Noise Assessment

Proposed Waste Transfer Station, Land at end of Falconer Road, Haverhill, Suffolk

WIDDINGTON RECYCLING LTD

R23.12063/1/AP
Date of Report: 07 December 2023

REPORT DETAILS

Client	Widdington Recycling Ltd
Report Title	Noise Assessment – Proposed Waste Transfer Station
Site Address	Land at end of Falconer Road, Haverhill, Suffolk, CB9 7UU
Report Ref.	R23.12063/1/AP
Vibrock Contact	[redacted]

QUALITY ASSURANCE

Issue No.	Issue Date	Author	Technical Review
1	07/12/23	[redacted]	
		A Pickford BSc MSc PGDip MIOA Director	R Kennedy BEng PGDip MIOA Director

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Vibrock Limited
Shanakiel
Ilkeston Road, Heanor
Derbyshire, DE75 7DR
Tel: +44 (0) 1773 711211
Fax: +44 (0) 1773 711311
Email: vibrock@vibrock.com
Web: www.vibrock.com

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1.0 INTRODUCTION

1.1 Overview

1.1.1 Vibrock Limited is commissioned to undertake a noise impact assessment for the proposed operation of a waste transfer station on land at end of Falconer Road in Haverhill.

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 guidance presented within BS 4142 '*Methods for rating and assessing industrial and* commercial *sound*'.

1.1.3 Further explanation of the acoustic terminology used within this report is provided in Appendix A.

1.2 The Proposed Development

1.2.1 The site comprises a 3 acre plot of brownfield land with a relatively old planning permission for crushing and screening of C&D waste and shredding wood. Widdington Recycling has purchased the site at which they are seeking planning permission to operate a Waste Transfer Station.

1.2.2 Plans showing the proposed development are presented in Figures 1 and 2.

1.2.3 The proposed operating hours of the waste transfer station are:

06:00 – 18:00 hours Monday to Fridays
06:00 – 14:00 hours Saturdays

No operations outside of the above times
or on Sundays or Public Holidays.

1.2.4 Vehicle movements to and from the site are anticipated to be in the region of 70 per day based on the maximum permitted throughput of 75,000 tonnes per annum.

2.0 NOISE POLICY AND GUIDANCE

2.1 National Planning Policy and Guidance

Noise Policy Statement for England (NPSE)

2.1.1 The NPSE sets out the Government's policy on noise and includes the long term vision of promoting good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.

2.1.2 This long term vision is supported by the following aims:

Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- avoid significant adverse impacts on health and quality of life;
- mitigate and minimise adverse impacts on health and quality of life; and
- where possible, contribute to the improvement of health and quality of life.

2.1.3 There are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are:

- NOEL (No Observed Effect Level) – this is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise;
- LOAEL (Lowest Observed Adverse Effect Level) – this is the level above which adverse effects on health and quality of life can be detected.

2.1.4 Extending these concepts further, NPSE leads to the concept of a significant observed adverse effect level:

- SOAEL (Significant Observed Adverse Effect Level) – this is the level above which significant adverse effects on health and quality of life occur.

2.1.5 NPSE acknowledges that it is not possible to have a single objective noise-based measure that defines NOEL, LOAEL and SOAEL that is applicable to all sources of noise in all situations. It is therefore suggested that more specific advice from other applicable noise standards and guidance could be employed to determine suitable noise level criteria within the overall principles of the NPSE.

National Planning Policy Framework (NPPF)

2.1.6 The NPPF was first published on 27 March 2012 and updated on 24 July 2018, 19 February 2019 and 20 July 2021. This sets out the government's planning policies for England and how these are expected to be applied.

2.1.7 Where issues of noise impact are concerned the NPPF provides brief guidance in Chapter 15 'Conserving and enhancing the natural environment' as follows:

Paragraph 174:

Planning policies and decisions should contribute to and enhance the natural and local environment by preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability.

Paragraph 185:

Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) mitigate and reduce to a minimum 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;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and

c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.

Paragraph 187:

Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.

