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Noise and Vibration Management Plan
EPR/FP3628SH/P001

Brains Farm Anaerobic Digestion Plant

Japan Environmental Development and Investment UK Limited

Report No. CRM.0169.001.NO.NVMP.001

'Experience and expertise working in union'

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Noise and Vibration Management Plan

Project:	Brains Farm Anaerobic Digestion Plant
For:	Japan Environmental Development and Investment UK Limited
Status:	FINAL
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1 Site Description

1.1 Project Introduction

1.1.1 Enzygo have been commissioned by Japan Environmental Development and Investment UK Limited (JEDI) to prepare a Noise and Vibration Management Plan to support an application for a Bespoke Environmental Permit for the proposed Anaerobic Digestion (AD) facility at land at Brains Farm, Moor Lane, Wincanton Somerset, BA9 9RA.

1.1.2 Given the nature of the operations and the distance between the site and receptors, it is considered that ground borne vibration arising from site activities are highly unlikely to result in any adverse impacts. To that end, ground borne vibration has not been considered further in this document.

1.2 Objectives

1.2.1 This noise management plan (NMP) serves to document the control measures used at the site to ameliorate noise emissions arising from operational activities at the site. The NMP includes the choice of controls, general site design, and operational practice in line with current industry best practice. The NMP is a working document with the specific aim of ensuring:

- noise impacts are considered as part of routine operations;
- the minimisation of the risk of unplanned 'noisy' events that could result in offsite complaints;
- noise is primarily controlled at source by good operational practices, the correct use and maintenance of plant, and operator training; and,
- all appropriate measures are taken to prevent or, where that is not reasonably practicable, to minimise noise emanating from the facility.

1.3 Site Location

1.3.1 The site is located approximately 500m to the south of Wincanton, south of the A303 in Somerset.

1.3.2 The area surrounding the site is rural in nature, with agricultural land in all directions. Beyond this, the area is described as follows:

- To the north of the site is Moor Lane, which runs broadly northwest/southeast along the site boundary, towards Wincanton. Beyond Moor Lane is Wincanton Sports Ground which includes open air sporting facilities and pitches;
- To the east is the continuation of Moor Lane and the junction with Common Road. Beyond this is open agricultural land;
- To the south are several agricultural buildings associated with the adjoining farm complex. It is understood at least one of these buildings is to be converted to residential end use; and,
- To the west are further open fields and beyond this, at approximately 430m, is a water treatment facility, accessed via Moor Lane.

1.3.3 An existing public footpath through the farmstead will run to the immediate south of the site boundary, joining Moor Lane in the vicinity of the junction with Common Road. This footpath is to be retained.

1.3.1 There are two, relatively new, solar farm developments in the vicinity of the site: Sutor Farm Solar Farm and Higher Hatherleigh Solar Farm at 420m and 620m respectively from the site boundary. In addition, the Wincanton Sewage Treatment facility is approximately 430m to the west. Further to this, the A303, a relatively major A-road through the area, is approximately 480m to the north.

1.3.2 Given the above, the site is already exposed to a number of existing noise generating sources in the area, as well as typical agricultural activities associated with a rural setting.

