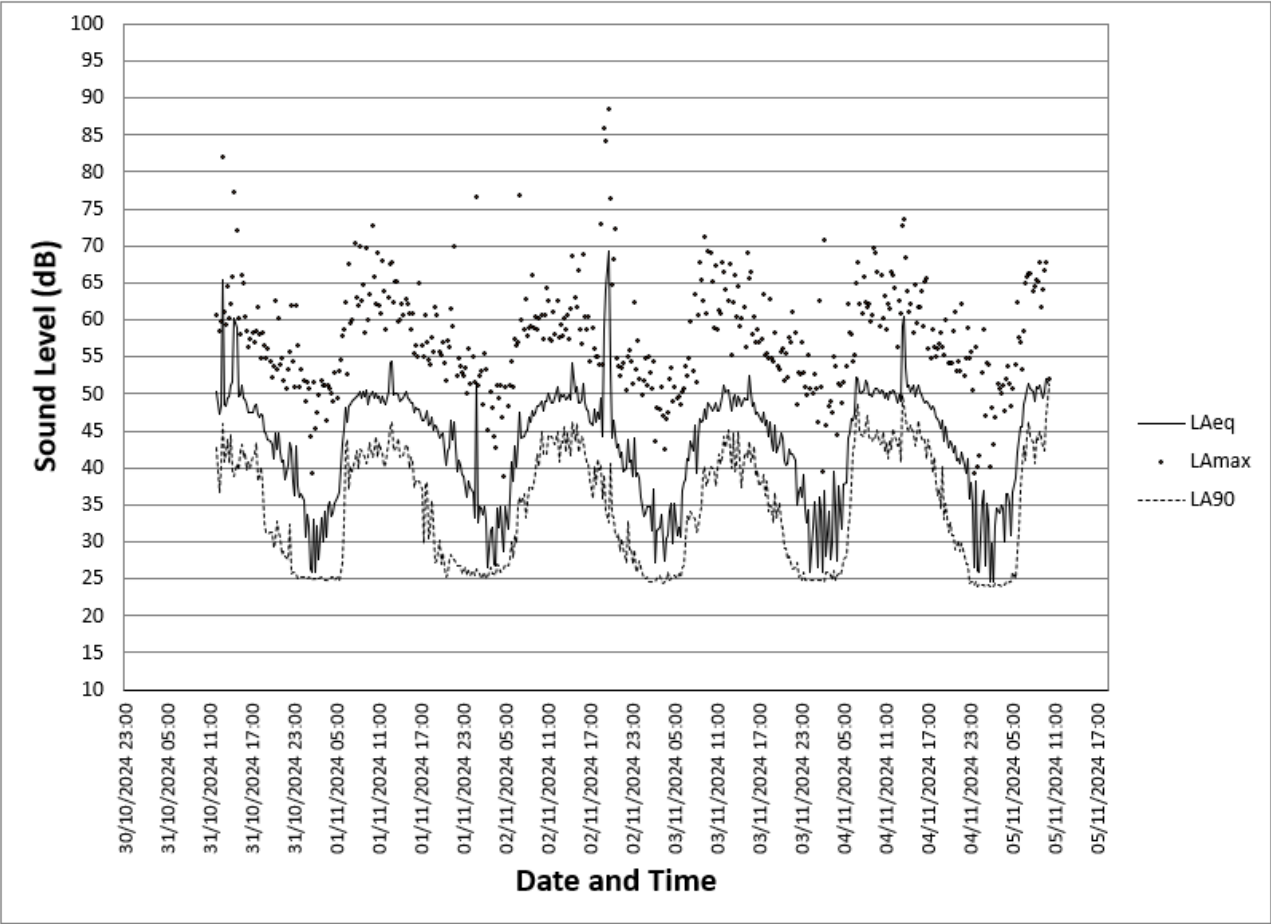


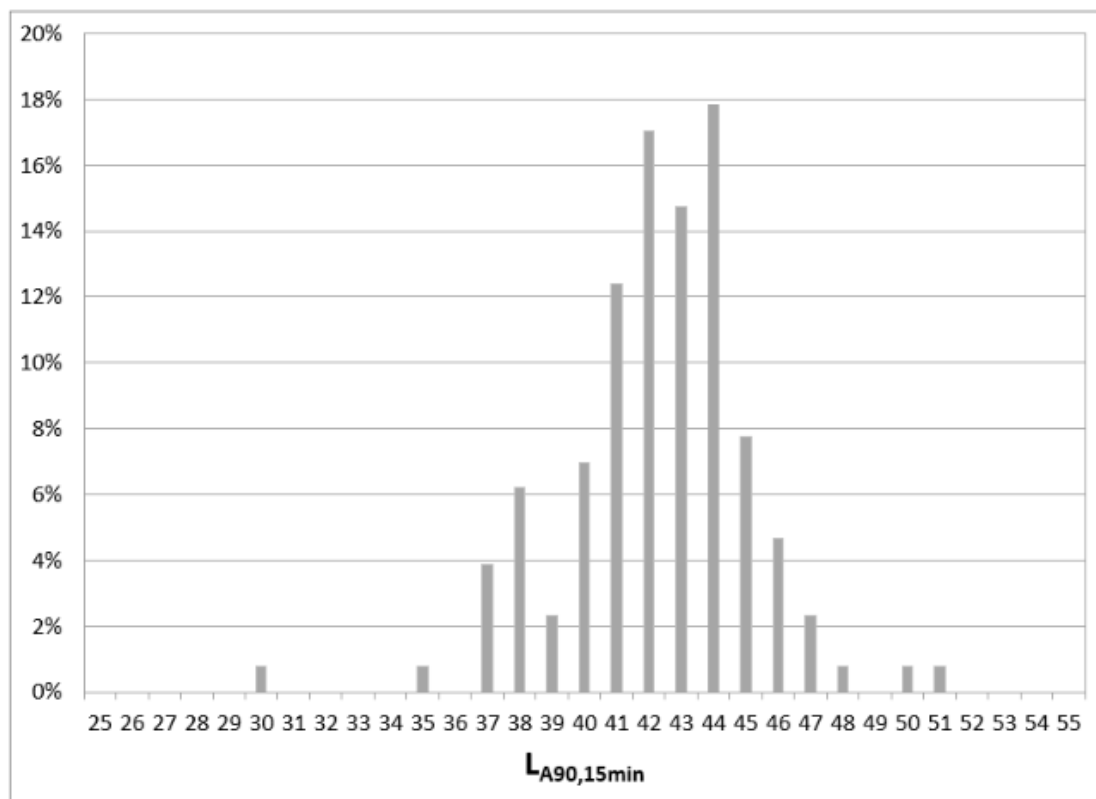
FIGURE 5

Statistical Analysis to Determine the Background Sound Level

Proposed Operating Hours

Monday to Friday 0800 – 1800

Saturday 0800 – 1200



APPENDIX A

Terminology and Definitions

Acoustic Environment

Sound from all sound sources as modified by the environment.

Sound Power Level, L_{WA}

The total amount of sound energy per unit of time generated by a particular sound source independent of the acoustic environment that it is in. It is a logarithmic measure of the sound power in comparison to a specified reference level.

Equivalent continuous A-weighted sound pressure level $L_{Aeq,T}$

Value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time interval T , has the same mean square sound pressure as a sound under consideration whose level varies with time.

A-weighting

The human ear is most sensitive to frequencies in the range 1 kHz to 5 kHz. On each side of this range the sensitivity falls off. A-weighting is used in sound level meters to replicate this sensitivity and respond in the same way as the human ear.

Ambient Sound Level $L_{Aeq,T}$

Totally encompassing sound in a given situation at a given time usually composed of sound from many sources near and far.

Specific Sound Level (also referred to as 'site noise') $L_{Aeq,Tr}$

Sound in the neighbourhood of a site that originates from the site i.e. the sound being assessed. The equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment position over a given reference time interval.

Rating Level $L_{Ar,Tr}$

The specific sound level plus any adjustment for the characteristic features of the sound.

Residual Sound Level $L_{Aeq,T}$

Ambient sound remaining at a given position in a given situation when the specific sound source is suppressed to a degree such that it does not contribute to the ambient sound.

Background Sound Level $L_{A90,T}$

The A-weighted sound pressure level of the residual sound at the assessment position that is exceeded for 90% of a given time interval, T , measured using time weighting F.

Reference Time Interval, T_r

The specified interval over which the specific sound level is determined.

