

Technical Appendix 10.1: Construction Noise Report



A specialist energy consultancy

Technical Appendix 10.1

Construction Noise Report

Watchman Energy Park

Watchman Energy Park Limited

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Executive Summary

TNEI Services Limited (TNEI) was commissioned by Ramboll on behalf of Watchman Energy Park Limited ('the Applicant') to undertake predictions of noise levels associated with the construction of the proposed Watchman Energy Park (the Proposed Development). The noise predictions were used to assess the potential impact of noise attributable to the construction of the Proposed Development on the occupiers of nearby noise sensitive receptors (NSRs).

The noise impact assessment was undertaken using guidance contained in BS 5228: Part 1 2009+A1:2014 'Noise and vibration control on construction and open sites- Noise' and the calculation methodology in ISO 9613-2:2024 'Acoustics – Attenuation of sound during propagation outdoors: General method of calculation' together with noise data for appropriate construction plant.

Ten residential receptors neighbouring the Proposed Development were identified as the nearest NSRs to the proposed construction activities on the Site. Predictions were made assuming that all items of plant are operating continually throughout the assessment period to provide a worst-case scenario. In addition, the noise model assumes that noise sources would be located within the most likely activity areas closest to the receptors, whereas in reality plant would move around the Site and only a proportion of the plant may be operating at any one time. As such, the predictions are inherently likely to over-predict the actual sound levels that are likely to be experienced.

The results show that the predicted noise levels would be below the most stringent of the noise Threshold Levels detailed in BS 5228, with the exception of one residential receptor during BS 5228's defined Daytime period, and two receptors during the defined Weekend and Evening period. However, the effects are deemed to be not significant; this is due to the short duration of the works and small magnitude of the exceedance where the Daytime Threshold is exceeded, and that no works are anticipated during the Weekend and Evening assessment period. Nevertheless, mitigation in the form of good practice during construction is recommended to keep noise to a minimum and recommendations in accordance with BS 5228 have been made in this report.

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- Annex A – Figures
- Annex B – Baseline Data
- Annex C – Noise Model Data

1 Introduction

1.1 Brief

TNEI was commissioned by Watchman Energy Park Limited ('the Applicant') to undertake a construction noise assessment for the proposed Watchman Energy Park ('the Proposed Development'). The following steps summarise the noise assessment process:

- Establish typical ambient noise levels at noise sensitive receptors (NSRs) located closest to the anticipated construction activities and derive appropriate noise Threshold Levels;
- Undertake predictions of activity noise throughout the construction period that that would be incident at the nearest NSRs;
- Compare the predicted noise levels across the construction period with the derived threshold values; and,
- Identify any requirements for mitigation measures, if needed.

The following terms and definitions are used throughout this report;

- **Emission** refers to the sound level emitted from a sound source, expressed as either a sound power level or a sound pressure level;
- **Immission** refers to the sound pressure level received at a specific location from a noise source(s);
- **SWL** indicates the sound power level in decibels (dB);
- **SPL** indicates the sound pressure level in decibels (dB);
- **NSR** (Noise Sensitive Receptor) are identified receptors that are sensitive to noise;
- **NML** (Noise Monitoring Location) refers to any location where baseline or specific noise levels have been measured; and
- **CNAL** (Construction Noise Assessment Location) refers to any location where the noise immission levels are calculated and assessed.

Unless otherwise stated, all noise levels refer to free field levels i.e. noise levels without influence from any nearby reflective surfaces. All coordinates refer to Ordnance Survey British National Grid using Eastings, Northings.

1.2 Site Description

The Proposed Development is located approximately 10 km south of Crawford, 7 km south of Elvanfoot and 12 km to the west of Moffat. The area around the Site is rural and is mainly comprised of upland moorland surrounded by a hilly landscape. There is also blanket bog located to the south of the Site, within the Shiel Dod Site of Special Scientific Interest (SSSI). The density of residential dwellings on the land surrounding the site is very low, with the main cluster of receptors being to the east of the Site near Wintercleugh, as well as some receptors directly north of the site.

Figure A1.1 in Annex A shows details of the Site infrastructure.

The Proposed Development can be accessed via the A702 through Watermeetings Forest (the Western Access), or the via the Eastern Access, which would be taken from the A702 along the Daer Water road, entering the Site at Wintercleugh.

1.3 Project Description

A detailed description of the Proposed Development and the construction requirements can be found in **Chapter 2: Description of Proposed Development (EIAR Volume 2)** of the Environmental Impact Assessment (EIA) Report (EIAR).

Construction of the Proposed Development would require the establishment of a Temporary Construction Compound (TCC), which is located on the northwest side of the Site. Access tracks would be laid from the Site entrances up to the construction compound and then southerly across the Site to the wind turbine locations. At each turbine location, construction activities would include the formation of crane hardstandings, excavation of turbine foundations, construction of turbine bases, and installation of turbines. A substation and Battery Energy Storage System (BESS) would also be installed.

Up to two borrow pits would be in use on-site and concrete batching would be undertaken at the TCC.

The construction period is anticipated to last for 18 months. **Table 1-1** (overleaf), which presents an indicative construction timetable, is taken from **Chapter 2: Description of Proposed Development (EIAR Volume 2)** and is based on TNEI's experience of construction timetables for similar developments of this size and scale. Yellow coloured cells indicate construction activities that have been included in the construction noise assessment, whereas cells shaded grey indicate construction activities that would not typically generate high levels of noise, and as such are excluded from the assessment. Examples of such activities could include wiring of plant, activities using handheld tools, and turbine commissioning tests.

Construction activities are expected to be limited to the following hours (Daytime period);

- Monday to Friday: 07:00 to 19:00
- Saturday: 07:00 to 13:00

Standard construction activities are not anticipated outside of the above times; however, it should be noted that some activity outside of the core hours could arise, under certain conditions. Examples include construction activities that cannot be stopped once they have begun, such as turbine erection or concrete pours; or where deliveries need to occur outside of standard working hours, for example, to receive Abnormal Indivisible Loads (AILs).

No nighttime construction activities are expected, however, there may be requirement to run a small amount of fixed plant during the nighttime, for example to provide power to site cabins or provide lighting for health and safety reasons. The assessment, therefore, considers the potential for nighttime noise impacts.

2 Legislation, Policy and Guidance

2.1 Legislation

The Control of Pollution Act 1974 (COPA 74), as amended, (1) is used to control the noise impacts of construction works. Specifically, Section 60 allows Councils to impose restrictions on construction works, including specifying the plant allowed to be used, hours of activity, or the setting of noise levels that may be emitted from a site.

2.2 National Planning Policy

National Planning Policy 4 (NPF4) (2) refers to environmental noise in respect of general health and safety and also in the context of energy developments. Policy 23 (Health and Safety) requires that proposed developments consider and mitigate noise pollution, whilst Policy 11 (Energy) supports the expansion of renewable energy, but emphasises that such developments must be sited and designed to minimise adverse impacts, including noise. There is no mention, however, regarding noise from construction works specifically.

No further detail is provided in NPF4, however, at a national level, Planning Advice Note (PAN) 1/2011 Planning and Noise (3) is the overarching document in relation to how environmental noise should be considered for new developments. The PAN “provides advice on the role of the planning system in helping to prevent and limit the adverse effects of noise.”

The PAN does not present any noise level limits or specific assessment methods, however, guidance on the assessment of environmental noise is included in the accompanying Technical Advice Note (TAN) Assessment of Noise. (4)

Both the PAN and the accompanying TAN provide little guidance in respect of construction noise, other than recommending that the use of planning conditions is not the preferred method for controlling temporary construction noise. Specifically, PAN 1/2011 states:

“32. While planning conditions can be used to limit noise from temporary construction sites, it is most effectively controlled through the Control of Pollution Act 1974 (COPA74) and the Pollution and Prevention Control Act 1999 for relevant installations. Notice can be served in advance of works and site conditions set to control activities.”

2.3 Relevant Guidance

BS 5228:1997 Noise and vibration control on construction and open sites. Code of practice for basic information and procedures for noise and vibration control, Parts 1 to 5 (5) is the approved Code of Practice under COPA74, however, it is the 2009 version of the Standard that should be used for planning applications. In this regards the TAN states:

“However, under Environmental Impact Assessments and for planning purposes i.e. not in regard to the Control of Pollution Act 1974, the 2009 version of BS 5228 is applicable. The 2009 version of the standard consists of Parts 1 and 2 for noise and vibration respectively.”

Accordingly, the assessment of construction noise in this report is undertaken with reference to the most up to date version of the standard, which is BS 5228:2009+A1:2014 Parts 1 and 2¹. (6) (7)

¹ The current version of BS 5228 comprises two parts. Part 1 Noise, and Part 2 Vibration. This assessment considers Part 1 only.

Table 1-1: Indicative Construction Timetable

Construction Activity	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Junction / site entrance upgrades																		
Felling																		
Site establishment																		
Construction of access tracks																		
Opening of borrow pits and concrete batching																		
Turbine Foundations																		
Substation and BESS construction																		
Cabling																		
Erection of turbines																		
Site restoration																		
Commissioning tests																		

Part 1 of BS 5228 provides useful guidance on practical noise control and management, with recommendations for basic methods of noise control, including sections on community relations, training, occupational noise effects, neighbourhood nuisance and project supervision. The annexes provide information on typical construction noise sources, noise calculation procedures, mitigation measures and their effectiveness.

