ACOUSTIC CONSULTANTS LTD

Noise Impact Assessment

Proposed Waste/Recycling Transfer Station
Wedal Road, Cardiff

Reference: 11329/LN

Client:


Document Control					
Version:	**Revision Description:**	**Date:**	**Author:**	**Reviewed by:**	**Approved by:**
1.0	First Issue	01/07/2025	Laurie Nickolls, MIOA	James Abbass, MIOA	James Abbass, MIOA

The report has been prepared in good faith, with all reasonable skill and care, based on information provided or available at the time of its preparation and within the scope of work agreement with the Client. We disclaim any responsibility to the Client and others in respect of any matters outside the scope of the above. The report is provided for the sole use of the named Client and is confidential to them and their professional advisors. No responsibility is accepted to other parties.

The report limits itself to addressing solely on the noise aspects as included in this report. We provide advice only in relation to noise and acoustics. It is recommended that appropriate expert advice is sought on all the ramifications (e.g. CDM, structural, condensation, fire, legal, etc.) associated with any proposals in this report or as advised and concerning the appointment. It should be noted that noise predictions are based on the current information as we understand it and on the performances noted in this report. Any modification to these parameters can alter the predicted level. All predictions are in any event subject to a degree of tolerance of normally plus or minus three decibels. If this tolerance is not acceptable, then it would be necessary to consider further measures.

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1. Introduction

The Urbanists appointed Acoustic Consultants Limited to carry out a noise impact assessment for the company's proposed site on Wedal Road, Cardiff.

The scope was to monitor existing background sound levels at the nearest sensitive receivers to the proposed site. The obtained data is to aid in providing a British Standard 4142:2014 noise impact assessment of noise from the proposed site and intended activities.

The noise impact assessment has been undertaken in accordance with the guidance in the British Standard 4142:2014 +A1:2019 (BS4142) and Planning Policy Wales (PPW).

The author of this report is a Member of the Institute of Acoustics (MIOA) with a recognised acoustic qualification and over four years' experience within the field of noise and acoustics, and as such, is suitably qualified and experienced to undertake a British Standard 4142:2014 assessment. The report, modelling, calculations and assessment have been checked by a Member of the Institute of Acoustics (MIOA) with a recognised acoustic qualification and seven years' experience within the field of noise and acoustics.

2. The Site & Proposals

2.1. Location & Sensitive Receivers

The proposed site is located on Wedal Road, Cardiff, set approximately 37 metres south of the A48, a main dual carriageway travelling through Cardiff. The immediate surrounding environment is mixed-use, with the nearest residential dwellings approximately 2 meters east of the nearest boundary edge, on Nant Y Wedal and there is a residential nursing home immediately to the west.

All the noted noise sensitive receivers (NSRs) are in urban areas. The site location and noted NSRs are provided on the following Google Earth image with the site boundary highlighted in yellow.

Figure 1: Site Location & NSRs

In addition to this, the previous use of the application site was for public civic amenity, with the use of household waste, recycling, and garden waste. The use of the site, therefore, is not to change.

2.2. Site Operations & Plan

The proposed development is to provide a waste transfer facility, and to retain a number of existing storage units, for use by Cardiff and Vale University Health Board. The re-use of the site requires no construction works to take place.

It is proposed to retain the 10x storage containers on site. These are standard shipping container units, which are located mostly in pairs on the site, and provide miscellaneous storage space.

The waste transfer element comprises the use of 3x Biffa Bulker storage/transportation units:

- Transfer container 1: 5.8 x 2.4 x 2.1 m, enclosed, to contain end-of-life plastics.
  To be collected & replaced once every three months.
- Transfer container 2: 5.8 x 2.4 x 2.1 m, enclosed, to contain recyclable waste streams, such as tins, cans and plastics.
  Expected to require collection & be replaced three times a week.
- Transfer container 3: 5.8 x 2.4 x 1.2 m, open, to hold wooden pallets.
  Expected to be collected & replaced monthly.