1.4 Scheme Description

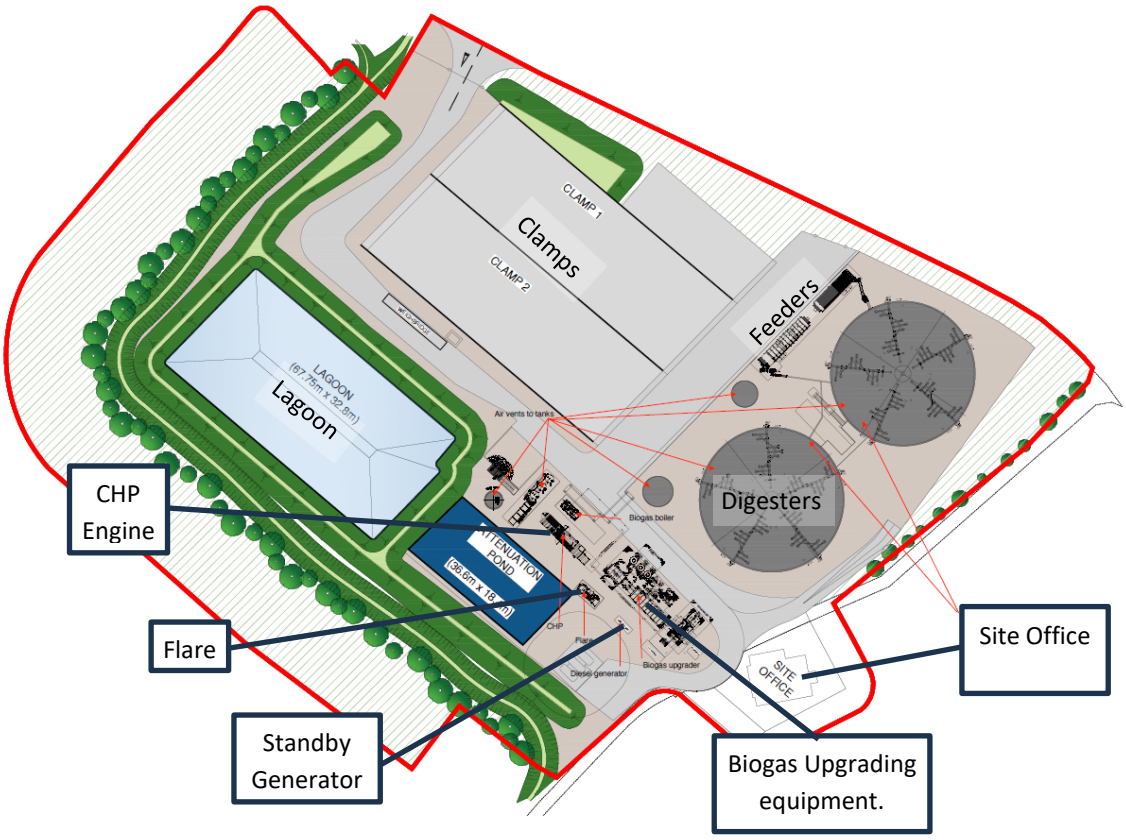
1.4.1 The facility is to be used to break down non-waste feedstocks in an anaerobic process to produce biomethane for use in the local and national gas grid network. The facility will process up to 50,000 tonnes per annum of feedstocks, which are to be sourced locally, with the manure being brought to the site from offsite sources.

1.4.2 The facility is to produce gas for export to the National Grid or for use in an onsite auxiliary biogas boiler.

1.4.3 The resultant digestate is used as fertiliser on the farm with some being shipped off site to other farms.

1.4.4 The latest iteration of the site layout is detailed in Figure 1-2 below:

Figure 1-1: SA48969-BRY-ST-PL-A-0005



1.4.5 The facility operates 24/7 although the movement of feedstocks and materials would occur during daytime hours only. The specific hours are detailed below:

Table 1-1: Operational Hours

Operation	Operational Hours
Typical operations	24/7 operations
Vehicle movements and transport activities	Daytime Only
Flare & standby generator operations	Emergency use only

1.4.6 Normal feedstock deliveries will be received at the site during the following operational hours:

- 07:00 to 19:00 hours Monday to Friday;
- 08:00 to 14:00 hours on Saturday;
- 08:00 to 14:00 hours Sunday and Bank Holidays feedstock deliveries are only received during harvest times.

1.4.7 The treatment of feedstock through the process and upgrading of biogas and injection into the grid will in general operate continuously 24 hours a day.

1.5 Document Status

1.5.1 The NMP is a controlled document, and forms part of the site's Management System.

1.5.2 The specification for the periodic review and update of this NMP will be set out within the Management System and will be undertaken on an annual basis, as a minimum. However, this NMP should be reviewed as required should the following occur:

- Significant changes are made to the plant or operational practices;
- The planning or permitting Authority requests that the NMP is updated, in their role as regulator; or,
- Complaints are received, which on subsequent investigation result in the identification of further control measures or remedial action, in addition to those set out within this NMP.