Annexes C and D of BS 5228 present measured noise levels from construction activities measured across multiple construction sites in the UK, that may be used to inform the prediction of noise from proposed construction activities. Annex E of BS 5228 presents methods of assessing the significance of impacts from construction noise.

3 Methodology

3.1 Considering the Potential for Noise Impacts

Noise levels from construction activities would vary continually over time, as activities and plant start and stop, and move around the Site. To assess the potential impacts of construction noise, a series of worst-case scenarios can be considered, where construction plant and activities are assumed to be working continually and in locations closest to the nearest sensitive receptors.

It would not be appropriate, however, to assume a worst-case scenario where a particular item of mobile plant is located directly opposite a receptor for any prolonged period of time (under most circumstances). An example of this could be where an excavator is working along a line to dig a cable trench over a number of weeks, which passes close to a receptor for only a few hours or days. Therefore, in the case of mobile plant, this is modelled as a point source that moves along a defined path, averaging out the sound power level across the length of the line, rather than concentrating it in a single location next to the receptor. In such cases, the predicted noise level will represent an average level expected to be received for the majority of the activity period, however, it should be recognised that when directly opposite a receptor, noise levels would be higher than predicted for a short period of time.

Notwithstanding these discrete occasions, the overall noise level attributable to construction activities from the Proposed Development site will tend to be higher in the assessment than what would actually occur for the majority of the time, given that all plant is assumed to be operating continually and concurrently.

3.2 Study Area

NSRs are properties, people or fauna that are sensitive to noise and, therefore, may require protection from nearby noise sources. The Study Area for the construction noise assessment is defined through the qualitative identification of the closest NSRs to the Proposed Development, on the assumption that if noise levels are acceptable at the closest receptors, then they should also be acceptable at more distant locations.

A representative sample of Construction Noise Assessment Locations (CNALs) have been chosen to represent the closest receptor or group of receptors.

Table 3-1 details the CNALs considered within the assessment, which are also shown on **Figure A1.1** included in **Annex A**.

Table 3-1: Construction Noise Assessment Locations (CNALs)

CNAL Name	Coordinates (BNG)	
	Easting	Northing
CNAL1 – Troloss House	291661	608445
CNAL2 – Troloss Cottage	292959	609479
CNAL3 – Nether Fingland	293834	610753
CNAL4 - Bracadale	296483	610122

CNAL Name	Coordinates (BNG)	
	Easting	Northing
CNAL5 – Wintercleugh House	296534	609999
CNAL6 - Daerbank	296580	609796
CNAL7 - Hitteril	296194	609629
CNAL8 – Sweetshaw Foot	298356	609066
CNAL9 – Kirkhope Cleuch Cottage	296617	607218
CNAL10 - Kirkhope	296337	605455

3.3 Methodology for the Prediction of Noise

To predict the noise immission levels attributable to the construction of the Proposed Development, a noise propagation model has been produced using the propriety noise modelling software CadnaA. Within the software, complex models can be used to simulate the propagation of noise according to a range of international calculation standards, including BS 5228 and ISO 9613 2:2024 *Acoustics - Attenuation of sound during propagation outdoors: Engineering method for the prediction of sound pressure levels outdoors*.

For this assessment, noise modelling was undertaken using the ISO 9613 propagation model, which was chosen in preference to the calculation method presented in BS 5228, primarily because of some of the significant distances from source to receptor evident on this Site. Specifically, BS 5228 notes in F 2.2.2.2, that at distances over 300 m noise predictions using the BS 5228 methodology should be treated with caution, especially where a soft ground correction factor has been applied, because of the increasing importance of meteorological effects; whereas ISO 9613-2 provides equations that have been validated up to greater distances.

The model uses the octave band sound power output of the proposed construction plant as its acoustic input data, and calculates on an octave band basis, attenuation due to geometric spreading, atmospheric absorption, topography and barriers, and ground effects.

For the purposes of this assessment, all noise level predictions have been undertaken using a receiver height of 1.5 m above local ground level. Soft ground (G=1) attenuation has been assumed at all locations except for waterbodies, construction compounds, turbine bases and similar areas of hardstanding, which have been modelled with a ground attenuation of G=0 (hard ground).

Air absorption based on a temperature of 10°C and 70 % relative humidity has been assumed.

3.4 Limitations of the Noise Model

The noise propagation models are intended to give a good approximation of the construction noise level and the contribution of each individual noise source. However, it is expected that actual levels are unlikely to be matched exactly with modelled values and the following limitations in the model should be considered:

- In accordance with ISO 9613-2, all assessment locations are modelled as downwind of all noise sources and propagation calculations are based on a moderate ground-based temperature inversion, such as commonly occurs at night;

- The predicted barrier attenuation provided by local topography, embankments, walls, buildings and other structures in the intervening ground between source and receiver can only be approximated and not all barrier attenuation will have been accounted for;
- Unless specifically stated, the modelled scenarios assume all noise sources are operating continuously and simultaneously, estimating a worst-case noise level; and
- All mobile plant assumed to be working on tracks (excavators, dozers, rollers etc) have been modelled as moving point sources along their anticipated movement paths and the sound power level of the source is effectively averaged out across the length of the entire line. This will give an approximation of the overall noise levels from mobile plant at receptor locations; however, in reality noise levels would fluctuate as construction plant and activities move around in their activity areas.

3.5 Methodology for the Assessment of Noise

The construction noise assessment is undertaken as follows:

- Define Noise Assessment Locations (NALs) to represent the closest NSRs;
- Identify applicable Threshold Levels to identify potentially significant effects;
- Predict noise levels for various construction activities or phases at each NAL;
- Compare the predicted levels and duration of exposure to the BS 5228 Threshold Levels; and,
- Where necessary, develop suitable mitigation measures to minimise any significant adverse effects.

Annex E, part E.3.2 of BS 5228-1, provides example methods for assessing the significance of construction noise effects and gives examples of acceptable levels for construction noise.

Table E.1 of BS 5228-1 (represented here as **Table 3-2**) contains an example of the significance criteria that can be used to assess construction noise for residential receptors.

Three categories of thresholds are provided for varying assessment periods (Daytime, Nighttime, Evenings, Weekends etc.). The appropriate category for any given receptor can be chosen after quantifying the existing ambient noise levels (rounded to the nearest 5 dB) at that location for the given assessment period. BS 5228 provides the following advice regarding the thresholds:

- *“Note 1: A potential significant effect is indicated if the LAeq,T noise level arising from the site exceeds the threshold level for the category appropriate to the ambient noise level.*
- *Note 2: If the ambient noise level exceeds the Category C threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a potential significant effect is indicated if the total LAeq,T noise level for the period increases by more than 3 dB due to site noise.*
- *Note 3: Applied to residential receptors only.”*

Therefore, the assessment of construction noise reflects a specific noise threshold for the locality for a particular period of the day, rather than an absolute noise level limit.

Table 3-2: Example of Threshold of Potential Significant Effect at Dwellings

Assessment Category and Threshold Value Period	Threshold Value $L_{Aeq,T}$ dB		
	Category A ^(A)	Category B ^(B)	Category C ^(C)
Nighttime (23:00 to 07:00)	45	50	55
Evenings and Weekends ^(D)	55	60	65
Daytime (07:00 to 19:00) and Saturdays (07:00 to 13:00)	65	70	75

(A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values;
 (B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values;
 (C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values;
 (D) 19:00 to 23:00 weekdays, 13:00 to 23:00 Saturdays and 07:00 to 23:00 Sundays.

It should be noted that exceedance of the threshold does not in itself indicate a significant effect, rather, the standard states; "If the site noise level exceeds the appropriate category value, then a potential significant effect is indicated. The assessor then needs to consider other project-specific factors, such as the number of receptors affected and the duration and character of the impact, to determine if there is a significant effect".

3.6 Determining the Threshold Levels

A baseline noise survey was undertaken as part of the Proposed Development's operational noise assessment, and this is reported in detailed in **Technical Appendix 10.2 (EIAR Volume 4)**.

Data from six Noise Monitoring Locations (NMLs) has been used in order to set the appropriate BS 5228 Threshold Levels. The NMLs can be seen on **Figure 1.1 (Annex A)**.

Table 3-3 details the average $L_{Aeq(t)}$ noise level at each NML, after filtering for rainfall events and windspeeds of 5 m/s and above. The levels were calculated for each of the periods defined in BS 5228 for Weekday and Weekend Daytime, Evening and Nighttime. Only data from full measurement periods, or measurement periods with the majority of records present, have been used to derive the levels in **Table 3-3** (i.e. if a period has had a substantial amount of data removed due to rainfall or wind speed, the entire period has been removed from the dataset). **Annex B** includes tables of the measured noise levels for all assessment periods, with cells shaded green (full measurement periods) and orange (majority-complete measurement periods) to indicate data that has been used to calculate the levels detailed in **Table 3-3**. Unshaded cells indicate periods where the noise data has been filtered out and not used for calculation of the averages.