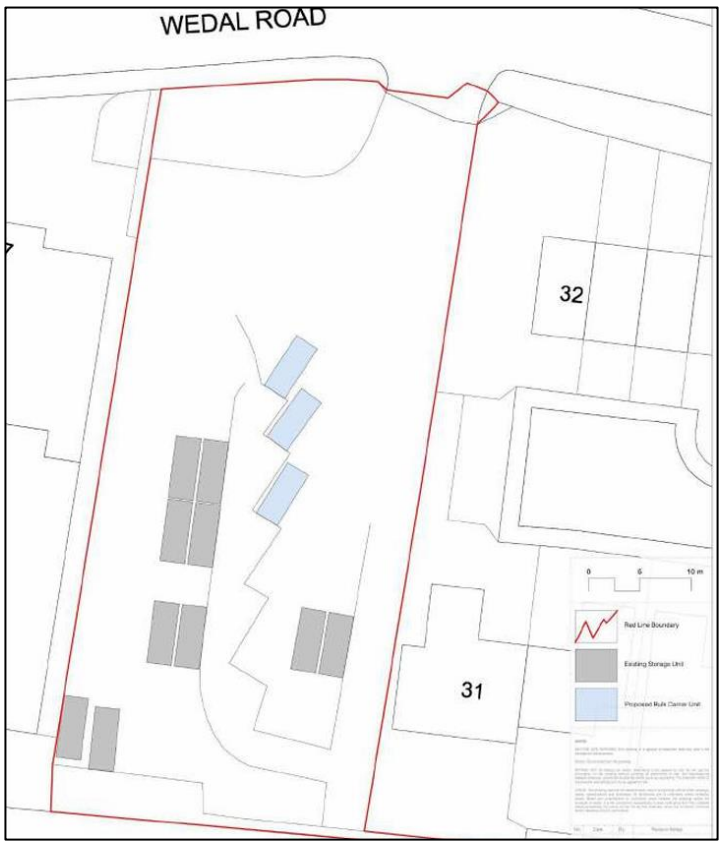
Waste/recyclable materials will be delivered to site a maximum of twice a day (during standard operating hours). Container removal/replacement will also be undertaken during weekdays with the respective frequencies above.

The drop-off of waste undertaken by the Health Board is understood to be carried out by standard vans, i.e., not an HGV for example.

Based on experience of similar use sites, collection of the waste is expected to last no longer than 1-hour. This is understood to be carried out during typical daytime working hours (09.00 to 17.00 hours) only.

Site management have provided us with the following proposed site plan. The grey blocks are the existing storage containers, with the blue blocks being the locations of the proposed storage containers.

Figure 2: Site Plan



Below is an example of the new containers that will be used.

3. Planning and Noise

3.1. Planning Policy Wales (PPW)

Planning Policy Wales (PPW) Edition 12 dated February 2024 sets out the land use planning policies of the Welsh Government. Section 1 states:

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 TANs1, MTANs2 and policy clarification letters comprise national planning policy.

The most relevant statements for noise affecting a residential use are provided in Section 6.7 and summarised below:

"6.7.1 Clean air and an appropriate soundscape, contribute to a positive experience of place as well as being necessary for public health, amenity and well-being. They are indicators of local environmental quality and integral qualities of place which should be protected through preventative or proactive action through the planning system. Conversely, air, noise and light pollution can have negative effects on people, biodiversity and the resilience of ecosystems and should be reduced as far as possible."

6.7.4 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.

6.7.5 In taking forward these broad objectives the key planning policy principle is to consider the effects which proposed developments may have on air or soundscape quality and the effects which existing air or soundscape quality may have on proposed developments. Air Quality and soundscape influence choice of location and distribution of development and it will be important to consider the relationship of proposed development to existing development and its surrounding area and its potential to exacerbate or create poor air quality or inappropriate soundscapes. The agent of change principle 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.

6.7.6 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.*

6.7.7 To assist decision making it will be important that the most appropriate level of information is provided and it may be necessary for a technical air quality and noise assessment to be undertaken by a suitably qualified and competent person on behalf of the developer."

6.7.8 Good design, for example setting back buildings from roads to avoid canyon effects and using best practice in terms of acoustic design to ensure the appropriate and intended acoustic environment of completed developments should be incorporated at an early consideration in the design and planning process. Other mitigation measures must be capable of being effectively implemented for their intended purpose, and could include those related to:

- *traffic management and road safety;*
- *ensuring progress towards a shift to low or zero emissions means of road transport, such as electrical charging points;*
- *supporting low or zero emissions public transport;*
- *providing active travel infrastructure; and*
- *incorporating green infrastructure, where it can improve air quality by removing air pollution and aiding its dispersal, reduce real or perceived noise levels by absorbing and scattering noise and introducing natural sounds to soften man-made noise, provide areas of relative tranquillity, and reduce exposure by putting a buffer between sources of pollution and receptors.*

6.7.14 Proposed development should be designed wherever possible to prevent adverse effects to amenity, health and the environment but as a minimum to limit or constrain any effects that do occur. In circumstances where impacts are unacceptable, for example where adequate mitigation is unlikely to be sufficient to safeguard local amenity in terms of air quality and the acoustic environment it will be appropriate to refuse permission.