2 Standards and Guidance

2.1 British Standard 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound.

2.1.1 BS4142 provides a methodology for rating and assessing sound associated with both industrial and commercial premises. The purpose of the Standard is clearly outlined in the opening section where it states that the method is appropriate for the consideration of:

- Sound from industrial and manufacturing processes;
- Sound from fixed installations which comprise mechanical and electrical plant and equipment;
- Sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and,
- 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.

2.1.2 The Standard is based around the premise that the significance of the noise impact of an industrial/commercial facility can be derived from the numerical subtraction of the background noise level (not necessarily the lowest background level measured, but the typical background of the receptor) from the measured/calculated rating level of the specific sound under consideration. This comparison will enable the impact of the specific sound to be concluded based upon the premise that typically *"the greater this difference, the greater the magnitude of the impact"*. This difference is then considered as follows:

- A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context;
- A difference of around +5dB is likely to be an indication of an adverse impact, depending upon context; and,
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact.

2.1.3 BS4142 further 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"* again depending upon the specific context of the site. The Standard further qualifies the assessment protocol by outlining conditions to the comparative assessment and stating that *"not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact"*, thus implying that all sites should be assessed on their own merits and specifics.

2.1.4 The Standard quantifies the typical reference periods to be used in the assessment of noise, namely:

Typical Daytime	07:00 – 23:00	1-hr assessment period
Typical Night-time	23:00 – 07:00	15-min assessment period

2.1.5 The Standard outlines methods for defining appropriate *"character corrections"* within the rating levels to account for tonal qualities, impulsive qualities, other sound characteristics and/or intermittency. These are a) the Subjective Method, b) the Objective Methods for

tonality and c) the Reference Method. It is noted by the Standard that where multiple features are present the corrections should be added in a linear fashion to the specific level.

2.1.6 The Subjective Method is based on the following corrections:

Table 2-1: BS4142 Subjective Method Rating Corrections

Level of Perceptibility	Tonal Correction	Impulsivity Correction	Correction for "Other sound characteristics"	Intermittency Correction
No Perceptibility	+0 dB	+0 dB	Where neither tonal nor Impulsive but clearly identifiable +3 dB	If intermittency is readily identifiable +3 dB
Just Perceptible	+2 dB	+3 dB		
Clearly Perceptible	+4 dB	+6 dB		
Highly Perceptible	+6 dB	+9 dB		

2.2 Environment Agency Guidance – Noise and Vibration Management Environmental Permits

2.2.1 The EA guidance on the management of noise impacts is published online and replaces the preceding guidance detailed in Horizontal Guidance for Noise (H3) parts 1 and 2.

2.2.2 With regards to NMP's the EA guidance states; 'Compliance with a good NMP is an excellent way of demonstrating that your site operations are properly controlled'.

2.2.3 The guidance further states that the NMP should include, as a minimum:

- a clear statement that you understand and accept your responsibilities for controlling noise impact, and that you will regularly review the effectiveness of your NMP;
- a commitment that either you, or your contractors or subcontractors, will make sure that any noise control equipment is designed, operated and maintained appropriately so it controls noise effectively at all times;
- a risk assessment of noise problems from normal and abnormal situations, including worst case scenarios due to, for example, weather, temperature, breakdowns and accidents;
- details of the appropriate controls (both physical and management) needed to manage the identified risks;
- confirmation of the level of monitoring that should be in place;
- details of the actions you will take, contingencies, and responsibilities, when problems arise (it is particularly important that you include expected actions resulting from exceptional circumstances or where serious pollution may occur);
- confirmation of the procedures in place to consider reducing or stopping operations to avoid serious noise pollution; and,
- a procedure for engaging with neighbours to minimise their concerns and respond to complaints.