The measured noise levels at NML3 were also heavily watercourse affected. Whilst this is deemed representative of the soundscape at this location (and the neighbouring receptors), due to this and the inability to minimise the potential influence of operational turbine noise, the average $L_{Aeq(t)}$ noise levels at NML3 have been provided for context only, rather than for the selection of the BS 5228 Category to assess against.

Table 3-3: Typical Ambient Noise Levels, $L_{Aeq(t)}$ for each NML.

Noise Monitoring Location	Daytime M - F	Daytime Sat	Evenings	Weekend	Nighttime
	Weekdays 07:00 to 19:00	Saturday 07:00 to 13:00	Weekdays 19:00 to 23:00	Saturday 13:00 to 23:00 Sunday 07:00 to 23:00	All days 23:00 to 07:00
NML1 - Troloss House	55	55	45	50	45
NML2 - Over Fingland	45	45	35	40	40
NML3 - Peden Gill	55	55	55	60	45
NML4 - Hitteril	35	35	30	35	35
NML5 - Kirkhope Cleuch Cottage	40	40	35	40	40
NML6 - Kirkhope	35	40	30	35	35

Having due regard to the existing ambient noise levels at NSRs around the Proposed Development, the BS 5228 Category A Threshold Values have been used for all receptors and all time periods. These are the most stringent threshold values and reflect the low ambient noise levels measured in the area during the baseline survey.

Accordingly, given the core construction hours and Category A Threshold values, the assessment has been made against the following noise levels at all NALs:

- 65 dB $L_{Aeq(t)}$ for Daytime weekdays 07:00 to 19:00 and Saturday 07:00 to 13:00. These are the core construction hours for this Proposed Development.
- 55 dB $L_{Aeq(t)}$ for Weekday evenings 19:00 to 23:00, Saturday 13:00 to 23:00 and Sunday 07:00 to 23:00. This is outside of core construction hours for the Proposed Development but considered nevertheless for potential instances where works may be required to continue outside of core hours.
- 45 dB $L_{Aeq(t)}$ for Nighttime 23:00 to 07:00. This similarly outside the core construction hours for the Proposed Development but is considered nevertheless against predictions of a potential scenario of generators operating within the construction compound.

4 Noise Impact Assessment

4.1 Modelling of Individual Sound Sources

Noise immission levels would vary throughout the construction period as construction activities, plant and locations vary. For much of the working day the noise associated with construction activities would be less than predicted, as the assessment assumes all equipment is continually operating at full power and in locations closest to the NSRs, whereas in practice, equipment load, and precise location may vary throughout the day. This approach has been adopted to represent a worst-case assessment.

At this stage a detailed plant list is not available, therefore, a generic plant list based upon experience of similar projects has been used. All modelled noise sources and associated sound power level (SWL) and sound pressure level (SPL) data is included in **Annex C**.

For felling activities, broadband noise level data for a harvester, a forwarder and a skidder has been taken from Noise Hazards in Forestry Operations and Selection of Personal Protective Equipment (8) (Forestry Commission). No octave band data is available therefore modelling has been undertaken using the 500 Hz octave band data, as recommended in ISO 9613. Noise levels for the harvester and forwarder are actually given in the documentation at the operator position inside a Q Cab, so to estimate external levels, 10 dB has been added to the quoted level and a sound power level for each item of plant calculated within CadnaA, assuming the quoted sound pressure levels (SPLs) have been measured at a distance of 1 m.

For all other construction activities, source noise level data was taken from Annex C of BS 5228, which provides octave band SPL levels for a wide variety of construction plant and activities suitable for the estimation of noise immission levels.

Construction noise sources for any given activity would generally comprise a mix of both moving and static sources. Mobile sources include mobile construction plant and HGVs, while static construction plant could include piling rigs and pumps. Static equipment is usually located at a fixed location for an extended period of time.

For both mobile and static plant, activity noise levels would be transient in nature due to changes in location, on/off periods, and fluctuations of load on any individual machine.

All static of plant and activities have been modelled as single point sources. All mobile plant (excavators, dozers, dumpers etc.) have been modelled as either a moving point source (line source) along their anticipated movement paths or as a stationary point source located at the closest point of its anticipated work area to any given CNAL.

4.2 Modelling of Construction Activities

For the purposes of this assessment noise modelling has been undertaken for months 1 to 18 and an additional modelling scenario has been included to consider the Nighttime period. The modelled scenarios are summarised in the following construction activities, which are detailed in full in **Annex C**.

- **Months 1 to 6** – Road junction upgrades are completed in month 1; Forestry activities commence along the site entrance (months 1 to 3); The temporary construction compound (TCC) is constructed and begins operation; Access track construction and upgrades are underway (month 2 onwards), and the first borrow pit begins operation, once this is established concrete batching commences in month 4; The second borrow pit is opened from month 6.

- **Months 7 to 11** - TCC in use; Improvements along access tracks; Construction of turbine hardstanding and foundations begins starting with turbines closest to the Site entrance; Construction of the Substation and BESS commences in month 8.
- **Months 12 to 18** - TCC in use; Construction of the BESS and substation is completed in month 12; Crane Deliveries (months 12 and 14 only); Erection of turbines (month 12 onwards); Removal of cranes (month 18 only).
- **Nighttime model** - To consider potential occurrence of noise outside of core hours, a scenario has been modelled considering the operation of fixed plant during the Nighttime period (23:00 to 07:00), for example, the use of generators to provide power and lighting within the construction compounds.

These scenarios were modelled to try to represent some of the 'noisiest' anticipated scenarios. Other construction activities not included in the noise models would occur, however, the noise output from these would likely be less than those considered above.

4.3 Calculated Noise Immission Levels

Table 4-1 (overleaf) presents the calculated immission levels and for each modelled scenario. The predicted construction noise levels are below the Category A Daytime Threshold Levels of 65 dB(A) at all CNALs, with the exception of CNAL4. The immission levels are also below the Evening and Weekend Threshold Levels of 55 dB(A) at all but CNAL4 and CNAL7. The predicted Nighttime noise levels do not exceed the Nighttime Threshold Level of 45 dB(A).

The predicted exceedance in the Daytime 65 dB(A) Threshold Level at CNAL4 is of 1 dB during month 1. It also exceeds the 55 dB(A) Evening and Weekend Threshold by 11 dB during month 1 and by 4 dB in month 2. CNAL7 exceeds the 55 dB(A) Evening and Weekend Threshold Level by 1 dB during month 2.

The 1 dB exceedance during month 1 at CNAL4 is the result of road junction upgrades around the Eastern Access. However, given the nature of these works, it is anticipated that the highest levels of noise would be experienced for, at most, only a small number of days. The exceedances during month 2 for CNAL4 and CNAL7 are primarily the result of the construction of access tracks around the Eastern Access, which at their closest points are approximately 50 m from CNAL4 and 60 m from CNAL7 respectively. However, as construction proceeds, works would move away from the receptor and again it is anticipated that the highest levels of noise would be experienced for a small number of days. If works are required during Evenings or Weekends periods (excluding 07:00 to 13:00 on Saturdays), it is not anticipated that this would include upgrade of the access tracks around the Site entrance, therefore noise levels would remain below the Weekend and Evening Category A Threshold Levels.

While the BS 5228 Category A Threshold Levels are exceeded, the effect is not expected to be significant due to the duration of the works and magnitude of the exceedances. Accordingly, whilst the construction noise impacts are above the indicator for a potential significant effect at CNAL4 during month 1, the effect has been deemed not significant due to the short duration of works (a number of days), and the small magnitude of exceedance (1 dB). However, mitigation in the form of good practice during construction is recommended to keep noise to a minimum and recommendations in accordance with BS 5228 are discussed below.

5 Noise Mitigation Measures

No significant effects resulting from construction noise are predicted. Nevertheless, a range of good practice measures would be employed to minimise noise impacts.

The core hours for the proposed works would be 07:00 to 19:00 Monday to Friday, 07:00 to 13:00 Saturday. No regular work is proposed in the evenings, nighttime or on Sundays or Bank Holidays. The requirement for out-of-hours work could arise, for example, from delivery and unloading of abnormal loads or health and safety requirements, or to ensure optimal use is made of fair-weather windows for the erection of turbine blades and the erection and dismantling of cranes. No scheduled construction is anticipated during the nighttime, although, there may be a requirement for some plant to be operational during nighttime, for example, a portable generator to provide lighting.

Good site practices for construction of the Proposed Development would be implemented to minimise the likely effects.