6.7.19 The health imperative of good air quality and appropriate soundscapes in contributing to the overall character and quality of places and the health and well-being of people and wildlife should be fully recognised. It will not be appropriate to locate sensitive uses, such as hospitals, schools, care homes and housing adjacent to busy roads or other transport routes, where there are no connectivity benefits to be gained and where health and amenity impacts associated with increased exposure of people to pollution will be unacceptable. Whilst some uses may be appropriate with

the aid of good design air quality and soundscape considerations can be overriding factors, especially for sensitive uses, if they cannot be adequately mitigated and impacts minimised.

6.7.20 Where sensitive developments need to be located close to existing transportation infrastructure for sustainable movement and access they should be designed, as far as practicable, to limit harmful substances and noise levels within and around those developments both now and in the future. This may include employing the principles of good acoustic design and the inclusion of active travel or travel management measures as part of development proposals. Such development, however, should preferably be located away from existing sources of significant noise, which may include aircraft noise or roads, particularly new roads or those with programmed route improvements.

6.7.21 Regard should be paid to current air quality and noise levels and the quality of the existing soundscape and account taken of any relevant local air quality action plan, noise action plan and/ or local or regional air quality strategy as part of development strategies and proposals in development plans and before determining planning applications.

6.7.24 The potential impacts of noise pollution arising from existing development, be this commercial, industrial, transport related or cultural venues (such as music venues, theatres or arts centres), must be fully considered to ensure the effects on new development can be adequately controlled to safeguard amenity and 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.

PPW does not provide any quantifiable criteria and directs you to the Technical Advice Notes (TAN 11).

3.2. Technical Advice Note (Wales) - Noise

Planning Policy Wales (PPW) Edition 11 dated February 2021 sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes. The relevant planning criteria for proposed residential development is in Technical Advice Note (Wales) 11 entitled "Noise" which was published in October 1997. The introduction states:

"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.

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".

For noise from industrial and commercial developments, such as plant noise, TAN 11 states:

"B17. 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."

4. Assessment Criteria

For industrial and commercial noise, the most relevant guidance is provided within British Standard 4142:2014+A1:2019. The methods described in the British Standard use outdoor sound levels to assess the likely effects of sound upon people who might be inside or outside a dwelling or other premise used for residential purposes.

4.1. BS4142, Initial Assessment

The initial estimate principle is that of establishing the 'difference' between the 'rating level' and the 'background sound level'. The 'rating level' is the 'specific sound level' of the source over a period of one hour during the day (07:00 to 23:00 hours) and over a period of 15 minutes during the night (23:00 to 07:00 hours). Clause 9 entitled 'Rating Level' states:

"Certain acoustic features can increase the significance of impact over that expected from a basic comparison between the specific sound level and the background sound level. Where such features are present at the assessment location, add a character correction to the specific sound level to obtain the rating level."

An acoustic character correction should be added to the 'specific sound level' if it exhibits any tonality, impulsivity, other specific characteristics and/or intermittency at the assessment location. The value of the character correction varies, dependent on the prominence of the character of the sound source at the assessment location.

In Clause 11 of the Standard, entitled 'Assessment of the Impacts', it states:

"Obtain an initial estimate of the impact of the specific sound by subtracting the measured background sound level (see Clause 8) from the rating level (see Clause 9), and consider the following.

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

It should be noted that the numerical outcome only represents the initial estimate of impact, as stated in the first paragraph of Clause 11, and that contextual matters should be considered before determining what the potential impact is.

4.2. **BS4142, Context**

In all instances the context needs to be considered when determining the overall impact. In terms of context BS 4142:2014+A1:2019 states: *"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) *Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night. Where residual sound levels are very high, the residual sound might itself result in adverse impacts or significant adverse impacts, and the margin by which the rating level exceeds the background might simply be an indication of the extent to which the specific sound source is likely to make those impacts worse.*

2) *The character and level of the residual sound compared to the character and level of the specific sound. Consider whether it would be beneficial to compare the frequency spectrum and temporal variation of the specific sound with that of the ambient or residual sound, to assess the degree to which the specific sound source is likely to be distinguishable and will represent an incongruous sound by comparison to the acoustic environment that would occur in the absence of the specific sound. Any sound parameters, sampling periods and averaging time periods used to undertake character comparisons should reflect the way in which sound of an industrial and/or commercial nature is likely to be perceived and how people react to it.*

   NOTE 3 Consideration ought to be given to evidence on human response to sound and, in particular, industrial and/or commercial sound where it is available. A number of studies are listed in the "Effects on humans of industrial and commercial sound" portion of the "Further reading" list in the Bibliography.

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, such as:*
   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."

In terms of good internal acoustic conditions, the most relevant criteria and methodology is provided in BS8233:2014. This is in accordance with a March 2020 Technical published by the ANC Working Group, which provided comments and guidance to clear any ambiguity in BS4142:2014+A1:2019.

