APPENDIX 12-1

DECOMISSING AND CONSTRUCTION NOISE REPORT

A specialist energy consultancy

Appendix 12-1

Construction Noise Report

Clonberne Wind Farm

MKO Ireland

13772-006 R0
25 June 2024

COMMERCIAL IN CONFIDENCE

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Executive Summary

TNEI Services Limited (TNEI) was commissioned by MKO ('the Applicant') to undertake predictions of noise levels associated with the construction of the proposed Clonberne Wind Farm. The noise predictions were used to assess the potential impact of noise attributable to the construction of the Proposed Project on nearby Noise Sensitive Receptors, all of which are residential properties.

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 ISO9613: 1996 *'Acoustics–- Attenuation of sound during propagation outdoors' -Part 2: General Method of Calculation*', together with noise data for appropriate construction plant and activities.

A total of 239 Noise Sensitive Receptors (NSRs) have been identified within a 2 km search area of the Wind Farm Site (defined from turbine locations within the Wind Farm Site).

Predictions have been made at all identified noise sensitive receptors assuming that all items of plant were operating continually 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 at all receptors would be below the noise threshold levels detailed in BS 5228. Accordingly, the assessment concludes that there would be no significant construction noise impacts.

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1 Introduction

1.1 Brief

1.1.1 TNEI was commissioned by MKO Ireland on behalf of Clonberne Wind Farm Limited ('the Applicant') to undertake a construction noise assessment for the proposed Clonberne Wind Farm (hereinafter referred to as the Proposed Project). The following steps summarise the noise assessment process:

- Establish typical ambient noise levels at noise sensitive receptors located closest to the anticipated construction activities and derive appropriate noise threshold levels in accordance with BS5228-1:2009 +A1:2014 [(1)];
- Undertake predictions of activity noise from different construction phases that would be incident at the nearest sensitive receptors;
- Compare the predicted noise levels with the derived threshold values; and,
- Identify any requirements for mitigation measures, if needed.

1.2 Nomenclature

1.2.1 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 all identified receptors that are sensitive to noise (typically residential properties); and
- **CNAL** (Construction Noise Assessment Location) refers to any location where the noise immission levels are calculated and assessed.

1.2.2 Unless otherwise stated, all noise levels refer to free field levels i.e. noise levels without influence from any nearby reflective surfaces.

1.2.3 As detailed in Chapter 1 of the EIAR, the following references the various project components are described and assessed using the following references: 'Proposed Project', 'the Site', 'Wind Farm Site' and 'Grid Connection'.

1.3 Site Description

1.3.1 The Wind Farm Site is located approximately 12 km northeast of Tuam Co. Gallway. The approximate Irish Transverse Mercator (ITM) reference for the centre if the site is 554500, 757000 and the locations of the proposed 11 wind turbines and site infrastructure during the construction phase are shown on Figure A1.1 in Annex A. The Grid Connection includes for underground cabling from the proposed onsite 220 kV substation within the Wind Farm Site to the connection point (including two new interface towers). The underground cabling

route, measuring approximately 2.5 km in length, will be partially located within the public road corridor.

1.3.2 The Wind Farm Site will be accessed through improved entrances off the R328 (to the north) and Claddagh East (to the west); the northern entrance will be used for the majority of site traffic, and the western entrance will be used to access the borrow pit. Construction noise impacts from vehicles improving and using this access track are considered within this assessment, as well as all anticipated noise generating construction activity occurring within the Site.

1.3.3 Construction of the Proposed Project would require tree felling, the laying of tracks across the site, establishing two temporary construction compounds, excavation of turbine foundations, construction of turbine bases, installation of turbines, and the installation of a substation and associated underground electrical cabling route. EIAR Chapter 4: Description can be referred to for a detailed description of the Proposed Project and the construction requirements.

1.3.4 Construction for this scale of wind farm is anticipated to last for 18-24 months. An indicative construction timeline is detailed in Table 1.1. Activities denoted with blue cells have been included in the noise assessment. Activities denoted with grey cells are considered to be non-contributory to the noise produced from the construction activities.

Table 1.1: Indicative Construction Timetable

Task	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Site Health & Safety								
Grid Connection								
Site Compounds								
Site Roads								
Substation and Electrical Works								
Turbine Hardstands								
Turbine Foundations								
Backfilling and Landscaping								
Turbine Delivery & Erection								
Substation Commissioning								
Turbine Commissioning								

1.3.5 TNEI has undertaken noise propagation modelling for five quarterly periods, which are representative of the loudest construction activities that could take place, denoted as

scenarios 1-5 representing quarters 1, 3, 5, 6 and 7, respectively. Although no construction activities are anticipated during the night-time, an additional scenario has been assessed that considers any potential noise from the operation of generators and other types of plant that may be left on overnight.

1.3.6 In addition to the above construction activities, underground electrical cabling will be laid to connect the Wind Farm Site to the proposed 220 kV Grid Connection point. The temporary noise effects that are likely to occur along the length of the underground electrical cabling route are also considered within this assessment.

2 Noise Planning Policy and Guidance

2.1 Overview of Noise Planning Policy and Guidance

2.1.1 There is no published Irish guidance that contains noise limits or assessment methods for construction activities other than a 2014 document published by the National Roads Authority (NRA), which relates to noise from road developments only. The Association of Acoustic Consultants of Ireland, however, have published *Environmental Noise Guidance for Local Authority Planning & Enforcement Departments* [2], which states; *"The chief guidance document applied in the assessment of construction phase noise impacts is British Standard BS 5228:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites Part 1: Noise (2014).* Accordingly, in the absence of any other applicable legislation or guidance, this assessment is undertaken in accordance with BS 5228.