Planning Practice Guidance (PPG)

2.1.8 PPG is written in support of the NPPF and provides an increased level of specific planning guidance.

2.1.9 PPG-Noise states that noise needs to be considered when new development may create additional noise or would be sensitive to the prevailing acoustic environment (including any anticipated changes to that environment from activities that are permitted but not yet commenced). Where justified, noise can override other planning concerns, although it is important to look at noise in the context of the wider characteristics of a development proposal, its likely users and its surroundings, as these can have an important effect on whether noise is likely to pose a concern.

2.1.10 Plan-making and decision taking need to take account of the acoustic environment and in doing so consider:

- whether or not a significant adverse effect is occurring or likely to occur;
- whether or not an adverse effect is occurring or likely to occur;

  and

- whether or not a good standard of amenity can be achieved.

2.1.11 In line with the Explanatory note of the NPSE this would include identifying whether the overall effect of the noise exposure would be above or below the significant observed adverse effect level (SOAEL) and the lowest observed adverse effect level (LOAEL) for the given situation.

2.1.12 When noise is not perceived to be present, there is by definition no effect. As the noise exposure increases, it will cross the 'No Observed Effect Level'. However, the noise has no adverse effect so long as the exposure does not cause any change in behaviour, attitude or other physiological responses of those affected by it.

2.1.13 As the exposure increases further, it crosses the LOAEL boundary above which the noise starts to cause small changes in behaviour and attitude and consideration needs to be given to mitigating and minimising those effects (taking account of the economic and social benefits being derived from the activity causing the noise).

2.1.14 Increasing noise exposure will at some point cause the SOAEL boundary to be crossed. Above this level the noise causes a material change in behaviour. If the exposure is predicted to be above this level the planning process should be used to avoid, but not necessarily prevent, this effect occurring, for example through use of appropriate mitigation such as by altering the design and layout.

2.1.15 The table below summarises the noise exposure hierarchy from PPG-Noise.

Table 1: Noise Exposure Hierarchy

Response	Examples of outcomes	Increasing effect level	Action
No Observed Effect Level			
Not present	No Effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

2.2 Local Planning Policy

St Edmundsbury Core Strategy (December 2010)

Policy CS2 Sustainable Development

A high quality, sustainable environment will be achieved by designing and incorporating measures appropriate to the nature and scale of development, including incorporating the principles of sustainable design and construction in accordance with recognised appropriate national standards and codes of practice to cover a range of themes including:-

- *Materials - minimising the use of resources and making use of local materials;*
- *Waste – adhering to the waste hierarchy during construction and following development to prevent waste generation and ensure reuse, recovery and recycling;*
- *Pollution – remedying existing pollution or contamination and preventing further pollution arising from development proposals;*

Forest Heath and St Edmundsbury Local Plan - Joint Development Management Policies Document (February 2015)

Policy DM2: Creating Places

Development Principles and Local Distinctiveness Proposals for all development (including changes of use, shopfronts, and the display of advertisements) should, as appropriate, take mitigation measures into account and not affect adversely the amenities of adjacent areas by reason of noise, smell, vibration, overlooking, overshadowing, loss of light, other pollution (including light pollution), or volume or type of vehicular activity generated; and/or residential amenity;

Policy DM14: Protecting and Enhancing Natural Resources, Minimising Pollution and Safeguarding from Hazards

Proposals for all new developments should minimise all emissions and other forms of pollution (including light and noise pollution) and ensure no deterioration to either air or water quality.

All applications for development where the existence of, or potential for creation of, pollution is suspected must contain sufficient information to enable the Planning Authority to make a full assessment of potential hazards.