4.3. British Standard 8233:2014

British Standard 8233:2014 entitled 'Guidance on sound insulation and noise reduction for buildings' came into effect on 28th February 2014 and supersedes British Standard 8233:1999. In the section of the Foreword entitled 'Information about this document', it outlines the principal changes to the previous version. The changes relevant to new student development are as follows:

Publication in England of the National Planning Policy Framework in March 2012, with the concurrent withdrawal of numerous individual planning guidance and policy statement documents, including those specifically relating to noise.

Section 7.7.2 Table 4 of the British Standard provides internal ambient noise levels for dwellings from noise sources 'without a specific character' and these are based on existing guidelines issued by the World Health Organisation in 1999.

The British Standard guideline states that noise levels should not exceed those as noted in Table 4 of the British Standard, and this is summarised below:

Table 1: British Standard 8233:2014 Internal Noise Criteria

Activity	Location	Daytime (07:00 to 23:00)	Night-time (23:00 to 07:00)
Resting	Living Room	35 dB $L_{Aeq,16\ hour}$	-
Dining	Dining Room/area	40 dB $L_{Aeq,16\ hour}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16\ hour}$	30 dB $L_{Aeq,8\ hour}$

5. Noise Monitoring

A partially attended noise survey was conducted between the 12th of March and the 18th of March 2025. This was conducted to determine existing environmental background noise levels at the location in accordance with BS 4142 and BS 7445.

5.1. Monitoring Equipment

Sound Pressure Levels were measured using a Class 1 sound level meter with a half-inch condenser microphone, using the 'fast' setting. The equipment is checked regularly using a Quality System meeting the requirements of British Standard EN ISO/IEC 17025:2017 "General requirements for the competence of testing and calibration laboratories"; in accordance with British Standard EN 10012:2003 "Measurement management systems. Requirements for measurement processes and measuring equipment"; and traceable to the National Standards.

This equipment was checked and calibrated as noted below and the certificates are available for inspection.

Table 2: Equipment and Calibration Status

Equipment Description / Manufacturer / Type	Serial Number	Date of Calibration	Calibration Certification Number
SLM, Svantek, 977A	69510	15/03/2024	1508101-1
Pre-Amplifier, Svantek, SV12L	73650	15/03/2024	1508101-1
Microphone, ACO Pacific, 7052E	90933	15/03/2024	1508101-1
Calibrator, Larson Davis, CAL200	17892	08/04/2025	1511884-1

The measuring systems were checked for calibration before and after the tests.

5.2. Weather Conditions

During the measurement exercises weather conditions were acceptable in terms of BS4142 requirements. Noted conditions from both days are as follows:

Table 3: Weather Conditions during Surveys

Survey Date	Wind Speed Range (m/s)	Prevailing Wind Direction	Air Temperature Range (°C)	Precipitation (time/hrs)	Cloud Cover (%)
12/03/2025	2-4	N	2-8	0	0
13/03/2025	3-5	N	0-9	0	20
14/03/2025	3-4	NE	0-8	0	0
15/03/2025	3-5	E	2-9	0	20
16/03/2025	3-6	E	-1-9	0	65
17/03/2025	3-5	E	5-7	0	100
18/03/2025	3-4	E	3-12	0	10

The weather conditions above are not expected to have adversely affected the measured noise data.

5.3. Baseline Monitoring Procedure

The microphone was mounted on a tripod 1.5m above the ground in a free-field position. The sound level meter was set to obtain 15-minute repeat periods, with a 1-second trace.