2.2.4 Further guidance provided by the EA indicates an NMP should include:

- site description and the status of the NMP;

- Receptor locations and details;
- Identification of noise sources and the resultant impacts; and
- Control measures and monitoring of impacts including Best Available Techniques (BAT).

2.2.5 As indicated above, the EA H3 guidance has been superseded by the current guidance, relevant sections of which are summarised above. Notwithstanding the status of the H3 guidance, it contained some guidance relevant to the preparation of an NMP, specifically in relation to methods of noise control methods, which states:

- use of inherently quieter processes;
- selection of inherently quiet plant or “low-noise options”;
- site layout to maximise natural screening, screening by buildings and separation distances;
- orientation of directional noise sources away from sensitive receptors; and,
- noise barriers or bunding.

2.2.6 The above guidance has been used to inform the NMP presented in this document.

3 Receptor Locations

3.1 Introduction

3.1.1 The closest noise sensitive receptor locations are identified in Table 3.1 below:

Table 3.1: Assessment Locations

Assessment Location	Receptor Identification	Approximate Distance from Site Boundary, m	Approximate OS Co-ordinates	
			Easting	Northing
AL01	Look-At-That Home Farm	315	372225	127175
AL02	Forget Me Not Farm	40	371985	127307
AL03	Wincanton Sports Ground	69	371786	127588
AL04	Lawrence Dairy Farm	415	371377	127643

3.1.2 The sensitive receptors and noise monitoring locations are indicated in Figure 3.1 below.

Figure 3.1: Site Location

Google ©

4 Noise Sources

4.1 Noise Emissions

4.1.1 The noise sources considered at the development site are detailed in Table 4-1 below.

Table 4.1: Modelled Source Emissions

Plant Noise Source	Number of Units	Noise Level	Notes
Combined Heat and Power Unit (CHP) – Container Envelope	1	62dB @1m	Info provided by Client
Combined Heat and Power Unit (CHP) – Intercooler	1	64dB @1m	
Combined Heat and Power Unit (CHP) – Exhaust Termination	1	69dB @1m	
Standby Diesel Generator	1	83dB @1m	
Biogas Boiler	1	69dB @1m	
Emergency Flare	1	85dB @1m	Library Data
Feed Hopper	2	83dB L_{WA}	
Compressor/CO_2 equipment	1	78dB L_{WA}	
Shovel Loader	1	104dB L_{WA}	
HGV Movements	Discussed Below	106dB L_{WA}	Maximum pass-by noise level used from BS5228 and input to the model as a moving point noise source.

4.2 Vehicle Movements

4.2.1 The site will expect approximately 14no. vehicles during a 'typical' daytime operating period (November to April). This will increase to up to 58no. daily vehicles during peak, harvest periods.

4.2.2 The delivery hours are presented in paragraph 1.4.6 above

4.3 Operating Conditions/Characteristics

4.3.1 Gas production is a 24/7 process, running during both the daytime and night-time periods. Vehicle movements are a daytime only activity. This arrangement gives three operational scenarios:

- Typical daytime – Gas production and typical vehicle movements;
- Typical night-time – Gas production only; and,
- Peak daytime – Gas production and peak vehicle movements.

4.3.2 In addition to the above, an emergency operational scenario is included to consider the use of the gas flare and standby diesel generator. This is an infrequent operational scenario and only expected to account for up to 10% of the operational hours.

4.4 BS4142 Impact Assessment

Table 4.2: BS4142 Assessment – Typical Scenario

Location	Period	Specific Level, dB $L_{As,T}$	Rating Level dB $L_{Ar,T}$	Typical Background Noise Level, dB L_{A90}	Difference, dB
AL01 – Look-At-That Farm	Daytime	24	27	38	-11
	Night	19	22	33	-11
AL02 – Forget Me Not Farm	Daytime	34	37	38	-1
	Night	26	29	33	-4
AL03 – Wincanton Sports Ground	Daytime	30	33	42	-9
AL04 – Lawrence Diary Farm	Daytime	19	22	42	-20
	Night	18	21	34	-13