Section 8 of BS 5228-1:2009+A1:2014 recommends a number of simple control measures as summarised below that can be employed on-site:

- Keep local residents informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern.
- Ensure that any extraordinary site work continuing throughout 24 hours of a day (for example, crane operations lifting components onto the tower) would be programmed, when appropriate, so that haulage vehicles would not arrive at or leave the site outside of core hours or other specific delivery hours, with the exception of abnormal loads that would be scheduled to avoid significant traffic flows.
- Ensure all vehicles and mechanical plant would be fitted with effective exhaust silencers and be subject to programmed maintenance.
- Select inherently quiet plant where appropriate - all major compressors would be 'sound reduced' models fitted with properly lined and sealed acoustic covers, which would be kept closed whenever the machines are in use.
- Ensure all ancillary pneumatic percussive tools would be fitted with mufflers or silencers of the type recommended by the manufacturers.
- Instruct that machines would be shut down between work periods or throttled down to a minimum.
- Regularly maintain all equipment used on site, including maintenance related to noise emissions.
- Vehicles would be loaded carefully to ensure minimal drop heights so as to minimise noise during this operation.
- Ensure all ancillary plant such as generators and pumps would be positioned so as to cause minimum noise disturbance and if necessary, temporary acoustic screens or enclosures should be provided.

Table 4-1: Predicted Construction Noise Immission Levels dB Leq,t

CNAL	Month/Scenario																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Night
CNAL1	20	28	30	29	31	31	34	35	35	34	33	33	32	28	25	23	22	20	10
CNAL2	29	35	35	33	34	34	36	38	37	35	35	36	34	30	25	23	21	26	nil
CNAL3	46	46	41	39	40	40	40	38	38	37	37	40	34	38	24	25	23	38	20
CNAL4	66	59	50	50	50	50	50	38	38	38	38	51	35	50	21	24	21	50	20
CNAL5	51	46	42	41	41	41	42	40	40	40	39	42	38	37	24	26	24	37	20
CNAL6	41	44	41	41	41	41	41	41	40	40	40	41	39	35	24	27	24	35	20
CNAL7	44	56	49	48	48	48	48	43	43	43	43	49	42	47	26	28	26	47	23
CNAL8	24	30	33	33	33	34	35	34	35	35	34	34	32	25	21	25	22	21	13
CNAL9	23	30	31	35	34	35	38	36	37	39	36	37	31	31	27	33	27	21	17
CNAL10	20	26	25	26	28	29	35	31	32	42	39	30	27	24	12	38	36	16	6

6 Summary

The noise impact assessment was undertaken to consider the construction of the Proposed Development. The guidance used was mostly contained in BS 5228: Part 1 2009+A1:2014 'Noise and vibration control on construction and open sites- Noise', specifically the ABC method of Annex E which defines potential thresholds depending on existing noise levels at local residential receptors.

Ten residential receptors neighbouring the Proposed Development were identified as the nearest NSRs to the proposed on-site construction activities.

Noise propagation modelling has been undertaken in the CadnaA noise modelling software and the anticipated noise immission levels presented for scenarios likely to occur throughout the construction period of the Proposed Development. The modelled scenarios consider a representative selection of activities throughout the indicative construction timetable and the modelling assumes that the construction activities are occurring at locations within the Site that are closest to the NSRs.

The predicted noise immission levels are below the Category A Daytime Threshold Levels of 65 dB(A) at all receptors except for CNAL4, during month 1 (this receptor is located directly beside the Eastern Site entrance). However, given the nature of the works, it is anticipated that the highest levels of noise would be experienced for, at most, only a small number of days.

The noise levels exceed the Weekend and Evening Category A Threshold Levels at CNAL4 and CNAL7 during months 1 and 2. While no works are planned during Evening and Weekend periods, if they are required, it is not expected that this would include upgrade of the access tracks/road junction around the Site entrance, therefore noise levels would also remain below the Weekend and Evening Category A Threshold Levels.

No construction is typically anticipated during Nighttime periods, however a scenario to consider generators running at the construction compounds was considered and predictions do not exceed the Nighttime threshold level of 45 dB(A).

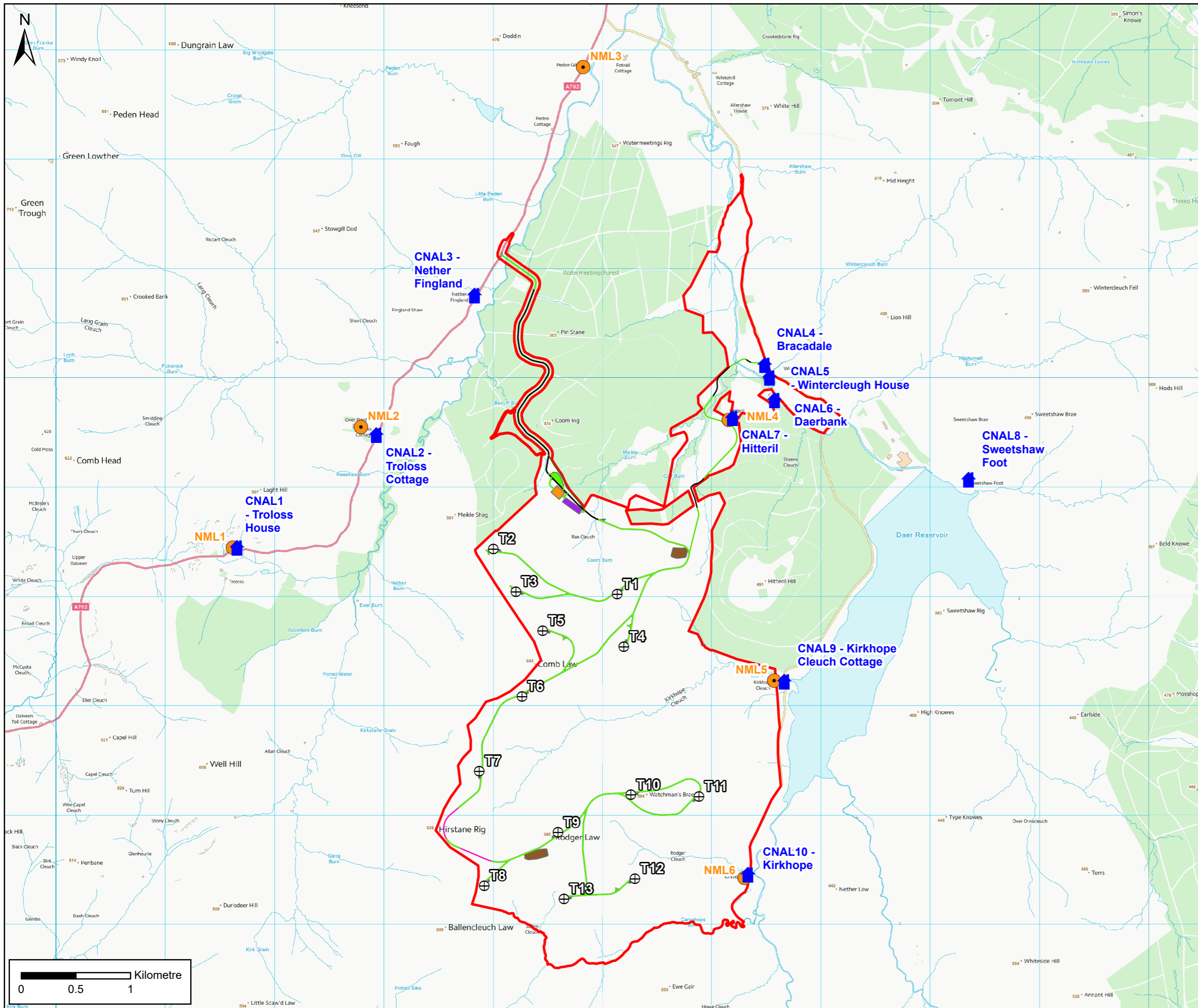
While the BS 5228 Category A Threshold Levels have been exceeded in specific instances, we do not expect the effect to be significant due to the duration of the works and magnitude of the exceedances. Accordingly, on-site construction noise impacts are below the indicator for a potential significant effect. Nevertheless, mitigation in the form of good practice during construction is recommended to keep noise to a minimum and recommendations in accordance with BS 5228 have been made in this report.

7 References

1. **UK Government.** Control of Pollution Act 1974. *legislation.gov.uk*. [Online] [Cited: 21 4 2025.] <https://www.legislation.gov.uk/ukpga/1974/40/contents>.
2. **Scottish Government.** *National Planning Framework 4*. Edinburgh : Scottish Government, 2023.
3. **The Scottish Government.** *Planning Advice Note: Planning and Noise*. s.l. : The Crown, 2011. PAN 1/2011.
4. —. *Technical Advice Note: Assessment of Noise*. s.l. : The Crown, 2011. TAN 1/2011.
5. **British Standards Institute.** *Noise and Vibration Control on Construction and Open Sites. Code of Practice for Basic Information and Procedures for Noise and Vibration Control*. s.l. : BSI, 1997. BS 5228:1997-Parts 1-5.
6. —. *5228 Part 1: Code of Practice for Noise and Vibration Control on Construction and Open Sites. Noise*. s.l. : BSI, 2014. BS 5228:2009 +A1:2014.
7. —. *5228 Part 2: Code of practice for noise and vibration control on construction and open sites. Vibration*. UK : BSI, 2014. BS 5228-2:2009+A1:2014.
8. **Forestry Commission.** *Noise Hazards in Forestry Operations and Selection of Personal Protective Equipment*. Edinburgh : The Crown, 2003.
9. **(ISO), International Organisation for Standardisation.** *Acoustics – Attenuation of Sound During Propagation Outdoors: Part 2: Engineering method for the prediction of sound pressure levels outdoors*. Geneva : ISO, 2024. ISO 9613-2:2024.
10. **UK Government.** The Control of Noise (Code of Practice for Construction and Open Sites) (England) Order 2015. *legislation.gov.uk*. [Online] [Cited: 25 4 2025.] <https://www.legislation.gov.uk/uksi/2015/227>.
11. **Ministry of Housing, Communities and Local Government.** National Planning Policy Framework (NPPF). *gov.uk*. [Online] [Cited: 25 4 25.] <https://www.gov.uk/guidance/national-planning-policy-framework>.
12. **Department for Environment, Food and Rural Affairs DEFRA.** *Noise Policy Statement for England (NPSE)*. UK : The Crown, 2010.