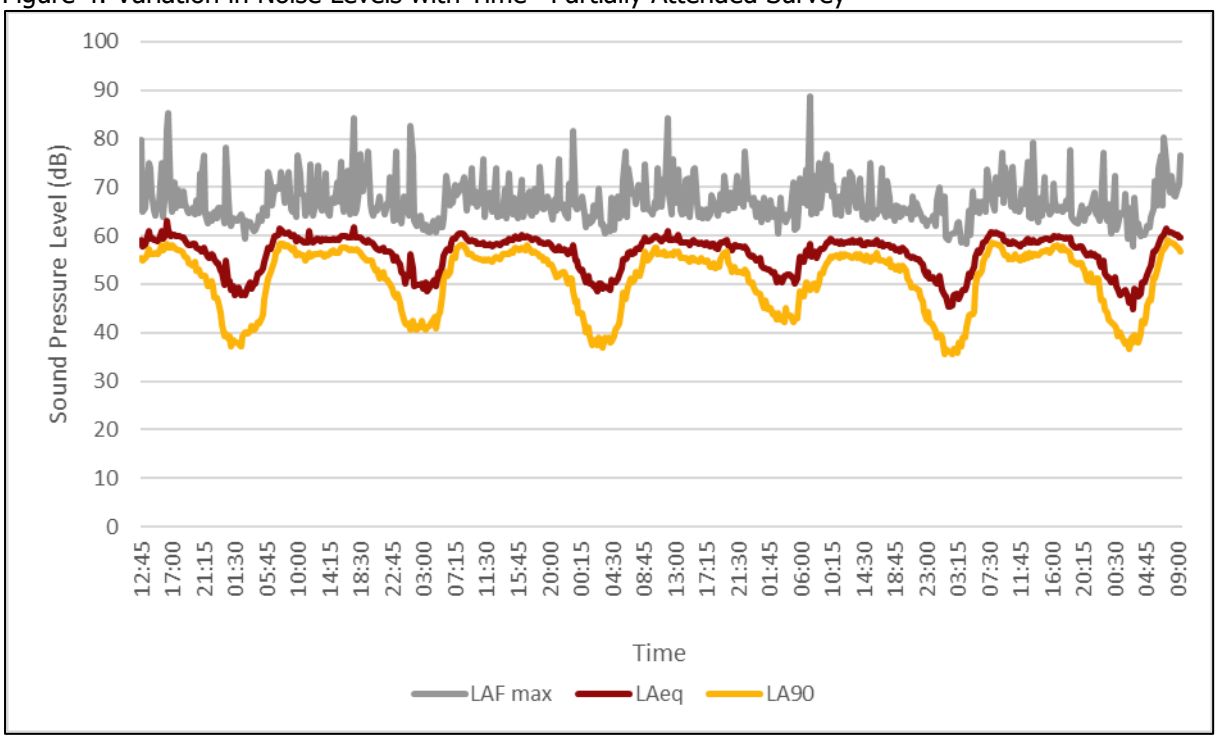
The monitoring position is shown in the figure below and is considered representative of the NSRs.

Figure 3: Monitoring Location

5.4. Measured Baseline Noise Data

We carried out a partially attended monitoring exercise between 12:15 on the 12th March and 11:45 on the 18th March 2025.

Figure 4: Variation in Noise Levels with Time– Partially Attended Survey



The data from the chart above is summarised in the table below for the proposed operational hours of the site.

Table 4: Summarised Noise Data- Partially Attended Survey

Time Period	$L_{A90(1hour)}$, dB		$L_{Aeq(1hour)}$, dB	
	Range	Mode	Range	Mode
Proposed Operational Hours (09:00 – 17:00)	53-59	55	58-63	59

5.5. Operational Noise Procedure & Measurements

To carry out the noise assessment of activity, in-house library data has been utilised.

The below measurements were taken from our library of other similar sites of which no-site measurements were conducted.

The microphone was at a height of 1.5 metres above the ground, and in a free-field position for all measurements. A laser measure was used to determine the distance between source and receiver accurately. The measured sources are detailed in the following table along with the distance they were measured at.

Table 5: Measured Site Operation Details

Operation	Measured Distance (m)	Measured Level dBA
Skip truck idling	4.5	65
8-Wheeler HGV Accessing Site (2 mins)	5	67
HGV unloading empty skip	4	77
Van Driving Forward, Accessing Site	15	51
Unloading Van (10 mins)	5	59

6. Noise Modelling

To determine noise levels across the site, noise modelling has been undertaken using computer modelling package Cadna:A by DataKustik and the measured data noted above. The software predicts industrial noise using the general method of calculation from ISO 9613-1.

The site operations are based on those noted above. The model considers that all waste related operations are undertaken inside the proposed building.

6.1. Modelling Parameters

The general parameters within the Cadna:A model are as follows and are considered reasonable assumptions:

- The existing building heights are based on site observations and Google Earth imagery and vary between 6 and 12 metres high.
- The 'max. Order of Reflection' is considered to be 3.
- The ground across the site and surrounding area is considered hard and reflective (G=0).
- Buildings are reflective (alfa within CadnaA assumed to be 0.21).
- The locations of the moving vehicles (line sources) entering and exiting the site are based on the access to the containers from the road access.
- The assessment considers that activities occur over a 15-minute period out of the hour. This is a worst-case scenario.
- Point sources have been input into the model for vehicles idling.
- The predicted noise map level is given at a height of 1.5 metres (worst case window) above the ground height for daytime operations.
- The generated noise map is given in a 2x2 metre calculation grid.