Table 4-3: BS4142 Assessment – Peak Scenario

Location	Period	Specific Level, dB $L_{s,T}$	Rating Level dB $L_{Ar,T}$	Typical Background Noise Level, dB L_{A90}	Difference, dB
AL01 – Look-At-That Farm	Daytime	25	28	38	-10
AL02 – Forget Me Not Farm	Daytime	34	37	38	-1
AL03 – Wincanton Sports Ground	Daytime	32	35	42	-7
AL04 – Lawrence Dairy Farm	Daytime	20	23	42	-19

Table 4-4: BS4142 Assessment – Emergency Scenario

Location	Period	Specific Level, dB $L_{s,T}$	Rating Level dB $L_{Ar,T}$	Typical Background Noise Level, dB L_{A90}	Difference, dB
AL01 – Look-At-That Farm	Night	21	24	33	-9
AL02 – Forget Me Not Farm	Night	28	31	33	-2
AL04 – Lawrence Dairy Farm	Night	21	24	34	-10

4.5 Context

4.5.1 BS4142 states that where the initial estimate of impact needs to be modified due to the context, all pertinent factors should be taken into consideration.

Sensitivity of the Receptors

4.5.2 Receptors AL01, AL02 and AL04 are residential properties with no links to the proposed development. To that end, they are all considered to be sensitive to potential changes in noise levels arising from the proposals.

4.5.3 Receptor AL03 is the sports ground and, while not considered sensitive to changes in noise levels during the night, would still be sensitive during daytime hours.

The Absolute Level of Sound

4.5.4 The predicted specific sound levels at all receptors are relatively low in absolute terms and are likely to be masked by the existing, prevailing ambient sound levels in the area.

Summary of Context

4.5.5 The context of the setting would not affect the outcome of the impact assessment presented in Tables 4-2 to 4-4 above.

5 Noise Control Measures

5.1 Introduction

5.1.1 Best Available Techniques (BAT) has been considered based on cost/benefit, technical characteristics of the site, geographic location, local environmental conditions, and the conditioned noise limits.

5.2 Inherent Mitigation Measures

5.2.1 The design of the site is such that it includes several inherent mitigation measures. These include:

- Siting of the facility away from the majority of third-party properties in the area;
- Perimeter bunds and other use of the landform to provide screening; and,
- Vehicle movements made during daytime hours.

5.2.2 These measures are included in this assessment and the noise modelling detailed below.

5.3 Additional Mitigation Measures

5.3.1 The assessments undertaken demonstrate that, noise arising from the AD facility would not exceed the existing background sound levels in the area. As such, no additional noise mitigation measures are proposed.

5.4 Onsite Monitoring Procedures

5.4.1 A significant element of the BAT documented below is the regular inspection of the operational plant and the site to prevent degradation of equipment and infrastructure over time.

5.4.2 It is advised that the inspections be undertaken at regular intervals (weekly or monthly) and be documented to identify any maintenance issues ahead of equipment failure or issues.

5.4.3 A log of the inspections and routines completed under the maintenance schedule for the site should be retained on file within the site's management documentation.

5.5 Best Available Techniques

Table 5.1: Demonstration of BAT

Noise Source	Are Abatement actions taken to prevent or minimise emissions BAT?	Actions Taken to Meet BAT (inc Timescales)	Timescales
All plant noise sources	Yes – regular inspection and maintenance	Regularly scheduled inspections and maintenance to ensure plant items are operating correctly and to minimise any degradation due to 'wear and tear' over time, i.e., weekly or monthly inspections. Inspections should be documented and the document retained on file.	Weekly/monthly Ongoing
Site and surrounding environs	Yes - regular inspection and maintenance	Regularly scheduled inspection and maintenance of the site to pre-empt any degradation over time, i.e., inspection and maintenance of the access road to minimise potholes, etc., which may generate additional noise during vehicle movements.	Weekly/monthly Ongoing
Standby Generator	Yes – Genset installed in suitable enclosures	The standby generator is to be installed at the site in suitable enclosures limiting noise emissions from the units to 83dB@1m in accordance with the information provided by the JEDI.	Ongoing.
Flare Stack	Yes - Flare would be used only in emergencies when other means of gas export are unavailable due to shut-down or maintenance.	Best available equipment to be used and equipment maintained to a good standard. Flare is located as far from noise-sensitive properties within the site boundary as possible.	Ongoing
Vehicle movements	Yes – Vehicles movements limited to daytime hours	Vehicle movements would only take place during daytime hours to minimise any disturbance during the night.	Ongoing