Annex A – Figures

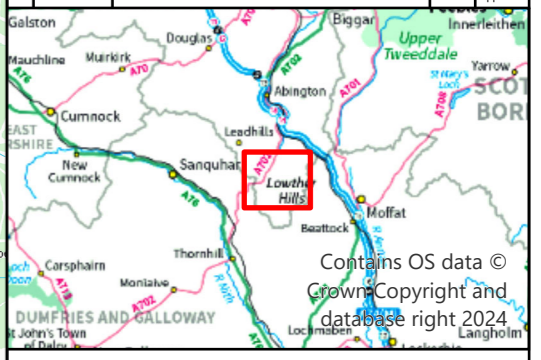
- Figure A1.1 – Construction Noise Assessment Locations and Study Area



LEGEND

- Noise Monitoring Locations (NMLs)
- Construction Noise Assessment Location (CNALs)
- Turbine Location
- Site Boundary
- Access Track (Existing) (Upgraded)
- Access Track (New)
- New Track - SUW Diversion
- Floating Track
- Battery Energy Storage System
- Borrow Pit Search Area
- Temporary Construction Compound
- Substation
- Turbine Hardstanding

Rev.	Date	Amendment Details	Drawn	Approved
2	18/12/2025	CLIENT COMMENTS	JCM	AD
1	16/12/2025	UPDATED LAYOUT	FL	AD
0	03/10/2025	FIRST ISSUE	FL	AD



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Client:	WATCHMAN ENERGY PARK LTD	
Drawing Status:	FOR PLANNING	
Project Title:	WATCHMAN ENERGY PARK	
Drawing Title:	FIGURE A1.1 CONSTRUCTION NOISE ASSESSMENT LOCATIONS AND STUDY AREA	
Scale:	1:32,500	Original Size: A3
Drawing Number:	16380-011	

Spatial Reference: British National Grid

Annex B – Baseline Data

- Ambient Sound Levels

Assessment Period	Measured Sound Pressure Level (Filtered) dB LAeq (t)										
	Daytime _{M-F}		Daytime _{Sat}		Evenings		Weekend		Night-time		
	Weekdays 07:00 - 19:00		Saturday 07:00 - 13:00		Weekdays 19:00 - 23:00		Saturday 13:00 – 23:00 & Sunday 07:00 to 23:00		All days 23:00 - 07:00		
	LAeq	t	LAeq	t	LAeq	t	LAeq	t	LAeq	t	
26/02/2025	56.7	60									
27/02/2025	56	330			46.8	40			48.4	340	
28/02/2025	52	10									
01/03/2025			54.7	10			46.2	30	46.6	50	
02/03/2025											
03/03/2025											
04/03/2025											
05/03/2025											
06/03/2025											
07/03/2025	48.5	100									
08/03/2025			51.4	90			48.1	170	41.6	410	
09/03/2025							50.1	850	36.1	410	
10/03/2025											
11/03/2025	48.5	20									
12/03/2025					26.6	50					
13/03/2025	47.4	300			36.5	240			38.9	310	
14/03/2025	48.6	260			38.4	240			42.1	480	
15/03/2025			50.7	360			45.8	600	35.1	330	
16/03/2025							47.3	270	54.1	40	
17/03/2025	47.6	150									
18/03/2025	49.3	180			30	20			43.7	470	
19/03/2025	49.5	660			32.5	240			44.7	370	
20/03/2025	49.9	640			39.1	10					
21/03/2025					29.1	10			25.2	10	
22/03/2025			49.7	80				47.2	480		
23/03/2025								44.4	270	25.6	320
24/03/2025	49.5	140									
25/03/2025	47.5	170			40.5	150			26.7	180	
26/03/2025											
27/03/2025											
28/03/2025											
29/03/2025											
30/03/2025							45.2	280	49.2	180	
31/03/2025	53.4	510			44.6	210					
01/04/2025	54.8	10							45.5	20	
02/04/2025					38.9	20			50.8	20	
03/04/2025									44.1	10	
04/04/2025	56.8	140			51	30			49.6	220	
05/04/2025			55.1	220			51	280	43.9	230	
06/04/2025							55.2	640	50	420	
07/04/2025	55.7	720			48.9	240			49.7	480	
08/04/2025	54.8	720			53.5	110			49.9	440	
09/04/2025	54.1	720			48.7	240			50.1	470	
10/04/2025	56.4	30									
11/04/2025	55.9	570			53.7	240			41	70	
12/04/2025			53.2	50			51.8	10			
13/04/2025							59.7	170			
14/04/2025									54.9	90	
15/04/2025	55.6	230									
Average	53		53		43		50		43		

NML02	Measured Sound Pressure Level (Filtered) dB LAeq (t)									
	Daytime _{M-F}		Daytime _{Sat}		Evenings		Weekend		Night-time	
	Weekdays 07:00 - 19:00		Saturday 07:00 - 13:00		Weekdays 19:00 - 23:00		Saturday 13:00 – 23:00 & Sunday 07:00 to 23:00		All days 23:00 - 07:00	
Assessment Period	LAeq	t	LAeq	t	LAeq	t	LAeq	t	LAeq	t
26/02/2025	41.5	60								
27/02/2025	41.7	330			38.2	40			37.6	340
28/02/2025	42.5	10								
01/03/2025			41.8	10			34.3	30	36.4	50
02/03/2025										
03/03/2025										
04/03/2025										
05/03/2025										
06/03/2025										
07/03/2025	36.1	100								
08/03/2025			40.8	90			46.4	170	43	410
09/03/2025							40.3	850	32.9	410
10/03/2025										
11/03/2025	33.7	20								
12/03/2025					33.8	50				
13/03/2025	35.9	300			31.2	240			38.7	310
14/03/2025	37.3	260			33.8	240			31.7	480
15/03/2025			41.6	360			33.9	600	31.4	330
16/03/2025							37.1	270	42.8	40
17/03/2025	49.4	150								
18/03/2025	43.4	180			27.9	20			33.6	470
19/03/2025	43.9	660			27.5	240			41	370
20/03/2025	42.2	640			33.3	10				
21/03/2025					36.6	10			30.1	10
22/03/2025			44.2	80			42.5	480		
23/03/2025							39	270	31.3	320
24/03/2025	42.8	140								
25/03/2025	39.6	170			33.6	150			26.9	180
26/03/2025										
27/03/2025										
28/03/2025										
29/03/2025										
30/03/2025							34.5	280	44.5	180
31/03/2025	45.7	510			35.2	210				
01/04/2025	44.6	10							31.3	20
02/04/2025					34.3	20			41.9	20
03/04/2025									38	10
04/04/2025	44.9	140			41	30			43.5	220
05/04/2025			47.2	220			41	280	33.8	230
06/04/2025							47.1	640	36.3	420
07/04/2025	41.9	720			38.8	240			42.3	480
08/04/2025	44.3	720			40.7	110			43.6	440
09/04/2025	45.8	720			38.7	240			45.7	470
10/04/2025	48.5	30								
11/04/2025	39.6	570			43.3	240			39.2	70
12/04/2025			45.6	50			38.1	10		
13/04/2025							42.6	170		
14/04/2025									52.5	90
15/04/2025	43.1	230								
Average	43		44		35		41		38	

NML03	Measured Sound Pressure Level (Filtered) dB LAeq (t)									
	Daytime _{M-F}		Daytime _{Sat}		Evenings		Weekend		Night-time	
	Weekdays 07:00 - 19:00		Saturday 07:00 - 13:00		Weekdays 19:00 - 23:00		Saturday 13:00 – 23:00 & Sunday 07:00 to 23:00		All days 23:00 - 07:00	
Assessment Period	LAeq	t	LAeq	t	LAeq	t	LAeq	t	LAeq	t
26/02/2025	60.1	60								
27/02/2025	60.1	330			51.4	40			50.9	340
28/02/2025	57.5	10								
01/03/2025					58.6	10			54.1	30
02/03/2025										
03/03/2025										
04/03/2025										
05/03/2025										
06/03/2025										
07/03/2025	51.8	100								
08/03/2025					51.5	90			52.6	170
09/03/2025									59.9	850
10/03/2025									42.3	410
11/03/2025										
12/03/2025	37	20								
13/03/2025					55	50				
14/03/2025	52.9	300			51.3	240			42.3	310
15/03/2025	58.4	260			57.2	240			43.6	480
16/03/2025					57.4	360			60.6	600
17/03/2025									57.2	270
18/03/2025	54.7	150							51	40
19/03/2025	50.7	180			38.9	20			46	470
20/03/2025	53.7	440								
Average	54		57		54		60		44	