Development will not be permitted where, individually or cumulatively, there are likely to be unacceptable impacts arising from the development on:

- *the natural environment, general amenity and the tranquillity of the wider rural area;*

- *health and safety of the public;*
- *air quality;*
- *surface and groundwater quality;*
- *land quality and condition; or*
- *compliance with statutory environmental quality standards.*

Suffolk Minerals & Waste Local Plan (SMWLP) - Adopted July 2020

Policy GP4: General environmental criteria

Minerals and waste development will be acceptable so long as the proposals, adequately assess (and address where applicable any potentially significant adverse impacts including cumulative impacts) on the following:

a) pluvial, fluvial, tidal and groundwater flood risk;
b) vehicle movements, access and the wider highways network;
c) landscape character, visual impact, setting, and designated landscapes including Areas of Outstanding Natural Beauty and the Broads;
d) biodiversity including Natura 2000 sites, ancient woodlands and trees;
e) geodiversity;
f) historic environment, archaeology, heritage assets and their setting;
g) public rights of way;
h) neighbouring land-use;
i) soil resources including the best and most versatile agricultural land;
j) noise and vibration;
k) air quality including dust and odour;
l) light pollution;
m) the local water environment;
n) land instability;
o) airfield safeguarding;
p) the differential settlement of quarry backfilling;
q) mud and aggregates on the road;
r) litter, vermin and birds;
s) The use of alternative forms of transport including the use of rail freight shipping should be considered; or
t) military and civil aviation.

Proposals should meet or exceed the appropriate national or local legislation, planning policy or guidance for each criterion, including reference to any hierarchy of importance. Proposals should aim to achieve a biodiversity net gain. Proposals should demonstrate that when considering the potential for significant adverse impacts upon features of acknowledged environmental importance, that the hierarchy of firstly avoidance, then mitigation and finally compensation has been followed.

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:

- The determination of noise amounting to a nuisance;
- The assessment of indoor sound levels;
- The assessment of low-frequency noise;
- The assessment of sound from the passage of vehicles on public roads and railway systems;
- The assessment of sound from recreational activities, including all forms of motorsport;
- music and other entertainment;

- shooting grounds;
- construction and demolition;
- domestic animals;
- people;
- public address systems for speech;
- 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 2.

Table 2: 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 3 below.

Table 3: 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 4 below.

Table 4: 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

3.0 BACKGROUND NOISE MONITORING

3.1 Survey Methodology

3.1.1 Sound levels were measured over a 7 day period from 11 – 18 September 2023 at a location selected to represent the closest noise-sensitive premises to the application site. The closest noise-sensitive premises comprise residential dwellings which are located on Ashlea Road to the west of the application site. These dwellings are afforded a good level of screening from the site by the intervening topography. A location plan is provided in Figure 3.

3.1.2 Monitoring was conducted by Healthy Abode Ltd trading as HA Acoustics (Registered in England and Wales: Company Number 07429355). Measurements were undertaken with reference to the guidance presented within BS 7445 and BS 4142.

3.2 Instrumentation

3.2.1 Monitoring was undertaken using a Svantek 977 Class 1 automated logging sound level meter with Class 1 ½“ microphone and a Larson Davis CAL200 calibrator.

3.2.2 The sound level meter was located in a free-field position away from reflective surfaces and mounted onto a tripod set approximately 1.5 metres above ground level.

3.2.3 Ambient, background and maximum noise levels were measured throughout the noise survey in consecutive 15-minute periods.

3.2.4 Field calibration checks were performed on site immediately before and after the survey period using a sound calibrator. No significant drift in the calibration value 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 road traffic using the A143, the A1017 and the B1057 along with a range of industrial and commercial sound sources across the Falconer Road Industrial Estate. Occasional aircraft and birdsong also contributed to the noise climate at the monitoring location. At the time of the survey a range of construction works were taking place at the site between the hours of 0700 - 1700.

3.3.2 Weather conditions during the monitoring period were predominantly dry and settled with light winds (<5 ms^{-1}). Cloud cover varied between 2 and 7 oktas and temperatures ranged from 12 – 24°C.

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: Summary of Measured Sound Levels (During Proposed WTS Operating Hours)

Time Period (*T*)	**Ambient Sound Level Average $L_{Aeq,T}$ dB**	**Background Sound Level Average $L_{A90,T}$ dB**
Night-time 0600 – 0700	56.5	40.3
Daytime 0700 – 1700	*Data excluded due to influence of nearby construction activity (7am-5pm)*	
Daytime 1700 – 1800	58.1	41.4

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 waste transfer station 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. Noise model configuration details are outlined in Table 6. The most important elements of this standard used in the estimation of noise levels from the proposed installation are geometrical divergence, atmospheric absorption, screening by obstacles, reflections and ground effects.