2.2 BS 5228:2009+A1:2014

2.2.1 The BS 5228 standard provides useful guidance on practical noise control. Part 1, provides 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 noise sources, noise calculation procedures, mitigation measures and their effectiveness.

2.2.2 Part 1 also contains sound power level data for a variety of construction plant. This data was obtained from field measurements of actual plant operating on construction and open sites and is therefore appropriate to use as source level data for construction noise predictions.

3 Potential Impacts

3.1 Construction Noise Sources

3.1.1 Noise levels from construction activities would vary continually over time as activities and plant start and stop and move around the site, however, a worst-case scenario is considered where all construction plant and activities are assumed to be working continually and in locations closest to the nearest NSRs.

3.2 Construction Phases

3.2.1 Although an indicative timetable has been provided, a specific construction schedule has not been determined at this stage. *Chapter 4: Description* of this EIAR does, however, provide descriptions of some of the likely construction activities that would be undertaken and the type of plant that would be used.

3.2.2 The core hours for construction activity will be 07:00 to 19:00 Monday to Friday, and 07:00 to 13:00 on Saturday. There will be no working on Sundays and Public Holidays, however, it should be noted that out of necessity some activity outside of the core hours could arise, from delivery and unloading of abnormal loads or health and safety requirements, or to ensure optimal use is made of fair weather windows for concrete deliveries, the erection of turbine blades and the erection and dismantling of cranes.

3.2.3 To consider the variation in noise levels that would occur throughout the construction period, several scenarios have been modelled. The scenarios are based on the combination of construction tasks detailed in the indicative timetable (Table 1.1), *Chapter 4: Description* and TNEI's knowledge and experience of other similar sites and construction schedules.

3.2.4 Each scenario has been assessed against a set of threshold levels to determine the likely temporary noise impacts.

3.2.5 The assessment does not consider the noise impacts associated with decommissioning, as the plant and activities used for that phase are assumed to be similar in nature (and noise output) to those already considered in the modelled construction scenarios. Accordingly, if noise levels during the construction phases are acceptable, they will also be acceptable during decommissioning.

4 Methodology

4.1 Methodology for the Prediction of Noise

4.1.1 To predict the noise immission levels attributable to the construction of the Proposed Project, noise propagation models are 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.

4.1.2 For each CNAL, the $L_{Aeq(t)}$ levels have been predicted in accordance with ISO9613-2:1996 *'Acoustics–- Attenuation of sound during propagation outdoors: General method of calculation'*. [(2)]

4.1.3 The ISO 9613 propagation model 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, BS5228 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 1,000 m.

4.1.4 The ISO 9613 model can take account of the following factors that influence sound propagation outdoors:

- geometric divergence;
- air absorption;
- reflecting obstacles;
- screening;
- vegetation; and
- ground reflections.

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

4.1.6 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 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.

4.2 Limitations of the Noise Model

4.2.1 The noise propagation models are intended to give a good approximation of the specific noise level and the contribution of each individual 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 models assume all noise sources are operating continuously and simultaneously, estimating a worst-case source noise level; and
- All mobile plant assumed to be working on the site access tracks (excavators, dozers, rollers etc) have been modelled along their anticipated movement paths. 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.

4.3 Assessing Construction Noise Effects

4.3.1 Annex E, part E.3.2 of BS 5228 provides example criteria for assessing the significance of construction noise effects and acceptable limits for construction noise.

4.3.2 Table E.1 of BS 5228 (represented here as Table 4.1) contains an example of the significance criteria that can be used to assess construction activities.

Table 4.1: Example of Threshold of Potential Significant Effect at Dwellings ($dB_{(A)}$)

Assessment Category and Threshold Value Period	Threshold Value $L_{Aeq,T}$ dB		
	Category $A_{(A)}$	Category $B_{(B)}$	Category $C_{(C)}$
Night-Time (23:00 – 07:00)	45	50	55
Evenings and Weekends$_{(D)}$	55	60	65
Daytime (07:00 – 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) 19:00-23:00 weekdays, 13:00-23:00 Saturdays and 07:00 - 23:00 Sundays.

4.3.3 The values can be considered thresholds for the construction noise levels (quantified using the L_{Aeq} noise metric). The values in each category are to be used where the existing noise level at each location, rounded to the nearest 5 dB, is below the level given for a particular time of day. BS5228 provides the following advice regarding the threshold levels:

"Note: 1 A potential significant effect is indicated if the $L_{Aeq,T}$ 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 $L_{Aeq,T}$ noise level for the period increases by more than 3 dB due to site noise.

Note 3: Applied to residential receptors only."

4.3.4 Therefore, the assessment of construction noise reflects a specific noise threshold for the locality (set depending on the existing ambient noise levels) for a particular period of the day, rather than an absolute noise level.

4.3.5 It should be noted that exceedance of the limit 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".*

4.4 Study Area

4.4.1 The Study Area for the noise assessment has been defined by a 2 km buffer around the Wind Farm Site, defined from turbine locations. Within this study area, 239 NSRs have been identified.

4.4.2 Noise Sensitive Receptors (NSRs) are properties, people or fauna that are sensitive to noise and, therefore, may require protection from nearby noise sources. Residential receptors are deemed to have a high level of sensitivity, therefore, all identified residential NSRs within the study area have been assessed.