NOTE This is 1hr during the day (07:00-23:00) and a shorter period of 15 min at night (23:00-07:00).

Free-field Level

The sound pressure level away from reflecting surfaces.

NOTE Measurements made 1.2 - 1.5 metres above the ground and at least 3.5 metres away from other reflecting surfaces are usually regarded as free-field.

APPENDIX B

Appeal Decision Conditions

Appeal Decision APP/A6835/A/10/2140062

Schedule

I allow the appeal, and grant planning permission for change of use from general industrial (processing of metal materials) to recycling/waste transfer station. B2 to sui generis at the Associated Wire Products Works, Hendre Mine, Rhydymwyn, Flintshire, CH7 5QD in accordance with the terms of the application, Ref 047031, dated 14 December 2009 and the plans submitted with it, subject to the following conditions:

- 1) The development hereby permitted shall begin not later than five years from the date of this decision.
- 2) No development shall take place until details of means of enclosure including site access gates has been submitted to and approved in writing by the local planning authority. Development shall be carried out in accordance with the approved details.
- 3) No development shall take place until details of surface water drainage including a maintenance plan for interceptors have been submitted to and approved in writing by the local planning authority. The approved system shall be in place prior to any waste materials being imported to the site and shall be maintained in accordance with the approved maintenance plan for as long as the development hereby permitted remains in existence.
- 4) No development shall take place until details of measures to collect, store and use rain water falling on the buildings within the site have been submitted to and approved in writing by the local planning authority. Development shall be carried out in accordance with the approved details.
- 5) No development shall take place until details of a scheme for the suppression of dust has been submitted to and approved in writing by the local planning authority. Dust suppression shall be carried out in accordance with the approved scheme for as long as the development hereby permitted remains in existence.
- 6) No development shall take place until details of the location, height, design and luminance of fixed lighting and positions for the location of mobile lighting units have been submitted to and approved in writing by the Local Planning Authority. Development shall be carried out in accordance with the approved details.
- 7) No development shall take place until details of the location and operation of wheel cleaning facilities have been submitted to and approved in writing by the local planning authority. The approved facilities shall be installed and operated in accordance with the approved details for as long as the development hereby permitted remains in existence.
- 8) No development shall take place until:
 - i) details of a scheme to assess the nature and extent of any contamination on the site has been submitted to and approved in writing by the local planning authority;
 - ii) the results of the survey carried out under condition 8 (i) above have been submitted in writing to the local planning authority
 - iii) a scheme to deal with any contamination identified by the survey has been submitted to and approved in writing by the local planning authorityDevelopment shall be carried out in accordance with the approved details.
- 9) Should contamination not previously identified be found through the course of development it must be reported immediately in writing to the local planning authority. An investigation shall be carried out to assess the nature and extent of any contamination and the contamination shall be dealt with in accordance with a scheme to be submitted to and approved in writing by the local planning authority before the development hereby permitted is brought into use.
- 10) The existing operation by Associated Wire Products Ltd at the site shall cease before the waste management operations hereby permitted commence.
- 11) Prior to the importation of waste, the site and access shall be hardsurfaced in accordance with details to be submitted to and approved in writing by the local planning authority.
- 12) The development hereby approved shall be used only for processing and recycling inert waste materials.
- 13) No machinery shall be operated, no process shall be carried out and no deliveries shall be taken at or despatched from the site outside the hours of 08.00 to 18.00 Monday to Friday, 08.00 to 12.00 on Saturdays and at no time on Sundays, Bank or Public Holidays.
- 14) There shall be no more than 20 Heavy Goods or Light Goods vehicles movements into the site per day Monday to Friday and no more than 10 Heavy Goods or Light Goods vehicles movements into the site on Saturdays.
- 15) No processing or storage of waste or recycled product shall take place to the east of the turning circle shown on Drawing number AWP/002/A.
- 16) No materials or skips shall be stockpiled or stored at a height greater than 3 metres measured from adjacent ground level.
- 17) The free field Equivalent Continuous Noise Level [LAeq, 1 hr] shall not exceed 50 dB LAeq 1hr free field at the boundary of the site at points to be agreed in writing with the local planning authority before the waste management operations hereby permitted commence.
- 18) There shall be no burning of waste on the site.