6 Compliance Noise Monitoring

6.1 Off Site Review

6.1.1 A responsible person shall undertake monthly 'noise patrols' at the nearby noise-sensitive receptors for the first 6 months of operation. Findings will be recorded. Any potential noise issues generated by operations at the Brains Farm site will be reported with remedial actions undertaken where required.

6.1.2 If no adverse impacts are found during these first 6 months the 'noise patrols' will be reduced in frequency.

6.2 Frequency of Noise Compliance Monitoring

6.2.1 The noise impact assessment presented for the facility indicates that noise emissions from the site would not result in any adverse impacts at the nearest receptors. To that end, it is considered that regular compliance noise monitoring is unnecessary.

6.2.2 Notwithstanding this, noise compliance monitoring shall be undertaken following:

- any verified complaint from a local resident; and,
- any changes to operating equipment and/or mitigation provision.

6.3 Noise Monitoring Locations

6.3.1 When required, noise monitoring should be undertaken at locations approximating the assessment locations detailed in Table 3-1 and Figure 3-1 above. It is possible (pending access permissions), that proxy locations would be used rather than the actual co-ordinates detailed in the table. A degree of professional judgement is necessary to ensure that the proxy locations are suitable and representative of the identified receptors.

6.4 Noise Monitoring Equipment

6.4.1 Noise monitoring shall be undertaken using sound level meters conforming to Type 1 of the latest version of BS EN 61672-1:2003 Electro-acoustics, Sound Level Meters, Specifications.

6.4.2 The sound level meters shall be field calibrated before and after monitoring using an appropriate acoustic calibrator which conforms to the latest version of BS EN 61672-1:2003 Electro-acoustics – Sound Calibrators.

6.4.3 All sound level meters shall be calibrated to a traceable standard within a 24-month period prior to the monitoring. Acoustic calibrators shall be calibrated to a traceable standard within a 12-month period prior to the monitoring.

6.5 Noise Monitoring Survey Methodology

6.5.1 Noise measurements shall be undertaken by a suitably qualified professional, i.e., an individual who has successfully completed the Institute of Acoustics Certificate of Competence in Environmental Noise Measurement as a minimum, at locations representative of the noise-sensitive receptors locations shown in Table 3-1.

6.5.2 Noise measurements shall be undertaken during the proposed operational hours of the sites, i.e., during both the daytime and night-time periods, for a sufficient period to gather representative operational noise data and for at least 30-minutes.

6.5.3 The sound level meter shall be positioned such that the microphone is located 1.5m above the ground in free-field conditions, i.e., at least 3.5m from the nearest vertical reflecting surface, at all monitoring locations.

6.5.4 A note of the prevailing weather conditions shall be made at each monitoring location. The audibility of site activities shall also be noted at each monitoring location during each measurement period. A note of any extraneous noise generating events shall also be made.

6.6 Reporting

6.6.1 On completion of each noise compliance monitoring exercise a report shall be prepared and issued to JEDI Ltd and retained on file.

6.6.2 Depending on the prevailing weather conditions, the report shall be submitted within 15 working days of a written request from JEDI Ltd to undertake the noise compliance monitoring.