4.4.3 A representative sample of 11 Construction Noise Assessment Locations (CNALs) have been chosen to represent the closest NSRs or group of NSRs to the Wind Farm Site and the assessment of these CNALs are detailed within this report on the assumption that if noise levels are within acceptable levels at the closest receptors, then it is reasonable to assume they will also be acceptable at more distant locations. Nevertheless, noise level predictions for all identified NSRs in the study area are provided in Annex C for completeness.Table 4.2 details the CNALs considered within the report, which are also shown on Figure A1.1. For clarity, all CNALs and NSRs are numbered to ensure consistency with labelling used within the rest of the EIAR.

Table 4.2: Construction Noise Assessment Locations (CNALs)

CNAL (NSR)	ITM Coordinates	
	Eastings	Northings
CNAL01 (H237)	552743	756385
CNAL02 (H01)	553264	756150
CNAL03 (H08)	553850	755166
CNAL04 (H02)	554551	755067

CNAL (NSR)	ITM Coordinates	
	Eastings	Northings
CNAL05 (H03)	555425	755249
CNAL06 (H09)	556377	756904
CNAL07 (H05)	555610	758076
CNAL08 (H69)	554940	758884
CNAL09 (H157)	554352	759072
CNAL10 (H234)	553992	758015
CNAL11 (H04)	553591	757438

4.5 Baseline Noise Levels

4.5.1 Baseline noise level monitoring was undertaken as part of the operational noise assessment undertaken for the Proposed Project (see Appendix 11-2 for more information).

4.5.2 At all noise monitoring locations the ambient sound levels were below the BS 5228 Category A Threshold Values, as detailed in Table 4.1.

4.6 Construction Noise Level Thresholds

4.6.1 Having due regard to the existing ambient noise levels at the NSRs around the Proposed Project, the BS 5228 Category A Threshold Values have been considered for the construction noise assessment.

4.6.2 Accordingly, the assessment is made against the following noise level limits:

- Daytime weekdays 07:00 – 19:00 and Saturday 07:00 – 13:00 : 65 dB $L_{Aeq,t}$
- Evenings and Weekends 19:00 – 23:00, Saturday 13:00 – 23:00 and Sundays 07:00 – 23:00: 55 dB $L_{Aeq,t}$
- Night time 23:00 – 07:00: 45 dB $L_{Aeq,t}$

5 Noise Impact Assessment

5.1 Modelling of Individual Sound Sources

5.1.1 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 this assessment assumes all equipment is continually operating at full power and in locations closest to the NSRs; in practice, equipment load and precise location may vary throughout the day. This approach has been adopted to represent a worst-case assessment.

5.1.2 At this stage a detailed plant list is not available, therefore a generic plant list based upon TNEI's 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 B: Noise Model Data.

5.1.3 For tree felling activities 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* [3] (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 given at the operator position inside a Q Cab. In order to estimate external levels 10 dB has been added to the quoted levels and the sound power level for each item of plant has been calculated within CadnaA assuming the quoted sound pressure levels (SPLs) have been measured at a distance of 1 m.

5.1.4 For all other construction activities source noise level data is 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.

5.1.5 Construction noise sources for any given activity will generally comprise a mix of both moving and static sources. Mobile sources include mobile construction plant and Heavy Goods Vehicles (HGVs), while static construction plant could include generators, lighting rigs and pumps. Static equipment is usually located at a fixed location for an extended period of time.

5.1.6 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.

5.1.7 All static items 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.

5.2 Modelling of Construction Activities

5.2.1 The assessment considers a number of construction scenarios based on the key construction activities detailed in Chapter 4: Description and the indicative timetable (Table 1.1 of this report).

5.2.2 Noise propagation modelling has been undertaken considering the key activities that are likely to occur throughout the construction period. Details of the items of plant assumed to

be operating in each modelled scenario, as well as noise data for each modelled noise source, are included in Annex B: Noise Model Data.

5.2.3 The modelled scenarios represent the following construction activities:

- Scenario 01 (Q1): Construction of the Grid Connection underground electrical cabling route has begun along with the construction and upgrading of roads and track leading into the Wind Farm site from the site entrance (off the R328), through the site towards the temporary construction compounds and borrow pit.
- Scenario 02 (Q3): Track upgrade and installation is on-going across the site. Both construction compounds are now in operation. Construction of the turbine hard standings is underway. Construction of the Grid Connection underground electrical cabling route is on-going and construction of the onsite 220kV substation has begun.
- Scenario 03 (Q5): Track upgrade and installation has begun on the remaining Wind Farm Site roads. Both construction compounds are in operation. Construction of the turbine hardstandings and foundations are underway. Construction of the Grid Connection underground electrical cabling route and substation is on-going. Delivery of turbines has begun, including turbine delivery route upgrades, and landscaping and backfilling is occurring at all the proposed spoil management locations.
- Scenario 04 (Q6): Both construction compounds are in operation. Construction of the turbine hardstandings and foundations are completed in this quarter. Construction of the Grid Connection underground electrical cabling route and substation is on-going. Erection of some turbines are underway and landscaping and backfilling is occurring at all the proposed spoil management locations. Delivery of turbines is still on-going.
- Scenario 05 (Q7): Both construction compounds are in operation. Construction of the Grid Connection underground electrical cabling route and substation is on-going. Delivery and erection of the last turbines is underway and landscaping and backfilling is occurring at all the proposed spoil locations.
- Night-time: Diesel generators for the cabin and lighting at both construction compounds are operational.

In addition to the above, forestry activities have been modelled including felling of trees in Scenario 1 (Q1). The locations of the felling activities have been modelled within areas around T2, T3, T4, T5, T6, T8 and T9.