NML04	Measured Sound Pressure Level (Filtered) dB LAeq (t)									
	Daytime _{M-F}		Daytime _{Sat}		Evenings		Weekend		Night-time	
	Weekdays 07:00 - 19:00		Saturday 07:00 - 13:00		Weekdays 19:00 - 23:00		Saturday 13:00 – 23:00 & Sunday 07:00 to 23:00		All days 23:00 - 07:00	
Assessment Period	LAeq	t	LAeq	t	LAeq	t	LAeq	t	LAeq	t
26/02/2025	37.2	60								
27/02/2025	38.1	330			38.5	40			32.9	340
28/02/2025	41.5	10								
01/03/2025			33.4	10			28.4	30	27.1	50
02/03/2025										
03/03/2025										
04/03/2025										
05/03/2025										
06/03/2025										
07/03/2025	37.2	100								
08/03/2025			40.7	90			34.4	170	30.9	410
09/03/2025							35.9	850	28.9	410
10/03/2025										
11/03/2025	37.4	20								
12/03/2025					31.8	50			27.5	310
13/03/2025	32.8	300			28.1	240			31.6	480
14/03/2025	35.2	260			28.8	240			27.8	330
15/03/2025			35.7	360			31.5	600	27.8	330
16/03/2025							34.4	270	38.3	40
17/03/2025	36.3	150								
18/03/2025	32.4	180			27.3	20			32	470
19/03/2025	36.4	670			28.6	240			36.4	370
20/03/2025	39.5	640			31.6	10				
21/03/2025					30.5	10			25.5	10
22/03/2025			35.9	80			33.4	480		
23/03/2025							33.3	270	27.5	320
24/03/2025	35.6	140								
25/03/2025	33.9	170			27.2	150			26.4	180
26/03/2025										
27/03/2025										
28/03/2025										
29/03/2025										
30/03/2025							32.9	280	34.1	180
31/03/2025	37.8	510			31.1	210				
01/04/2025	37	10							32.9	20
02/04/2025					30	20			32.4	20
03/04/2025									31.4	10
04/04/2025	36.2	140			37.9	30			33.5	220
05/04/2025			34.9	220			31.9	280	28	230
06/04/2025							37.6	640	46.2	420
07/04/2025	36.1	720			30	240			31.4	480
08/04/2025	36.8	720			31.3	110			31.4	440
09/04/2025	35.3	720			31.5	240			46.9	470
10/04/2025	39.9	30								
11/04/2025	33.5	570			30.4	240			25.9	70
12/04/2025			37.3	50			38.5	10		
13/04/2025							37.8	170		
14/04/2025									46.7	90
15/04/2025	39.8	220								
Average	36		35		30		35		33	

NML05	Measured Sound Pressure Level (Filtered) dB LAeq (t)									
	Daytime _{M-F}		Daytime _{Sat}		Evenings		Weekend		Night-time	
	Weekdays 07:00 - 19:00		Saturday 07:00 - 13:00		Weekdays 19:00 - 23:00		Saturday 13:00 – 23:00 & Sunday 07:00 to 23:00		All days 23:00 - 07:00	
Assessment Period	LAeq	t	LAeq	t	LAeq	t	LAeq	t	LAeq	t
26/02/2025	40.2	60								
27/02/2025	40.5	330			41.1	40			40.8	340
28/02/2025	41.8	10								
01/03/2025					37.8	10			35.9	30
02/03/2025										
03/03/2025										
04/03/2025										
05/03/2025										
06/03/2025										
07/03/2025	37.5	100								
08/03/2025			42.5	90					39.2	170
09/03/2025									39.3	850
10/03/2025										
11/03/2025	42	20								
12/03/2025					36.5	50				
13/03/2025	41.5	300			33.8	240			35.8	310
14/03/2025	37.9	260			36.5	240			37.6	480
15/03/2025			40.2	360					36.3	600
16/03/2025									44.6	270
17/03/2025	39.1	150							43.5	40
18/03/2025	39.5	180			36.2	20			38.1	470
19/03/2025	37.5	670			36.7	240			39.1	370
20/03/2025	36.7	640			38	10				
21/03/2025					36.3	10			37.7	10
22/03/2025			40.3	80					35.8	480
23/03/2025									36.2	270
24/03/2025	38.3	140							35.1	320
25/03/2025	38.9	170			34.4	150			35.8	180
26/03/2025										
27/03/2025										
28/03/2025										
29/03/2025										
30/03/2025									37.8	280
31/03/2025	42.9	510			38	210			41.4	180
01/04/2025	40.3	10							35.9	20
02/04/2025					36	20			38.3	20
03/04/2025									36.4	10
04/04/2025	40.9	140			40.1	30			43.5	220
05/04/2025			40	220					35.9	280
06/04/2025									38.6	640
07/04/2025	36	720			35.6	240			38.1	480
08/04/2025	38.3	720			36.1	110			38.6	440
09/04/2025	37.7	720			36.9	240			38.1	470
10/04/2025	41.2	30								
11/04/2025	35.7	570			36.8	240			36.7	70
12/04/2025			39.3	50					34.5	10
13/04/2025									42.7	170
14/04/2025									46.7	90
15/04/2025	43	210								
Average	38		40		36		38		38	

Annex C – Noise Model Data

Scenario & Activity Description	Plant	Data Source
Month 1		
Road junction upgrades - Point Source at both Site entrances	Dumper, Dozer, Tracked Excavator, Vibratory roller	BS 5228 ref C4.3, C2.12, C2.14, C5.20 respectively
Forestry Activities (Eastern Access) – Line Source (~0.7 m) along access track	Forwarder, Harvester, Skidder	TNEI Library
Forestry Activities (Western Access) – Line Source (~1 km) along access track	Forwarder, Harvester, Skidder	TNEI Library
Month 2		
Construction of TCC - Point Source	Dumper, Dozer, Tracked Excavator, Vibratory roller	BS 5228 ref C4.3, C2.12, C2.14, C5.20 respectively
Upgrade of Access track (Western Access) (~1.6 km) – Line Source from entrance towards CC	Dumper, Dozer, Tracked Excavator, Vibratory roller	BS 5228 ref C4.3, C2.12, C2.14, C5.20 respectively
Upgrade of Access track (Eastern Access) (~0.6 km) – Line Source from entrance towards CC	Dumper, Dozer, Tracked Excavator, Vibratory roller	BS 5228 ref C4.3, C2.12, C2.14, C5.20 respectively
Deliveries - Line Source from site entrance to TCC (for both site accesses)	Road lorry (full)	BS 5228 ref C6.21
Forestry Activities (Western Access) – Line Source (~0.6 km) continuing along Site entrance	Forwarder, Harvester, Skidder	TNEI Library
First Borrow pit in operation – Point Source	Excavator mounted rock breaker, Tracked semi-mobile crusher, Dumper, Dozer, Tracked Excavator	BS5228 ref C9.12, C9.15, C4.3, C2.12, C2.14 respectively
Month 3		
Deliveries - Line Source from Site entrance to TCC (for both site accesses)	Road lorry (full)	BS 5228 ref C6.21
Operation of TCC - Point Source	Diesel generator, Diesel generator-lights, Wheeled Excavator	BS5228 ref C4.84, C4.86, C.4.10 respectively
Forestry Activities (Western Access) – Line Source (~0.8 km) continuing to TCC	Forwarder, Harvester, Skidder	TNEI Library
Upgrade of Access track (Eastern Access) - Line Source (~2.3 km) to first borrow pit and then to TCC	Dumper, Dozer, Tracked Excavator, Vibratory roller	BS 5228 ref C4.3, C2.12, C2.14, C5.20 respectively
Upgrade of Access track (Western Access) (~2 km) – Line Source continuing onto the TCC	Dumper, Dozer, Tracked Excavator, Vibratory roller	BS 5228 ref C4.3, C2.12, C2.14, C5.20 respectively
Upgrade of Access track (Western Access) – Line Source (~1 km) from TCC to first borrow pit	Dumper, Dozer, Tracked Excavator, Vibratory roller	BS 5228 ref C4.3, C2.12, C2.14, C5.20 respectively
Borrow pit in operation – Point Source	Excavator mounted rock breaker, Tracked semi-mobile crusher, Dumper, Dozer, Tracked Excavator	BS5228 ref C9.12, C9.15, C4.3, C2.12, C2.14 respectively
Month 4		