6.6.3 The report shall contain, as a minimum:

- The results of the noise compliance monitoring surveys;
- An assessment of the results against the conditioned noise limits;
- Details of the monitoring equipment used, including calibration details;
- Details of the prevailing weather conditions during each measurement period;
- Details of any correction calculations made;
- Details of the audibility of the sites at the noise-sensitive receptor locations; and,
- Details of any extraneous noise sources that may have influenced the noise measurements.

6.6.4 Where additional noise mitigation measures are required, these should be fully implemented, and a further compliance survey commissioned in the manner documented above.

7 Complaints Reporting Procedure

7.1 Procedure

7.1.1 If a complaint is received from a local resident, an investigation shall be instigated within seven working days to identify the cause of the complaint. The Noise Complaint Form detailed in Appendix A will be filled in and appropriate action taken to remedy the problem should the complaint be validated.

7.1.2 A complaint investigation may involve the identification and cessation of the activity or activities considered to be the cause of the complaint and/or the investigation of mitigation measures to reduce the noise emission levels from the activity or activities. For example, this could include the replacement of noisy plant with quieter alternatives and/or the construction of localised mitigation measures.

7.1.3 Any deviation from agreed working practices shall be identified immediately and conformance to the working practice reinstated.

7.1.4 If it is not possible to identify the source of the complaint, it may be necessary to undertake a noise survey. If this is needed, a suitably qualified person should be employed to undertake the required survey work. The survey should be undertaken in accordance with the methodology detailed in Section 6 above.

7.1.5 A complaints system shall be maintained by the Site, ensuring that any complaints relating to noise are recorded and investigated as appropriate. Complaints relating to noise will be responded to promptly and the complainant will be kept informed of the outcome of the investigation. The Site's management team are the point of contact in the event of a complaint regarding noise from within the site. Each noise complaint will be logged upon receipt and a record of all complaints will be kept, which will include the remedial/corrective actions taken. This will be via the use of a logbook retained by the Site, which will be made available for examination, and which will follow the format in Appendix A.

Noise is defined as unwanted sound. The range of audible sound is known to be from 0dB (threshold of hearing) to 140dB (threshold of pain). Examples of typical noise levels relating to 'everyday' occurrences are given in Table G-1 below.

Table:G-1: Typical Noise Levels

Source	Sound Pressure Level in dB(A)	Subjective Level
Gun shot	160	Perforation of eardrum
Military Jet take-off	140	Threshold of pain
Jet Aircraft at 100m	120	Very Loud
Rock Concert, front seats	110	Threshold of Sensation
Pneumatic Drill at 5m	100	Very Loud
Heavy goods vehicle from pavement	90	
Traffic at kerb edge	70 – 85	Loud
Vacuum Cleaner, Hair Dryer	70	
Normal conversation at 1m	60	Moderate
Typical Office	50 – 60	
Residential area at night	40	Quiet
Rural area at night, still air	30	
Leaves Rustling	20	
Rubbing together of fingertips	10	
	0	Threshold of hearing

The frequency response of the human ear to noise is usually taken to be around 18Hz (number of oscillations per second) to 18,000Hz. However, the human ear does not respond equally to different frequencies at the same level; it is more sensitive in the mid-frequency range than lower and higher frequencies and, because of this, when undertaking the measurement of noise the low and high frequency components of any given sound are reduced in importance by applying a filtering (weighting) circuit to the noise measuring instrument. The weighting which is widely accepted to correlate best with the subjective nature of human response to noise and is most widely used to quantify this is the A-weighted filter set. This is an internationally accepted standard for noise measurement.

For variable noise sources within an area an increase of 3dB(A) would be the minimum perceptible to the human ear under normal conditions. It is generally accepted that an increase/decrease of 10dB(A) corresponds to a doubling or halving in perceived loudness. The 'loudness' of a noise is a purely subjective parameter, dependant not only upon the sound pressure of the event but also on the dynamics of the listener's ear, the time of the day and the general mood of the person.

With regard to environmental noise levels (in the open air), these are rarely steady but rise and fall according to the activities being undertaken within the surrounding area at any given time. In an attempt to produce a figure that relates this variable nature of noise to human subjective response, a number of statistical noise metrics have been developed. These and other useful terminology and descriptors are presented in Table G-2 below.