5.3 Cumulative Construction Noise

5.3.1 In December 2023, a planning application (ref: 2460013) was submitted for Lomaunaghbaun Quarry, a proposed sand quarry to located west of the borrow pit, on the western edge of the Proposed Project. The Lomaunaghbaun Quarry EIAR describes a total site area of 6.2 hectares and states a proposed average excavation depth of 3 m with a total lifespan of 10 years. In addition to excavation works, the extracted material will be processed on-site via crushing and washing facilities. The EIAR states that there is no intention to extract bedrock, and that there is no expected requirement for blasting.

5.3.2 The closest noise-sensitive receptor to Lomaunaghbaun Quarry is CNAL01, located to the south of the Proposed Project borrow pit. Predicted noise levels at CNAL01 resulting from the construction of the Proposed Project are identified in Table 5.1; the highest predicted noise level at CNAL01 is 50 dB, 15 dB below the Category A threshold level of 65 dBA.

5.3.3 In order for the Category A threshold level to be exceeded at CNAL01, noise levels attributable to the Quarry would need to be at 65dB or above and that point the temporary construction activities predicted for the Proposed Project would not contribute to any noise (i.e. would be at least 10dB below). In addition construction activities relating to the Proposed Project in proximity to CNAL01 will be short term.

5.3.4 In March 2024, a planning application (ref: 2460230) was submitted for the construction of a new 38 kV overhead line (OHL), which crosses the Proposed Project area north to south from the Cloon 110 kV substation to the Glenmaddy 37 kV substation. Works involved in the construction of the OHL are anticipated to be primarily related to the erection of 179 wooden poles along a distance of approximately 26.8 km. The Planning & Environmental Considerations Report for the application states that construction of the poles will be undertaken via the use of a single mechanical excavator to both dig the holes and erect the poles.

5.3.5 The closest noise-sensitive receptors to the route of the OHL are CNAL04 & CNAL05, located to the south of the Proposed Project, and CNAL07, located to the north of the Proposed Project. The predicted noise levels at these three noise-sensitive receptors resulting from the construction of the Proposed Project are identified in Table 5.1; the highest predicted noise level at any of these three receptors is 45 dB (at CNAL07), 20 dB below the Category A threshold level of 65 dBA.

5.3.6 In order for the Category A threshold level to be exceeded at CNAL04, CNAL05 or CNAL07, noise levels attributable to the OHL would need to be at 65dB or above and that point the temporary construction activities predicted for the Proposed Project would not contribute to any noise (i.e. would be at least 10dB below). In addition construction activities relating to the OHL will be short term.

5.3.7 It is therefore concluded that no significant effects will occur as a result of cumulative construction noise.

5.4 Calculated Noise Immission Levels

5.4.1 Table 5.1 presents the calculated noise immission levels at each CNAL for each scenario.

Table 5.1: Predicted Construction Noise Immission Levels, dB $L_{Aeq(t)}$

CNAL	Scenario					
	1	2	3	4	5	Night
CNAL01	50	49	50	49	50	19
CNAL02	61	54	54	55	54	33
CNAL03	41	41	45	45	43	20
CNAL04	42	38	40	41	40	20
CNAL05	42	39	42	39	37	25
CNAL06	40	32	41	40	30	21
CNAL07	43	34	45	44	34	24

CNAL	Scenario					
	1	2	3	4	5	Night
CNAL08	48	48	48	48	41	19
CNAL09	42	40	43	38	32	29
CNAL10	43	39	42	40	37	19
CNAL11	41	39	41	41	36	24

5.4.2 For all CNALs the predicted noise levels for Scenarios 1 to 5 are below the weekday and Saturday daytime Category A threshold level of 65 dBA.

5.4.3 No construction activities are anticipated during evenings and weekends, however it may be possible that some limited time or weather sensitive activities (such as concrete pouring or turbine erection) occur outside of typical working hours. In this event, predicted noise levels would likely be lower than those shown above for Scenarios 1 to 5. If any unforeseen requirement for out of hours work would occur, it most likely would be within Scenario 3 and would be below the Category A threshold level for Evenings and Weekends (55 dBA) at all receptors.

5.4.4 No construction activities are anticipated during the night-time, however some generation plant or similar may operate during night-time hours within the construction compounds. The predicted noise levels for the modelled night-time scenario are well below the night-time Category A threshold levels of 45 dBA.

5.5 Grid Connection Route

5.5.1 For the Grid Connection Route, underground electrical cabling route, the amount of required plant is relatively small, typically being based around a small excavator for trenching and backfill activities. As such, construction activities in any one location will be limited in duration and adverse noise effects are anticipated to be not significant. Section 4.7.7.1 in Chapter 4 of the EIAR describes the construction of the underground electrical cable trench in more detail.

5.5.2 Noise levels from trenching and backfill operations are very unlikely to exceed the BS 5228 threshold, and if they do work on the cabling route near a receptor would only occur for a short period of time (i.e. 1 – 5 days) at any one location. Accordingly, the impact is not deemed significant.

5.5.3 At some watercourse, culvert and drain crossings, there may be a requirement for Directional Drilling (DD). DD for large crossing may require multiple items of plant including pumps, mud recyclers, drilling rigs and generators, however, the proposed plant for these small water crossings is a Vermeer D36 x 50 Directional Drill (or similar), which is much smaller than large DD rigs and requires less associated plant.