Table 6: Noise Model Configuration Details

Parameter	Input
Software	DataKustik GmbH CadnaA v.2023 MR2 (build: 201.5366)
Calculation Standards/Guidelines	ISO 9613
Model of Terrain	Triangulation
Max. Order of Reflection	2
Ground Attenuation	Spectral
Frequency Band Calculation	Octave Bands (63Hz – 8kHz)
Temperature and Rel. Humidity	10°C and 70%
Barriers	2m high concrete wall at site boundary, 4m high concrete wall at south-west facing boundary

Parameter	Input
Topographic data	3D contour data – 1.0m DTM EA LiDAR
Ground Absorption	0.9 (Resolution 1.0m), 0.25 for hardstanding
Receiver Heights	1.5m above ground level (day) and 4 and 6m a.g.l (night)

4.2.2 Within the model, HGV/Skip Wagon movements have been modelled as line sources. Point sources have been used to represent stationary or quasi-stationary activities such as unloading/loading of materials and the static processing plant.

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 $\pm 45^0$ 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 A list of noise generating plant and activities, from which the noise predictions have been made, is presented in Table 7. The sound levels used within this assessment are based on recent sound pressure level measurements made by Vibrock Limited at similar sites across the UK.

4.3.2 The applicant is proposing not to undertake noisy operations during the early morning period from 6 – 7am (considered to be night-time hours). This scenario has been assessed by excluding the crusher, excavator and material handler from the calculations.

Table 7: Noise Source Details

Plant	Octave Band Centre Frequency (Hz)								Sound Power Level dB(A)
	63	125	250	500	1k	2k	4k	8k	
HGV movements	108.5	97.8	95.3	93.5	93.5	92.4	89.8	84.6	99
Weighbridge Activity	97.3	92.9	85.1	87.0	87.5	86.7	80.0	70.4	92
Tipping Materials / Skip Loading and Offloading	104.8	98.4	97.1	94.7	96.6	94.2	90.7	83.2	101
Waste Handler	98.4	101.0	104.3	99.6	95.9	92.8	89.3	80.8	102
Shovel Managing Material in WTS	117.3	104.9	103.6	93.7	93.2	91.1	87.1	81.7	100
Shovel Handling Processing Material and Stockpiling	114.3	107.6	103.1	98.7	97.0	95.3	92.0	91.0	103
Shovel Loading HGV/Skip	97.1	98.6	96.3	94.2	96.8	97.5	92.2	85.9	102
Excavator Loading Crushing/ Screening Plant	111.2	105.9	100.1	97.0	95.7	96.8	100.9	96.5	105

4.4 Calculation Results

4.4.1 Table 8 summarises the results of the noise level predictions at the identified assessment locations.

Table 8: Calculation Results

Assessment Location	Calculated Specific Sound Level $L_{Aeq,Tr}$ (free-field) dB			
	Daytime (0700 – 1800)	Night-time (0600 – 0700)		
		Ground Floor	First Floor	Second Floor
28 Ashlea Road	34.2	n/a	33.6	n/a
Cambridge House	32.5	29.2	32.3	36.5

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 that would be readily distinguishable, however, it is considered that the sound could on occasions contain impulsive features associated with the unloading/loading and handling of materials.

5.1.7 In accordance with BS 4142 it is 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 just perceptible at the nearest noise-sensitive receptors.