Table G-2: Terminology

Term	Definition
Sound	Pressure fluctuations in a fluid medium within the audible range of amplitudes and frequencies which stimulate the organs of hearing.
Noise	Unwanted sound emitted from a source and received by the sensitive receptor.
Decibel (dB)	Unit most often used to describe the sound pressure level. A logarithmic number, it correlates closely to the way in which humans perceive sound. Its wide range of values helps quantify sound pressures from a large variety of magnitudes.
A-Weighting (dB(A))	Human perception of sound is frequency dependant. A-weighting applies a range of corrections at each frequency to provide a 'human-averaged'. Can be frequency band or broadband values.
Frequency (Hz)	The number of cycles per second, for sound this is closely related (and often mistaken for) pitch.
Frequency Spectrum	A more detailed analysis of the frequency components that comprise a sound source.
$L_{A10,T}$	The 10th statistical percentile of a measurement period, i.e. the level that is exceeded for 10% of the measurement duration. Closely correlates with traffic sources, A-weighted.
$L_{A90,T}$	The 90th statistical percentile of a measurement period, i.e. the level that is exceeded for 90% of the measurement duration. Used to describe background sound levels, as this value is affected less by short, transient sound sources, A-weighted.
L_{Amax}	The root mean square (RMS) maximum sound pressure level within a measurement period, A-weighted.
Ambient Sound	The total sound climate of all sources incident at one location, both in the near- and far-field (*The ambient sound comprises the residual sound and the specific sound when present)*.
Ambient Sound Level $L_A = L_{Aeq,T}$	Equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T.
Background Sound Level $L_{A90,T}$	A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels.
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, $T = t_2 - t_1$, has the same mean-squared sound pressure as a sound that varies with time, and is given by the following equation: $$L_{Aeq,T} = 10lg_{10}\left\{\left(\frac{1}{T}\right)\int_{t1}^{t2}\left[p_A\frac{(t)^2}{{p_0}^2}\right]dt\right\}$$

Term	Definition
	Where p_0 is the reference sound pressure (20μPA); and $P_A(t)$ is the instantaneous A-weighted sound pressure level at time t.
Measurement Time Interval T_m	Total time over which measurements are taken (*This may consist of the sum of a number of non-contiguous, short-term measurement time intervals)*
Rating level $L_{Ar,Tr}$	Specific sound level plus any adjustment for the characteristic features of the sound, over a period of time, T.
Reference Time Interval, T_r	Specified interval over which the specific sound level is determined (This is 1hr during the day from 07:00 to 23:00 hours and a shorter period of 15-min at night from 23:00 to 07:00 hours).
Residual Sound	Ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound.
Residual sound level $L_r = L_{Aeq,T}$	Equivalent continuous A-weighted sound pressure level of the residual sound in a given situation at the assessment location over a given time interval, T.
Sound Pressure Level	The level of fluctuation in air pressure, caused by airborne sound sources. Measured in Pascals (Pa).
Sound Power Level	The rate at which sound is radiated by a source. This parameter is useful as it describes sound energy before environmental or decay factors. Quantified in dB and notated usually as L_w or SWL.
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 time interval, T.
Specific Sound Source	Sound source being assessed.

Appendix A – Complaint Log Template

Item		Date Recorded:	Ref Number:
Name and address of Caller			
Telephone No.			
Locations of Caller in relation to site (direction and approx. distance).			
Time and date of complaint			
Date, time and duration of offending noise			
Callers description of noise			
Has the caller any other comments on the noise?			
Weather conditions (rain, sun)			
Wind speed and direction			
Any previous complaints relating to this noise?			
Any other relevant information?			
Potential sources that could give rise to complaint			
Operating condition at time of complaint			
Follow up – Date and time Caller contacted			
Action taken			
Amendment required to NMP			
Form completed by:		Signed and date	

Enzygo specialise in a wide range of technical services:

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