5.5.4 Calculations of the Vermeer DD rig, assuming a source noise level of 94 dBA at 1 m, indicate that noise levels would be below the 65dBA threshold from a distance of approximately 30 m. The distance between the nearest receptor to a potential water crossing (H21) is approximately 180 m, therefore noise levels related to directional drilling will be substantially lower than the daytime Category A threshold level. Additionally, for such

small crossings, the work would likely be completed within 1 and 2 weeks so it will be short term only.

5.6 Road Junction Widening/Improvements

5.6.1 Construction works related to road and junction improvements, such as turbine delivery route upgrades, may occur outwith the CNALs considered in this assessment. It is therefore possible that noise from these activities may at times exceed the guideline levels, however it should be noted that this will be a short-term, temporary impact. Good practice during construction is recommended and will reduce noise levels from these short-term works to minimum levels, as detailed in Section 6.

6 Mitigation

6.1.1 There are no specific requirements identified for mitigation to lessen noise levels to avoid significant effects, however, good practice during construction is recommended and will be presented in a Construction Environmental Management Plan (CEMP) to minimise any potential noise impacts.

6.1.2 Generally construction activities will be confined to the core hours periods 07:00 to 19:00 Monday to Friday, and 07:00 to 13:00 on Saturday.

6.1.3 Good practices, both for construction of the wind turbines and along the grid connection underground electrical cabling route and road junctions will be implemented to minimise the likely effects. Particular care will be taken at watercourse, culvert and drain crossings along the underground electrical cabling route. Section 8 of BS5228-1:2009+A1:2014 recommends a number of simple control measures as summarised below that can be employed onsite:

- 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 site work is within core hours and any required work outside core hours shall be programmed carefully with consideration to noise and nearby local residents;
- ensure all vehicles and mechanical plant will be fitted with effective exhaust silencers and be subject to programmed maintenance;
- select inherently quiet plant where appropriate - all major compressors will be 'sound reduced' models fitted with properly lined and sealed acoustic covers, which will be kept closed whenever the machines are in use;
- ensure all ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers;
- instruct that machines will be shut down between work periods or throttled down to a minimum;
- regular maintenance of all equipment used on site, including maintenance related to noise emissions;
- vehicles will be loaded carefully to ensure minimal drop heights to minimise noise during this operation; and
- ensure all ancillary plant such as generators and pumps will be positioned to cause minimum noise disturbance and, if necessary, temporary acoustic screens or enclosures should be provided.
- At any location within 30 m of a residential receptor, where trenching work or directional drilling activities are required for the underground grid connection cabling route, the installation of temporary boarding alongside the drilling rig or 'acoustic blanket panels' hanging from Heras fencing (or similar) may be used to mitigate noise emissions.

7 Summary

7.1.1 The noise impact assessment has considered the existing noise environment at local residential receptors to determine appropriate noise threshold levels for construction activities.

7.1.2 Noise propagation modelling has been undertaken in accordance with ISO 9613-2:1996 and the anticipated noise immission levels presented for scenarios likely to occur during the construction period. The modelled scenarios consider the 'noisiest' activities that are likely to occur across a number of scenarios and the modelling assumes that activities are occurring at the locations within the development site that are closest to the NSRs.

7.1.3 The predicted levels for the construction of the Wind Farm Site are below the Category A Daytime Threshold Level, as detailed within BS 5228:2009, for all receptors. Accordingly, construction noise impacts during daytime periods are below the indicator for a potential significant effect.

7.1.4 No construction activities are anticipated during evenings and weekends, however it may be possible that some limited time or weather sensitive activities (such as concrete pouring or turbine erection) occur outside of typical working hours. In this event, predicted noise levels would likely be lower than those shown above for Scenarios 1 to 5. If any unforeseen requirement for out of hours work would occur, it most likely would be within Scenario 3 and would be below the Category A threshold level for Evenings and Weekends , as detailed within BS 5228:2009, for all receptors. Accordingly, construction noise impacts during Weekend and Evening periods are below the indicator for a potential significant effect.

7.1.5 No construction activities are anticipated during Night-time, however an assessment of passive noise levels that may occur in the absence of construction activities (e.g. generators to power on-site lighting) has indicated that levels will remain below the Category A Night-time Threshold Level, as detailed within BS 5228:2009, for all receptors. Accordingly, construction noise impacts during Night-time periods are below the indicator for a potential significant effect.

7.1.6 The assessment concludes that construction noise would not have significant effect on nearby noise sensitive receptors which are residential properties.