Initial Estimate of Impact

5.1.8 Table 9 presents an 'initial estimate' of the potential impact of the proposals in accordance with BS 4142.

Table 9: Initial Estimate of Impact (BS 4142)

Assessment Location	Period	Background Sound Level L_{A90} dB	Specific Sound Level $L_{Aeq,Tr}$ dB	Acoustic Feature Correction (dB)	Rating Level $L_{Ar,Tr}$ dB	Initial Estimate Excess of rating over background sound level (dB)
28 Ashlea Road	Daytime	41	34	+3	37	**-4**
	Night-time/ Early am	40	34	+3	37	**-3**
Cambridge House	Daytime	41	33	+3	36	**-5**
	Night-time/ Early am (Ground Floor Flat)	40	29	+3	32	**-8**
	Night-time/ Early am (1st Floor Flat)	40	32	+3	35	**-5**
	Night-time/ Early am (2nd Floor Flat)	40	37	+3	40	**0**

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 initial estimate 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 initial 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 predominantly operate during the daytime period when there is lower likelihood of adverse impact when compared to operations during more sensitive periods such as the evening and early night-time when the majority residents are going to sleep. There will be no operations on Saturday afternoon, Sunday and Public Holidays. During the early morning period from 6 – 7am it is proposed that the excavator, crushing equipment and material handler will not be operated.

- *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 source. Overall, the character of the sound from the proposed waste transfer station is not considered incongruous with the residual acoustic environment.

- *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, this is especially true at night. With reference to the guide values recommended by BS 8233 and WHO, worst-case external noise levels from the site are expected to be in the region of 40 dB and noise emissions from the site are therefore considered likely to have a low impact on residents using private external amenity areas during the daytime. During the early morning, these external levels equate to internal sound levels of 30 dB or less with windows open which suggests that there are also unlikely to be any significant adverse effects on residents using bedrooms.

- *Comparison to the Residual Sound* – Noise emissions from the proposed development are below the residual sound levels which are around 57 dB during the proposed operating hours.

- *Receptors* – The nearest residential dwellings in the vicinity of the site benefit from the screening effects provided by a high topographical feature which lies in the intervening area between Ashlea Road and the site. The proposals also include a good level of boundary screening in the form of 2 and 4m high concrete walls along with dedicated screened bays for the operation of material processing plant.

Uncertainty

5.1.13 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 in close proximity to the assessment locations and 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;
- Monitoring carried out by suitably experience and qualified acousticians who are full Corporate Members of the Institute of Acoustics (MIOA);
- 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;
- 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.

BS 4142 Assessment Outcome

5.1.15 Following an initial estimate of noise impact, along with consideration of the context and any potential effects of uncertainty, the development is considered likely to have a low impact in accordance with BS 4142.

5.2 Noise Policy and Guidance

5.2.1 Based on the above assessment and with reference to the noise exposure hierarchy outlined in PPG-Noise which supports the NPPF and NPSE, it is suggested that potential noise at the nearest residential premises is likely to be present but not intrusive and therefore considered to be below the 'Lowest Observed Adverse Effect Level (LOAEL). At this level noise will have little adverse effect as the exposure is unlikely to cause any change in behaviour, attitude or other physiological responses of those affected by it.

6.0 SUMMARY

6.1 An assessment of potential noise impact associated with the proposed development has been made following the guidance presented within BS 4142. Following an initial estimate of noise impact, along with consideration of the context and any potential effects of uncertainty, the development is unlikely to result in any 'adverse' or 'significant adverse' impacts.

6.2 In relation to the noise exposure hierarchy outlined in PPG-Noise which supports the NPPF and NPSE, it is suggested that potential noise at the most affected noise-sensitive premises is likely to be present but not intrusive and therefore at a level where the exposure is unlikely to cause any change in behaviour, attitude or other physiological responses of those affected by it.

6.3 As a result, the proposed development is considered to be consistent with the aims of the NPSE and NPPF 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.

6.4 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.

7.0 REFERENCES

1. ANC Guidelines: *Environmental Sound Measurement Guide*. Association of Noise Consultants. 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. National Planning Policy Framework. Department for Levelling Up, Housing and Communities. September 2023.