NML06	Measured Sound Pressure Level (Filtered) dB LAeq (t)									
	Daytime _{M-F}		Daytime _{Sat}		Evenings		Weekend		Night-time	
	Weekdays 07:00 - 19:00		Saturday 07:00 - 13:00		Weekdays 19:00 - 23:00		Saturday 13:00 – 23:00 & Sunday 07:00 to 23:00		All days 23:00 - 07:00	
	LAeq	t	LAeq	t	LAeq	t	LAeq	t	LAeq	t
26/02/2025	38.5	60								
27/02/2025	34.4	330			37.6	40			34.7	340
28/02/2025	34.1	10								
01/03/2025			33.6	10			31.7	30	30.3	50
02/03/2025										
03/03/2025										
04/03/2025										
05/03/2025										
06/03/2025										
07/03/2025	33.2	100								
08/03/2025			34.6	90			35.2	170	37.6	410
09/03/2025							35	850	33.5	410
10/03/2025										
11/03/2025	35.9	20								
12/03/2025					32.5	50				
13/03/2025	37	300			30.3	240			29	310
14/03/2025	50.4	260			31.2	240			32.7	480
15/03/2025			39.9	360			47.2	600	30.8	330
16/03/2025							41.4	270	32.7	40
17/03/2025	31.3	150								
18/03/2025	29.5	180			29.6	20			31.9	470
19/03/2025	37.5	670			30.1	240			31.5	370
20/03/2025	33.9	640			33.4	10				
21/03/2025					28.2	10			25.7	10
22/03/2025			34.2	80			31.5	480		
23/03/2025							33.5	270	31.8	320
24/03/2025	31.4	140								
25/03/2025	33.5	170			32.2	150			29.1	180
26/03/2025										
27/03/2025										
28/03/2025										
29/03/2025										
30/03/2025							31.8	280	42.4	180
31/03/2025	46.7	510			31.4	210				
01/04/2025	34.1	10							30.1	20
02/04/2025					30.9	20			32.9	20
03/04/2025									28.2	10
04/04/2025	37.3	140			35.4	30			32.8	220
05/04/2025			43	220			31.4	280	31	230
06/04/2025							35.4	640	33.3	420
07/04/2025	37.3	720			30.4	240			34.6	480
08/04/2025	35.3	720			30.2	110			32.7	440
09/04/2025	36.9	720			30.7	240			32.2	470
10/04/2025	42	30								
11/04/2025	32	570			33.3	240			32.5	70
12/04/2025			33.1	50			43.9	10		
13/04/2025							34.5	170		
14/04/2025									39.8	90
15/04/2025	40.5	200								
Average	37		41		31		37		33	

Scenario & Activity Description	Plant	Data Source
Deliveries - Line Source from Site entrance to TCC (for both site accesses)	Road lorry (full)	BS 5228 ref C6.21
Operation of TCC - Point Source	Diesel generator, Diesel generator-lights, Wheeled Excavator	BS5228 ref C4.84, C4.86, C.4.10 respectively
Upgrade of Access track – Line Source (1.3 km) from first borrow pit to T4	Dumper, Dozer, Tracked Excavator, Vibratory roller	BS 5228 ref C4.3, C2.12, C2.14, C5.20 respectively
Concrete Batching – Point Source	Water pump (diesel), Concrete mixer truck, Diesel generator	BS 5228 ref C4.88, C4.20, C4.84 respectively
Borrow pit in operation – Point Source	Excavator mounted rock breaker, Tracked semi-mobile crusher, Dumper, Dozer, Tracked Excavator	BS5228 ref C9.12, C9.15, C4.3, C2.12, C2.14 respectively
Month 5		
Deliveries - Line Source from site entrance to TCC (for both Site accesses)	Road lorry (full)	BS 5228 ref C6.21
Operation of TCC - Point Source	Diesel generator, Diesel generator-lights, Wheeled Excavator	BS5228 ref C4.84, C4.86, C.4.10 respectively
Upgrade of Access track – Line Source (2 of) tracks to T2 and T3 and to T6	Dumper, Dozer, Tracked Excavator, Vibratory roller	BS 5228 ref C4.3, C2.12, C2.14, C5.20 respectively
Concrete Batching – Point Source (1 of)	Water pump (diesel), Concrete mixer truck, Diesel generator	BS 5228 ref C4.88, C4.20, C4.84 respectively
Borrow pit in operation – Point Source	Excavator mounted rock breaker, Tracked semi-mobile crusher, Dumper, Dozer, Tracked Excavator	BS5228 ref C9.12, C9.15, C4.3, C2.12, C2.14 respectively
Month 6		
Deliveries - Line Source from site entrance to TCC (for both site accesses)	Road lorry (full)	BS 5228 ref C6.21
Operation of TCC - Point Source	Diesel generator, Diesel generator-lights, Wheeled Excavator	BS5228 ref C4.84, C4.86, C.4.10 respectively
Upgrade of Access track – Line Source (~2.5 km) from T6 to T9	Dumper, Dozer, Tracked Excavator, Vibratory roller	BS 5228 ref C4.3, C2.12, C2.14, C5.20 respectively
Concrete Batching – Point Source (1 of)	Water pump (diesel), Concrete mixer truck, Diesel generator	BS 5228 ref C4.88, C4.20, C4.84 respectively
Construction of turbine hardstanding – Point Source (2 of) for T1 and T4	Dumper, Dozer, Tracked Excavator, Vibratory roller	BS 5228 ref C4.3, C2.12, C2.14, C5.20 respectively
Both borrow pits in operation – Point Source	Excavator mounted rock breaker, Tracked semi-mobile crusher, Dumper, Dozer, Tracked Excavator	BS5228 ref C9.12, C9.15, C4.3, C2.12, C2.14 respectively
Month 7		
Deliveries - Line Source from Site entrance to TCC (for both site accesses)	Road lorry (full)	BS 5228 ref C6.21
Operation of TCC - Point Source	Diesel generator, Diesel generator-lights, Wheeled Excavator	BS5228 ref C4.84, C4.86, C.4.10 respectively
Upgrade of Access track – Line Source (2 of) (~3 km) from T9 to T11 and tracks to T12 and T13	Dumper, Dozer, Tracked Excavator, Vibratory roller	BS 5228 ref C4.3, C2.12, C2.14, C5.20 respectively
Concrete Batching – Point Source (1 of)	Water pump (diesel), Concrete mixer truck, Diesel generator	BS 5228 ref C4.88, C4.20, C4.84 respectively

Scenario & Activity Description	Plant	Data Source
Both borrow pits in operation – Point Source	Excavator mounted rock breaker, Tracked semi-mobile crusher, Dumper, Dozer, Tracked Excavator	BS5228 ref C9.12, C9.15, C4.3, C2.12, C2.14 respectively
Construction of turbine foundations – Point Source (2 of) for T1 and T4	Concrete mixer truck + truck mounted concrete pump + boom arm, Road lorry (full), Tracked Excavator	BS 5228 ref C4.32, C6.21, C2.14 respectively
Construction of turbine hardstanding – Point Source (2 of) for T2 and T3	Dumper, Dozer, Tracked Excavator, Vibratory roller	BS 5228 ref C4.3, C2.12, C2.14, C5.20 respectively
Month 8		
Operation of TCC - Point Source	Diesel generator, Diesel generator-lights, Wheeled Excavator	BS5228 ref C4.84, C4.86, C.4.10 respectively
Concrete Batching – Point Source (1 of)	Water pump (diesel), Concrete mixer truck, Diesel generator	BS 5228 ref C4.88, C4.20, C4.84 respectively
Both borrow pits in operation – Point Source	Excavator mounted rock breaker, Tracked semi-mobile crusher, Dumper, Dozer, Tracked Excavator	BS5228 ref C9.12, C9.15, C4.3, C2.12, C2.14 respectively
Construction of turbine foundations – Point Source (2 of) for T2 and T3	Concrete mixer truck + truck mounted concrete pump + boom arm, Road lorry (full), Tracked Excavator	BS 5228 ref C4.32, C6.21, C2.14 respectively
Construction of substation and BESS – Point Source (2 of)	Concrete mixer truck + truck mounted concrete pump + boom arm, Road lorry (full), Tracked Excavator, Mobile telescopic crane	BS 5228 ref C4.32, C6.21, C2.14, C4.45 respectively
Construction of turbine hardstanding – Point Source (2 of) for T5 and T6	Dumper, Dozer, Tracked Excavator, Vibratory roller	BS 5228 ref C4.3, C2.12, C2.14, C5.20 respectively
Month 9		
Operation of TCC - Point Source	Diesel generator, Diesel generator-lights, Wheeled Excavator	BS5228 ref C4.84, C4.86, C.4.10 respectively
Concrete Batching – Point Source (1 of)	Water pump (diesel), Concrete mixer truck, Diesel generator	BS 5228 ref C4.88, C4.20, C4.84 respectively
Both borrow pits in operation – Point Source	Excavator mounted rock breaker, Tracked semi-mobile crusher, Dumper, Dozer, Tracked Excavator	BS5228 ref C9.12, C9.15, C4.3, C2.12, C2.14 respectively
Construction of turbine foundations – Point Source (3 of) for T5, T6, T7	Concrete mixer truck + truck mounted concrete pump + boom arm, Road lorry (full), Tracked Excavator	BS 5228 ref C4.32, C6.21, C2.14 respectively
Construction of substation and BESS – Point Source (2 of)	Concrete mixer truck + truck mounted concrete pump + boom arm, Road lorry (full), Tracked Excavator, Mobile telescopic crane	BS 5228 ref C4.32, C6.21, C2.14, C4.45 respectively
Construction of turbine hardstanding – Point Source (3 of) for T7, T8, T9	Dumper, Dozer, Tracked Excavator, Vibratory roller	BS 5228 ref C4.3, C2.12, C2.14, C5.20 respectively
Month 10		
Operation of TCC - Point Source	Diesel generator, Diesel generator-lights, Wheeled Excavator	BS5228 ref C4.84, C4.86, C.4.10 respectively
Concrete Batching – Point Source (1 of)	Water pump (diesel), Concrete mixer truck, Diesel generator	BS 5228 ref C4.88, C4.20, C4.84 respectively