The operational parameters are considered as follows:

- One skip collection/delivery vehicle is expected on site at any one time. This is based on the size of the site and the collection frequencies provided to us.
- It is expected that only one container will be delivered/collected during a visit. This is based on the logistics of typical HGVs being able to carry one load at a time.
- One van transporting waste from the hospital is expected to be on site at any one time.
- We have considered that the skip collection vehicle may have an idling engine during the delivery and collection process.
- We have considered that the Health Board's van will have the engine turned off during the drop-off of waste to the site.
- As a worst-case scenario, we have considered that the skip vehicle and the Health Board's delivery vehicle could be on site during the same 1-hour assessment period.

- We have included the skip delivery and collection to take 15-minutes. This is included as a point source.
- We have accounted for the Health Board's delivery vehicle to drive across the site to different container types.
- All vehicle movements are included in the model as line sources.

6.2. Existing Site Barrier

There is a close boarded timber fence to the east of the site as shown in the figure below.

Site Photo 1: Existing Site Barrier

From our understanding of the area, and previous use of the site, this is expected to have been installed for noise and visual purposes.

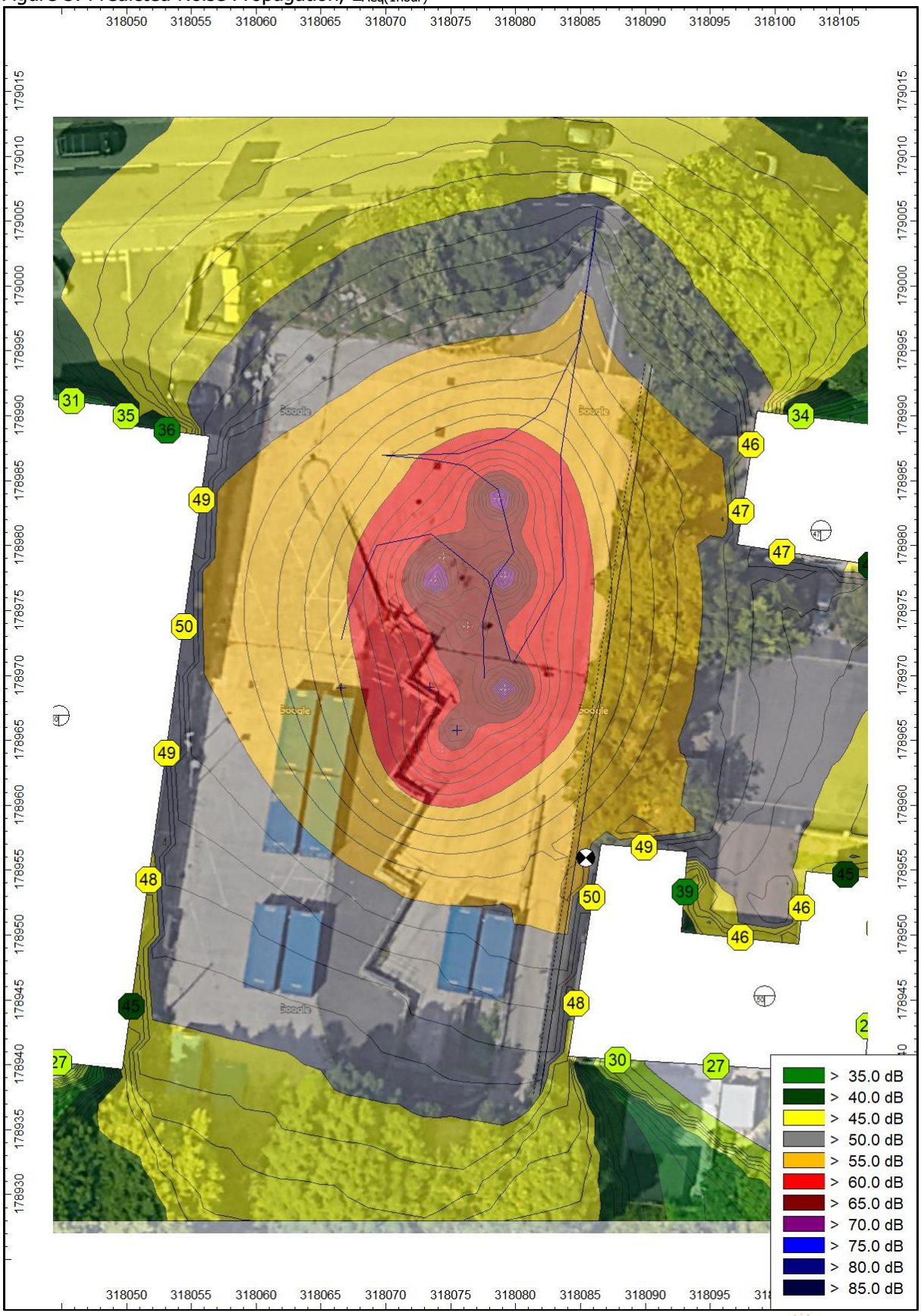
From visual inspection during our site visit, the barrier is in good condition with no holes or gaps in its finish or structure. This should be confirmed by the client to ensure that acoustic integrity of the barrier is correct.