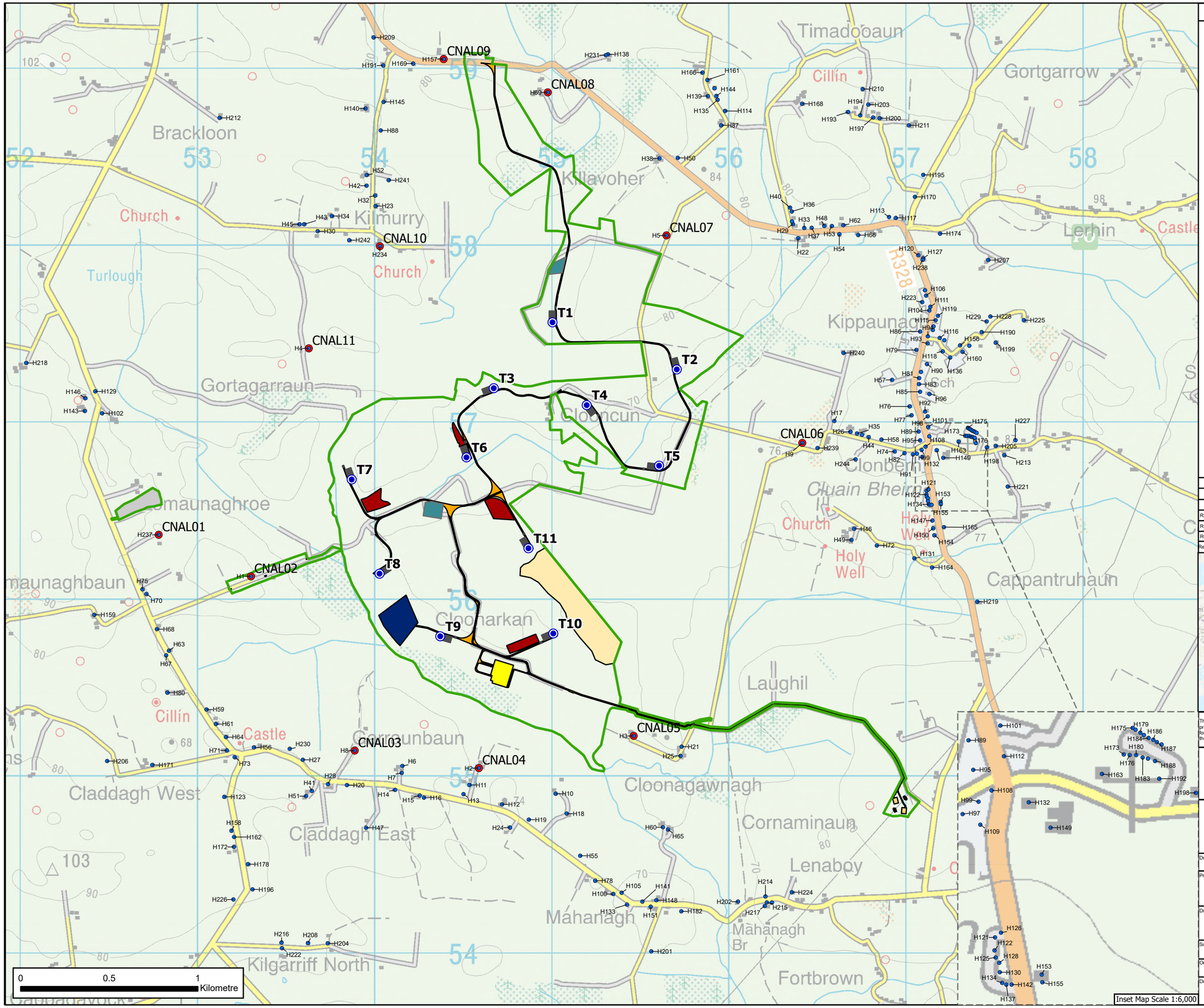
8 References

1. **British Standards Institute.** *Code of practice for noise and vibration control on construction and open sites. Noise.* UK : BSI, 2014. BS 5228-1:2009+A1:2014 .

2. **(ISO), International Organisation for Standardisation.** *Acoustics – Attenuation of Sound During Propagation Outdoors: Part 2 – General Method of Calculation.* Geneva : ISO, 1996. ISO 9613-2:1996.

3. **Forestry Commission.** *Noise Hazards in Forestry Operations and Selection of Personal Protective Equipment.* Edinburgh : The Crown, 2003.

Annex A – Figure



Legend

- Noise Sensitive Receptors (NSRs)
- Construction Noise Assessment Locations (CNALs)
- EIAR Site Boundary
- Proposed Turbine Layout
- Proposed Crane Platform Hardstanding
- Proposed Turbine Foundations
- Proposed Construction Compounds
- Proposed Substation
- Proposed Cable Route and Cable Access Track
- Proposed Cable in the Public Road
- Proposed Borrow Pit
- Proposed New Roads
- Proposed Upgrades to Existing Roads
- Proposed Spoil Repository Access Road
- Proposed Operational Access Road
- Proposed TDR Accommodation Areas
- Proposed Passing Bays
- Proposed Grid Connection Compounds
- Proposed Grid Connection Masts
- Proposed Peat Repository Areas
- Proposed Proposed Spoil Storage Area
- Proposed Peatland Restoration Area

Rev.	Date	Amendment Details	Drw'n	Chk'd	App'd
R2	27/02/24	Third Issue	MT	MC	MC
R1	11/12/23	Second Issue	MT	JM	JM
R0	06/07/23	First Issue	MT	JM	JM

Drawing Status: FOR PLANNING

Project Title: Clonberne Wind Farm

Drawing Title: Figure A1.1 - Construction Noise Assessment Locations

Scale	Designed	Drawn	Checked	Approved
1:20,000	MT	MT	MC	MC
Original Size	**Date**	**Date**	**Date**	**Date**
A3	27/02/2024	27/02/2024	27/02/2024	27/02/2024