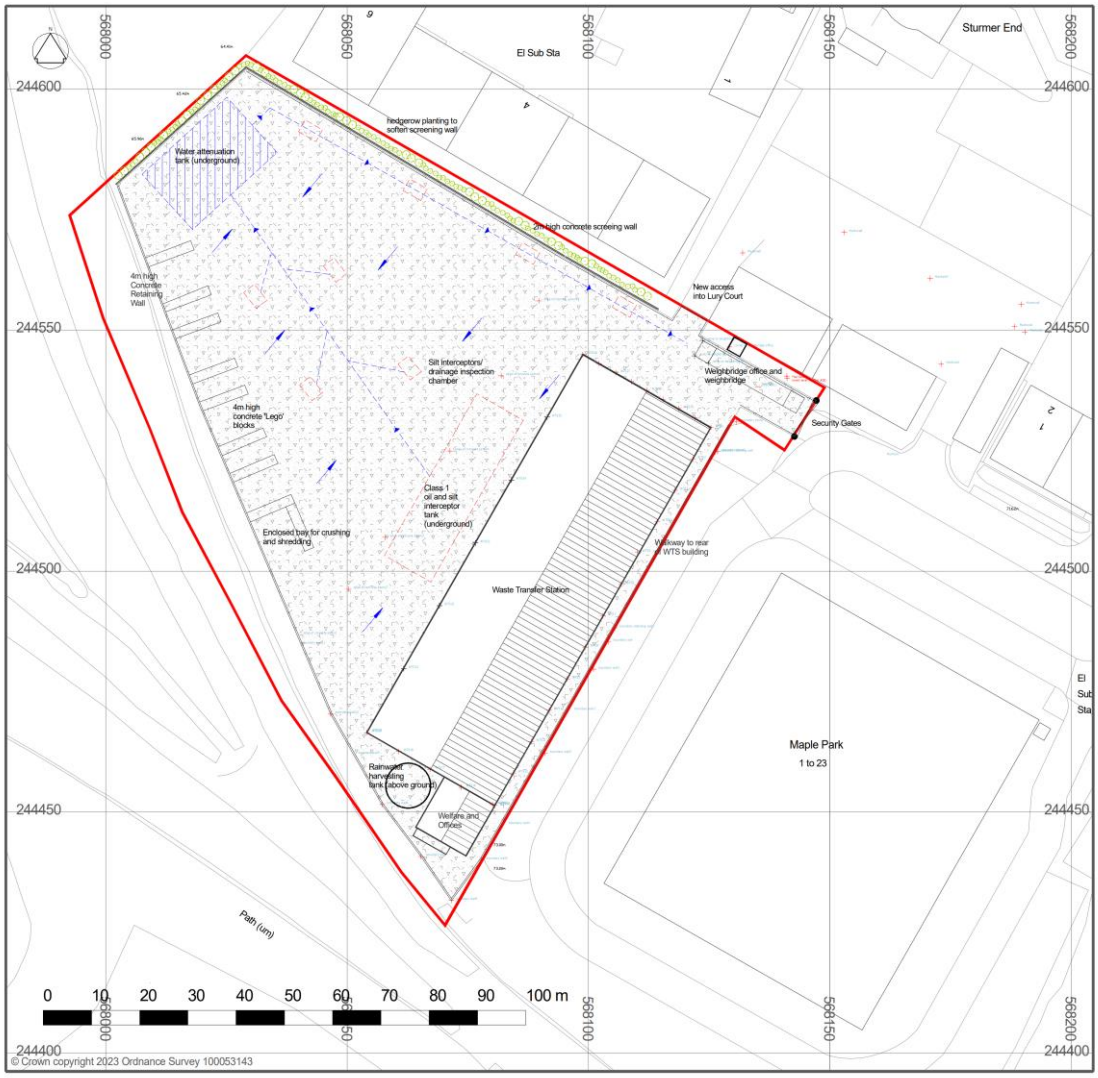
8. Noise Policy Statement for England. Government Department for Environment, Food and Rural Affairs. March 2010.