Based on the above, we have included this barrier in our noise model. This is at a height of 3m with a 0.5m cantilever to the application site-side, as shown above.

6.3. Modelling Results

Noise levels have been predicted based on the parameters set out above. The following noise models provide the daytime predicted noise levels.

Figure 5: Predicted Noise Propagation, $L_{Aeq(1hour)}$



7. Noise Assessment

Noise from industrial activity is assessed in accordance with BS4142:2014 for the hours of use between 09:00 hours and 17:00 hours.

7.1. Initial Estimate

7.1.1. Background Sound Level

From the measured data obtained at the monitoring location, we have determined modal design background sound level to be 55 dB $L_{A90\ (1\ hour)}$ over this period.

7.1.2. Specific Sound Level

The specific sound level at the worst-case receiver is 50 dB $L_{Aeq(1hour)}$. This is based on the site operational use as noted above.

This is the level determined at the noise sensitive receivers without any character corrections applied.

7.1.3. Character Corrections

Character corrections should be added to the "specific sound level" if the "specific sound level" exhibits any *tonality, impulsivity, other specific characteristics and/or intermittency* at the assessment location. Based on our site visit the character corrections to be applied are as follows:

- ***Tonality*** – Our site measurements of vehicle movement and container unloading do not indicate any tonal noise characteristic. No correction applied.
- ***Impulsivity*** – Skip delivery and collection is expected to be impulsive. A +6dB correction is applied for clear perceptibility.
- ***Intermittency*** – Operations are intermittent. However, they are infrequent across the week to a degree that does not mean there are regular on/off periods that are close together. No correction applied.
- ***Other Sound Characteristics*** – A correction for impulsivity has been applied. No further correction is required.

7.1.4. Estimate of Impact

Therefore, the British Standard 4142:2014 initial estimate of the noise impact at the most sensitive locations is as follows:

Table 6: British Standard 4142:2014 Initial Estimate

Parameter	East NSR	West NSRs
Background Level, $L_{A90\ (T)}$	55 dB	55 dB
Specific Sound Level, $L_{Aeq\ (T)}$	50 dB	50 dB
Acoustic Character Correction	+6 dB	+6 dB
Rating Level	56 dB	56 dB
Excess rating over background level	+1 dB	+1 dB

This means that the rating noise level will result in a British Standard 4142:2014 initial estimate of having a low impact at all NSRs.

Context should also be considered.

7.2. Context

The context of the application site is for a waste transfer station of hospital waste. The waste to be stored at the site is of end-of-life plastics, general recycling, and wooden pallets.

Previous use of the land was as a well-established, large-scale, local recycling facility which was accessed by significant numbers of residents. The proposals are significantly less daily use than previous use of the land.

The highest frequency of site use will be delivery of the hospital waste, which is expected to occur a maximum of twice per day, between standard operating hours.

The highest frequency of container collection and delivery is three times per week, and this is of general recycling waste only. All other noted waste types will be collected once every three months (end-of-life plastics), and once per month (wooden pallets). The twice daily deliveries of waste from the hospital are expected to last no more than 30-minutes. Use of the site is therefore infrequent, and the predicted levels of expected worst-case possible site use is predicted to exceed the background sound levels marginally by 1 decibel.

In addition to this, our baseline noise data and site visit indicate that Wedal Road, along with the main dual carriageway, A48, are clearly dominant in the existing ambient noise climate. These roads are frequently accessed by HGVs, many of which are either articulated vehicles and/or skip carrying vehicles. Therefore, the noise of similar vehicles accessing the site is not incongruous with the existing noise climate from nearby main road sources.

Therefore, the above context reduces the initial estimate of impact.

7.3. Summary of British Standard 4142:2014

The noise modelling indicates that the predicted rating sound level of operations could marginally exceed the existing background sound level by 1dB.

However, with context of the proposed frequency of site access considered, the initial estimate of impact is considerably reduced.

The noise modelling and assessment considers that the impact in terms of noise at the NSRs will be low based on all above points.

8. Summary & Conclusions

The Urbanists appointed Acoustic Consultants Limited to carry out a noise impact assessment for the company's proposed site on Wedal Road, Cardiff.

The proposed site is for a waste transfer station of general recycling waste, end-of-life-plastics, and wooden pallets.

A noise impact assessment has been undertaken in accordance with the guidance in the British Standard 4142:2014 (BS4142) and PPW.