Drawing Number: 13772-009

Revision: 2

Annex B – Noise Model Data

Operating scenario	Construction activity	Specific Machinery/Activity	Source
Q1	Tree Felling (T8)	Harvester Forwarder	https://cdn.forestresearch.gov.uk/2003/01/fctn7.pdf
Q1	Tree Felling (T5)	Harvester Forwarder	https://cdn.forestresearch.gov.uk/2003/01/fctn7.pdf
Q1	Tree Felling (T2)	Harvester Forwarder	https://cdn.forestresearch.gov.uk/2003/01/fctn7.pdf
Q1	Tree Felling (T4)	Harvester Forwarder	https://cdn.forestresearch.gov.uk/2003/01/fctn7.pdf
Q1	Tree Felling (T6)	Harvester Forwarder	https://cdn.forestresearch.gov.uk/2003/01/fctn7.pdf
Q1	Tree Felling (T9)	Harvester Forwarder	https://cdn.forestresearch.gov.uk/2003/01/fctn7.pdf
Q1	Backfilling & Landscaping (Q1 - North TCC)	Wheeled Excavator Dumper	BS 5228-1:2009+A1:2014: Annex C
Q1	Backfilling & Landscaping (Q1 - South TCC)	Wheeled Excavator Dumper	BS 5228-1:2009+A1:2014: Annex C
Q1	Road Construction/Upgrades (Q1)	Tracked Excavator Dozer Dumper	BS 5228-1:2009+A1:2014: Annex C
Q1	Road Construction/Upgrades (Q1)	Tracked Excavator Dozer Dumper	BS 5228-1:2009+A1:2014: Annex C
Q1	Grid Connection (Q1)	Tracked Excavator Dozer Dump Truck (tipping fill) Concrete mixer truck	BS 5228-1:2009+A1:2014: Annex C
Q1	Road Construction/Upgrades (Q1)	Tracked Excavator Dozer Dumper	BS 5228-1:2009+A1:2014: Annex C
Q1	Road Construction/Upgrades (Q1)	Tracked Excavator Dozer Dumper	BS 5228-1:2009+A1:2014: Annex C
Q1	Road Construction/Upgrades (Q1)	Tracked Excavator Dozer Dumper	BS 5228-1:2009+A1:2014: Annex C
Q1	Road Construction/Upgrades (Q1)	Tracked Excavator Dozer Dumper	BS 5228-1:2009+A1:2014: Annex C
Q1	Road Construction/Upgrades (Q1)	Tracked Excavator Dozer Dumper	BS 5228-1:2009+A1:2014: Annex C
Q1	Road Construction/Upgrades (Q1)	Tracked Excavator Dozer Dumper	BS 5228-1:2009+A1:2014: Annex C
Q1	Road Construction/Upgrades (Q1)	Tracked Excavator Dozer Dumper	BS 5228-1:2009+A1:2014: Annex C

Operating scenario	Construction activity	Specific Machinery/Activity	Source
Q1-7	Borrow Pit W (Q1-7)	Dozer	BS 5228-1:2009+A1:2014: Annex C
Q1-7	Borrow Pit E (Q1-7)	Tracked Excavator Dumper	BS 5228-1:2009+A1:2014: Annex C
Q1-7	Borrow_Pit_Lorry (Q1-7)	Lorry	BS 5228-1:2009+A1:2014: Annex C
Q3	Substation & Electrical Works (Q3)	Wheeled Excavator Diesel generator Diesel generator	BS 5228-1:2009+A1:2014: Annex C
Q3	Turbine hardstanding (T3)	Vibratory roller Tracked Excavator Dumper Dozer	BS 5228-1:2009+A1:2014: Annex C
Q3	Turbine hardstanding (T4)	Vibratory roller Tracked Excavator Dumper Dozer	BS 5228-1:2009+A1:2014: Annex C
Q3	Turbine hardstanding (T2)	Vibratory roller Tracked Excavator Dumper Dozer	BS 5228-1:2009+A1:2014: Annex C
Q3	Turbine hardstanding (T1)	Vibratory roller Tracked Excavator Dumper Dozer	BS 5228-1:2009+A1:2014: Annex C
Q3	Backfilling & Landscaping Substation (Q3)	Wheeled Excavator Dumper	BS 5228-1:2009+A1:2014: Annex C
Q3	Road Construction/Upgrades (Q3)	Tracked Excavator Dozer Dumper	BS 5228-1:2009+A1:2014: Annex C
Q3	Road Construction/Upgrades (Q3)	Tracked Excavator Dozer Dumper	BS 5228-1:2009+A1:2014: Annex C
Q3	Grid Connection (Q3)	Tracked Excavator Dozer Dump Truck (tipping fill) Concrete mixer truck	BS 5228-1:2009+A1:2014: Annex C
Q3	Road Construction/Upgrades (Q3)	Tracked Excavator Dozer Dumper	BS 5228-1:2009+A1:2014: Annex C
Q5	Turbine hardstanding (T6)	Vibratory roller Tracked Excavator Dumper Dozer	BS 5228-1:2009+A1:2014: Annex C
Q5	Turbine hardstanding (T7)	Vibratory roller Tracked Excavator Dumper Dozer	BS 5228-1:2009+A1:2014: Annex C
Q5	Turbine hardstanding (T5)	Vibratory roller Tracked Excavator Dumper Dozer	BS 5228-1:2009+A1:2014: Annex C
Q5	Turbine Foundations (T6)	Dumper Concrete mixer truck + truck mounted concrete pump + boom arm	BS 5228-1:2009+A1:2014: Annex C
Q5	Turbine Foundations (T3)	Dumper Concrete mixer truck + truck mounted concrete pump + boom arm	BS 5228-1:2009+A1:2014: Annex C
Q5	Turbine Foundations (T1)	Dumper Concrete mixer truck + truck mounted concrete pump + boom arm	BS 5228-1:2009+A1:2014: Annex C
Q5	Turbine Foundations (T4)	Dumper Concrete mixer truck + truck mounted concrete pump + boom arm	BS 5228-1:2009+A1:2014: Annex C