Scenario & Activity Description	Plant	Data Source
Both borrow pits in operation – Point Source	Excavator mounted rock breaker, Tracked semi-mobile crusher, Dumper, Dozer, Tracked Excavator	BS5228 ref C9.12, C9.15, C4.3, C2.12, C2.14 respectively
Construction of turbine foundations – Point Source (4 of) for T8, T9, T10, T11	Concrete mixer truck + truck mounted concrete pump + boom arm, Road lorry (full), Tracked Excavator	BS 5228 ref C4.32, C6.21, C2.14 respectively
Construction of substation and BESS – Point Source (2 of)	Concrete mixer truck + truck mounted concrete pump + boom arm, Road lorry (full), Tracked Excavator, Mobile telescopic crane	BS 5228 ref C4.32, C6.21, C2.14, C4.45 respectively
Construction of turbine hardstanding – Point Source (2 of) for T10 and T11	Dumper, Dozer, Tracked Excavator, Vibratory roller	BS 5228 ref C4.3, C2.12, C2.14, C5.20 respectively
Month 11		
Operation of TCC - Point Source	Diesel generator, Diesel generator-lights, Wheeled Excavator	BS5228 ref C4.84, C4.86, C.4.10 respectively
Concrete Batching – Point Source (1 of)	Water pump (diesel), Concrete mixer truck, Diesel generator	BS 5228 ref C4.88, C4.20, C4.84 respectively
Both borrow pits in operation – Point Source	Excavator mounted rock breaker, Tracked semi-mobile crusher, Dumper, Dozer, Tracked Excavator	BS5228 ref C9.12, C9.15, C4.3, C2.12, C2.14 respectively
Construction of turbine foundations – Point Source (2 of) for T12 and T13	Concrete mixer truck + truck mounted concrete pump + boom arm, Road lorry (full), Tracked Excavator	BS 5228 ref C4.32, C6.21, C2.14 respectively
Construction of substation and BESS – Point Source (2 of)	Concrete mixer truck + truck mounted concrete pump + boom arm, Road lorry (full), Tracked Excavator, Mobile telescopic crane	BS 5228 ref C4.32, C6.21, C2.14, C4.45 respectively
Construction of turbine hardstanding – Point Source (2 of) for T12 and T13	Dumper, Dozer, Tracked Excavator, Vibratory roller	BS 5228 ref C4.3, C2.12, C2.14, C5.20 respectively
Month 12		
Operation of TCC - Point Source	Diesel generator, Diesel generator-lights, Wheeled Excavator	BS5228 ref C4.84, C4.86, C.4.10 respectively
Concrete Batching – Point Source (1 of)	Water pump (diesel), Concrete mixer truck, Diesel generator	BS 5228 ref C4.88, C4.20, C4.84 respectively
Both borrow pits in operation – Point Source	Excavator mounted rock breaker, Tracked semi-mobile crusher, Dumper, Dozer, Tracked Excavator	BS5228 ref C9.12, C9.15, C4.3, C2.12, C2.14 respectively
Construction of substation and BESS – Point Source (2 of)	Concrete mixer truck + truck mounted concrete pump + boom arm, Road lorry (full), Tracked Excavator, Mobile telescopic crane	BS 5228 ref C4.32, C6.21, C2.14, C4.45 respectively
Erection of turbines – Point Source (2 of) for T1 and T4	Mobile Telescopic Crane x2	BS 5228 ref C4.45
Delivery of Cranes (Eastern Access) – Line Source (~4 km) from Site entrance to TCC	Mobile Telescopic Crane	BS 5228 ref C4.45
Delivery of Cranes (Western Access) – Line Source (~2.7 km) from Site entrance to TCC	Mobile Telescopic Crane	BS 5228 ref C4.45
Month 13		

Scenario & Activity Description	Plant	Data Source
Operation of TCC - Point Source	Diesel generator, Diesel generator-lights, Wheeled Excavator	BS5228 ref C4.84, C4.86, C.4.10 respectively
Concrete Batching – Point Source (1 of)	Water pump (diesel), Concrete mixer truck, Diesel generator	BS 5228 ref C4.88, C4.20, C4.84 respectively
Borrow pits in operation – Point Source	Excavator mounted rock breaker, Tracked semi-mobile crusher, Dumper, Dozer, Tracked Excavator	BS5228 ref C9.12, C9.15, C4.3, C2.12, C2.14 respectively
Erection of turbines – Point Source (2 of) for T2 and T3	Mobile Telescopic Crane x2	BS 5228 ref C4.45
Month 14		
Operation of TCC - Point Source	Diesel generator, Diesel generator-lights, Wheeled Excavator	BS5228 ref C4.84, C4.86, C.4.10 respectively
Erection of turbines – Point Source (2 of) for T5 and T6	Mobile Telescopic Crane x2	BS 5228 ref C4.45
Delivery of Cranes (Eastern Access) – Line Source (~4 km) from Site entrance to TCC	Mobile Telescopic Crane	BS 5228 ref C4.45
Delivery of Cranes (Western Access) – Line Source (~2.7 km) from Site entrance to TCC	Mobile Telescopic Crane	BS 5228 ref C4.45
Month 15		
Operation of TCC - Point Source	Diesel generator, Diesel generator-lights, Wheeled Excavator	BS5228 ref C4.84, C4.86, C.4.10 respectively
Erection of turbines – Point Source (2 of) for T7 and T8	Mobile Telescopic Crane x2	BS 5228 ref C4.45
Month 16		
Operation of TCC - Point Source	Diesel generator, Diesel generator-lights, Wheeled Excavator	BS5228 ref C4.84, C4.86, C.4.10 respectively
Erection of turbines – Point Source (3 of) for T9, T10, T11	Mobile Telescopic Crane x2	BS 5228 ref C4.45
Month 17		
Operation of TCC - Point Source	Diesel generator, Diesel generator-lights, Wheeled Excavator	BS5228 ref C4.84, C4.86, C.4.10 respectively
Erection of turbines – Point Source (2 of) for T12, T13	Mobile Telescopic Crane x2	BS 5228 ref C4.45
Month 18		
Operation of TCC - Point Source	Diesel generator, Diesel generator-lights	BS5228 ref C4.84, C4.86 respectively
Removal of Cranes (Eastern Access) – Line Source (~4 km) from TCC to Site entrance	Mobile Telescopic Crane	BS 5228 ref C4.45
Removal of Cranes (Western Access) – Line Source (~2.7 km) from TCC to Site entrance	Mobile Telescopic Crane	BS 5228 ref C4.45
Night		
Generators at TCCs – Point Source	Diesel generator, Diesel generator-lights	BS5228 ref C4.84, C4.86 respectively

Name	31.5	63	125	250	500	1k	2k	4k	8k	A	lin	Source
Wheeled Excavator	28	92	88	91	92	90	85	79	73	94	98	BS 5228 C4. 10
Harvester					103					103		Noise Hazards in Forestry Operations and Selection of Personal Protective Equipment
Forwarder					101					101		Noise Hazards in Forestry Operations and Selection of Personal Protective Equipment
Skidder					108					108		Noise Hazards in Forestry Operations and Selection of Personal Protective Equipment

Name	31.5	63	125	250	500	1k	2k	4k	8k	A	lin	Source
Tracked Excavator	28	113	106	105	105	101	99	96	91	107	115	BS 5228 C2. 14
Dumper	28	112	109	102	101	100	96	89	81	104	115	BS 5228 C4. 3
Dozer		113	102	104	101	100	106	90	84	109	115	BS 5228 C2. 12
Concrete mixer truck + truck mounted concrete pump + boom arm	28	101	101	105	104	100	98	93	90	106	110	BS 5228 C4. 32
Mobile telescopic crane	28	118	109	106	102	105	104	97	89	109	119	BS 5228 C4. 45
Diesel generator	28	103	100	104	98	97	93	84	75	102	108	BS 5228 C4. 84
Diesel generator - lights	28	106	99	94	90	87	83	84	77	94	107	BS 5228 C4. 86
Vibratory roller	28	118	110	101	100	98	93	87	82	103	119	BS 5228 C5. 20
Excavator mounted rock breaker	28	119	117	113	117	115	115	112	108	121	125	BS 5228 C9. 12
Tracked semi-mobile crusher	28	119	119	116	115	113	111	106	96	118	124	BS 5228 C9. 15
Water pump (diesel)	28	98	93	94	92	92	91	84	74	97	102	BS 5228 C4. 88
Road Lorry	28	121	107	104	102	101	100	97	94	107	121	BS 5228 C11. 14