With the noise model considered, the predicted operational noise marginally exceeds the existing background sound level at the NSRs by just 1 decibel. This still equates to a low level of impact.

Once context of the site is also considered, the noise impact of the proposed site operation is compared to the existing noise climate, the initial estimate of impact is reduced, and is considered to be lower than the initial estimate suggests.

We would therefore consider the proposed site activities to be of a low impact at all noise-sensitive receivers and to fall within the low impact threshold, achieving the aims of PPW.

9. Appendix 1 – Glossary of Acoustic Terminology

A-weighted sound pressure pA – 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.

A-weighted sound pressure level, L_{pA} - quantity of A-weighted sound pressure given by the following formula in decibels (dBA)

$L_{pA} = 10 \log_{10} (p_A/p_0)^2$

where:

p_A is the A-weighted sound pressure in pascals (Pa);
p_0 is the reference sound pressure (20 µPa)

Background sound level, $L_{A90,T}$– A-weighted sound pressure level that is exceeded by the residual sound assessment location for 90% of a given time interval, T, measured using weighting F and quoted to the nearest whole number of decibels

Break-in - noise transmission into a structure from outside.

Decibel (dB) – The decibel is the unit used to quantify sound pressure levels. The human ear has an approximately logarithmic response to acoustic pressure over a very large dynamic range (typically 20 micro-Pascals to 100 Pascals). Therefore, a logarithmic scale is used to describe sound pressure levels and also sound intensity and power levels. The logarithms are taken to base 10. Hence an increase of 10 dB in sound pressure level is equivalent to an increase by a factor of 10 in the sound pressure level (measured in Pascals). Subjectively, this increase would correspond to a doubling of the perceived loudness of sound.

Equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$ – value of the A-weighted sound pressure level in decibels of continuous steady sound that, within a specified time interval, T = t2 – t1, has the same mean-squared sound pressure as a sound that varies with time, and is given by the following equation:

$$L_{AeqT} = 10\lg_{10}\left\{(1/T)\int_{t_1}^{t_2}[p_A(t)^2/p_0^2]dt\right\} \quad (1)$$

where:

p_0 is the reference sound pressure (20 µPa); and
$p_A(t)$ is the instantaneous A-weighted sound pressure (Pa) at time t

NOTE The equivalent continuous A-weighted sound pressure level is quoted to the nearest whole number of decibels.

Facade level – sound pressure level 1 m in front of the façade. Facade level measurements of L_{pA} are typically 1 dB to 3 dB higher than corresponding free-field measurements because of the reflection from the facade.

Free-field level – sound pressure level away from reflecting surfaces. 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).

Octave and Third Octave Bands – The human ear is sensitive to sound over a range of frequencies between approximately 20 Hz to 20 kHz and is generally more sensitive to medium and high frequencies than to low frequencies within the range. There are many methods of describing the frequency content of a noise. The most common methods split the frequency range into defined bands, in which the mid-frequency is used as the band descriptor and in the case of octave bands is double that of the band lower. For example, two adjacent octave bands are 250 Hz and 500 Hz. Third octave bands provide a fine resolution by dividing each octave band into three bands. For example, third octave bands would be 160 Hz, 250 Hz, 315 Hz for the same 250 Hz octave band.

Sound pressure level – Sound pressure level is stated on many of the charts. It is the amplitude of the acoustic pressure fluctuations in a sound wave, fundamentally measured in Pascals (Pa), typically from 20 micro-Pascals to 100 Pascals, but commonly simplified onto the decibel scale.

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, $L_s = L_{Aeq,Tr}$ – 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.

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.

Rating level, $L_{Ar,Tr}$ – Specific sound level plus any adjustment for the characteristic features of the sound.

Reverberation Time, T – The reverberation time is defined as the time taken for a noise level in an enclosed space to decay by 60 dB from a steady level once the noise source has stopped. It is measured in seconds. Often a 60 dB decay cannot be measured so the reverberation time is measured over a lesser range and corrected back to the time for a 60 dB drop assuming a constant decay rate. Common parameters are T20 (time taken for a 20 dB decay multiplied by three) and T30 (time taken for a 30 dB decay multiplied by two).

Vibration Dose Value, VDV – measure of the total vibration experienced over a specified period of time.

Estimated Vibration Dose Value, eVDV – estimation of the total vibration experienced over a specified period of time. This is usually based on the number of events and shortened measurement data.

Weighted sound reduction index, R_w – Single-number quantity which characterizes the airborne sound insulating properties of a material or building element over a range of frequencies. The weighted sound reduction index is used to characterize the insulation of a material or product that has been measured in a laboratory (see BS EN ISO 717-1).

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