9. Planning Practice Guidance: Noise – Ministry of Housing, Communities and Local Government. July 2019.

10. ISO 9613-2:1996 *Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation*.

FIGURE 1

Proposed Site Layout



Scale 1:1250 @ A4

	Client	Plan Title	Drawn	Land Under Applicants Control	
	Widdington Recycling Ltd	Haverhill WTS Proposed Site Layout	M Leivers	Application Boundary	
			Date Aug 2023		
			Plan No. WID/HAV/WTS/03		

Extent of concrete hardstanding

Proposed drainage fall

FIGURE 2

3D Image

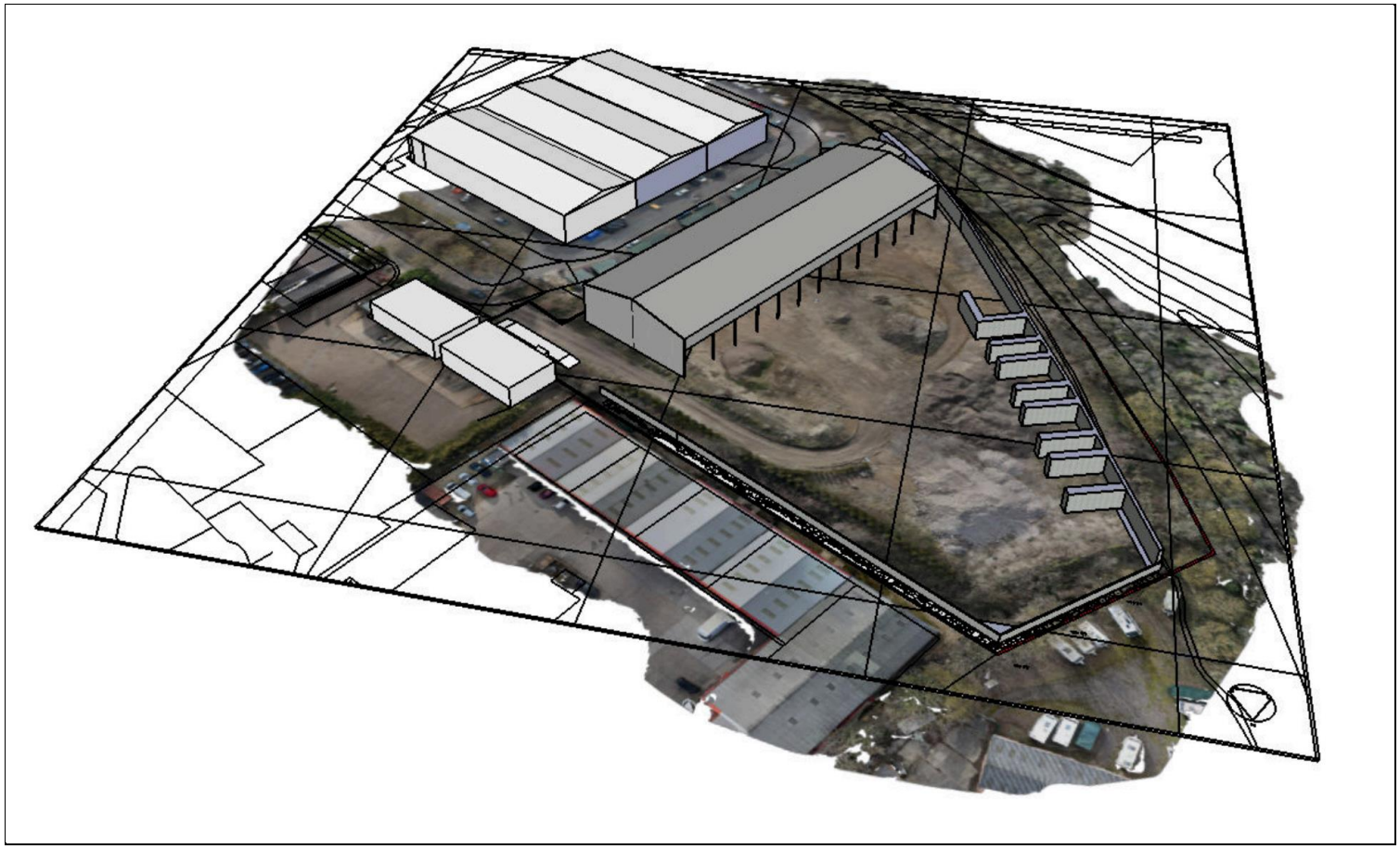
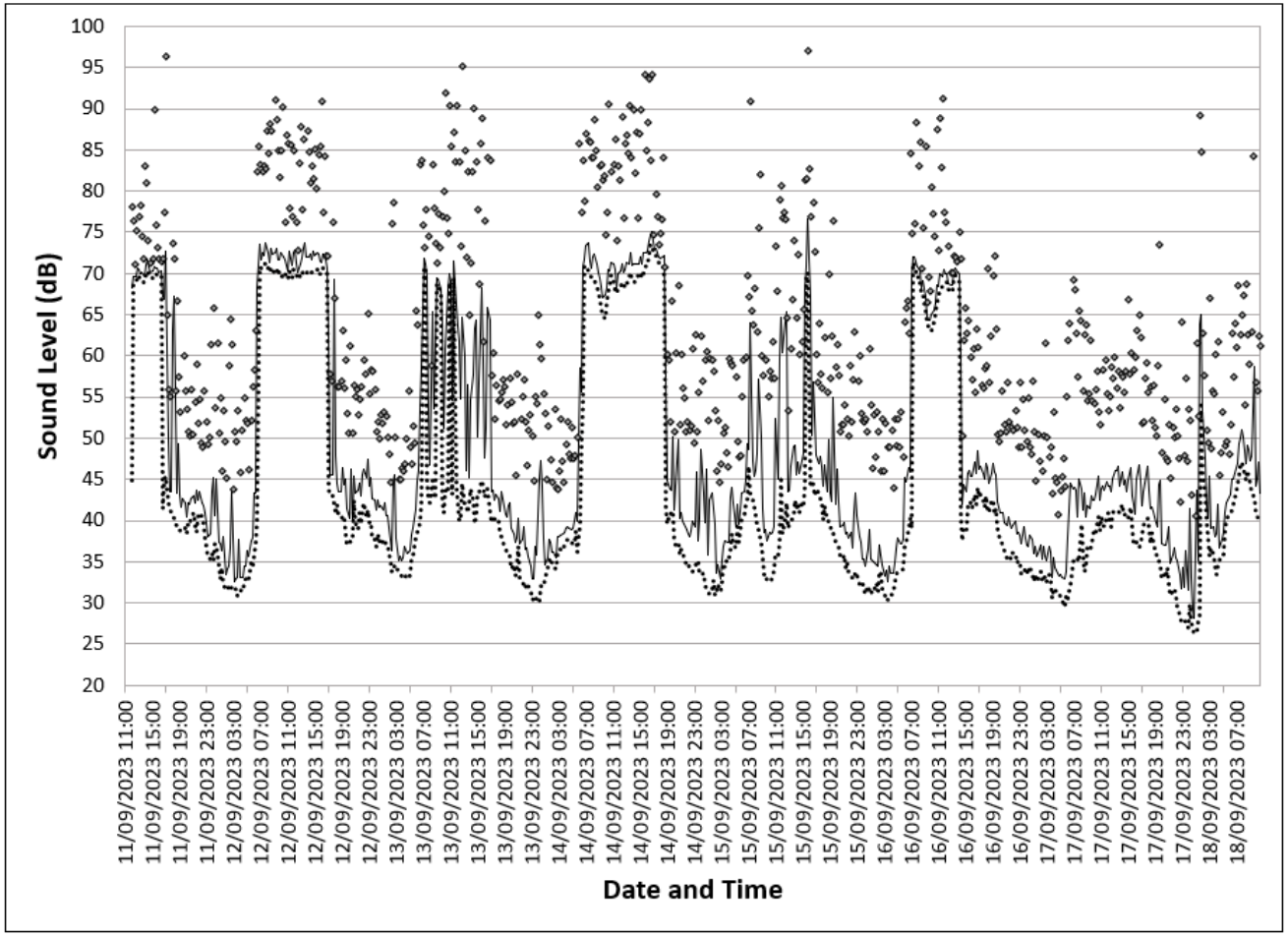


FIGURE 3

Monitoring and Receptor Location Plan

FIGURE 4

Measured Sound Levels



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.