Operating scenario	Construction activity	Specific Machinery/Activity	Source
Q5	Turbine Foundations (T5)	Dumper Concrete mixer truck + truck mounted concrete pump + boom arm	BS 5228-1:2009+A1:2014: Annex C
Q5	Turbine Foundations (T2)	Dumper Concrete mixer truck + truck mounted concrete pump + boom arm	BS 5228-1:2009+A1:2014: Annex C
Q5	Cranes (T4)	Mobile telescopic crane Mobile telescopic crane	BS 5228-1:2009+A1:2014: Annex C
Q5	Cranes (T2)	Mobile telescopic crane Mobile telescopic crane	BS 5228-1:2009+A1:2014: Annex C
Q5	Cranes (T1)	Wheeled Excavator Dumper	BS 5228-1:2009+A1:2014: Annex C
Q5	Backfilling & Landscaping (T3)	Wheeled Excavator Dumper	BS 5228-1:2009+A1:2014: Annex C
Q5	Backfilling & Landscaping (T4)	Wheeled Excavator Dumper	BS 5228-1:2009+A1:2014: Annex C
Q5	Backfilling & Landscaping (T2)	Wheeled Excavator Dumper	BS 5228-1:2009+A1:2014: Annex C
Q5	Backfilling & Landscaping (Borrow Pit)	Wheeled Excavator Dumper	BS 5228-1:2009+A1:2014: Annex C
Q5	Cranes (T3)	Mobile telescopic crane Mobile telescopic crane	BS 5228-1:2009+A1:2014: Annex C
Q5	Substation & Electrical Works (Q5)	Wheeled Excavator Diesel generator Diesel generator	BS 5228-1:2009+A1:2014: Annex C
Q5	Road Construction/Upgrades (Q5)	Tracked Excavator Dozer Dumper	BS 5228-1:2009+A1:2014: Annex C
Q5	Road Construction/Upgrades (Q5)	Tracked Excavator Dozer Dumper	BS 5228-1:2009+A1:2014: Annex C
Q5	Grid Connection (Q5)	Tracked Excavator Dozer Dump Truck (tipping fill) Concrete mixer truck	BS 5228-1:2009+A1:2014: Annex C
Q5	Road Construction/Upgrades (Q5)	Tracked Excavator Dozer Dumper	BS 5228-1:2009+A1:2014: Annex C
Q5-6	Turbine Delivery (North TCC)	Tracked Excavator Dozer Dump Truck (tipping fill) Concrete mixer truck	BS 5228-1:2009+A1:2014: Annex C
Q6	Turbine hardstanding (T8)	Vibratory roller Tracked Excavator Dumper Dozer	BS 5228-1:2009+A1:2014: Annex C
Q6	Turbine hardstanding (T9)	Vibratory roller Tracked Excavator Dumper Dozer	BS 5228-1:2009+A1:2014: Annex C
Q6	Turbine hardstanding (T10)	Vibratory roller Tracked Excavator Dumper Dozer	BS 5228-1:2009+A1:2014: Annex C
Q6	Turbine hardstanding (T11)	Vibratory roller Tracked Excavator Dumper Dozer	BS 5228-1:2009+A1:2014: Annex C

Operating scenario	Construction activity	Specific Machinery/Activity	Source
Q6	Turbine Foundations (T10)	Dumper Concrete mixer truck + truck mounted concrete pump + boom arm	BS 5228-1:2009+A1:2014: Annex C
Q6	Turbine Foundations (T9)	Dumper Concrete mixer truck + truck mounted concrete pump + boom arm	BS 5228-1:2009+A1:2014: Annex C
Q6	Turbine Foundations (T8)	Dumper Concrete mixer truck + truck mounted concrete pump + boom arm	BS 5228-1:2009+A1:2014: Annex C
Q6	Turbine Foundations (T7)	Dumper Concrete mixer truck + truck mounted concrete pump + boom arm	BS 5228-1:2009+A1:2014: Annex C
Q6	Turbine Foundations (T11)	Dumper Concrete mixer truck + truck mounted concrete pump + boom arm	BS 5228-1:2009+A1:2014: Annex C
Q6	Backfilling & Landscaping (T7)	Wheeled Excavator Dumper	BS 5228-1:2009+A1:2014: Annex C
Q6	Cranes (T7)	Mobile telescopic crane Mobile telescopic crane	BS 5228-1:2009+A1:2014: Annex C
Q6	Cranes (T6)	Mobile telescopic crane Mobile telescopic crane	BS 5228-1:2009+A1:2014: Annex C
Q6	Cranes (T5)	Mobile telescopic crane Mobile telescopic crane	BS 5228-1:2009+A1:2014: Annex C
Q6	Backfilling & Landscaping (T6)	Wheeled Excavator Dumper	BS 5228-1:2009+A1:2014: Annex C
Q6	Backfilling & Landscaping (T5)	Wheeled Excavator Dumper	BS 5228-1:2009+A1:2014: Annex C
Q6	Backfilling & Landscaping (T1)	Wheeled Excavator Dumper	BS 5228-1:2009+A1:2014: Annex C
Q6	Substation & Electrical Works (Q6)	Wheeled Excavator Diesel generator Diesel generator	BS 5228-1:2009+A1:2014: Annex C
Q6	Grid Connection (Q6)	Tracked Excavator Dozer Dump Truck (tipping fill) Concrete mixer truck	BS 5228-1:2009+A1:2014: Annex C
Q7	Backfilling & Landscaping (T8)	Wheeled Excavator Dumper	BS 5228-1:2009+A1:2014: Annex C
Q7	Cranes (T9)	Mobile telescopic crane Mobile telescopic crane	BS 5228-1:2009+A1:2014: Annex C
Q7	Cranes (T8)	Mobile telescopic crane Mobile telescopic crane	BS 5228-1:2009+A1:2014: Annex C
Q7	Cranes (T8)	Mobile telescopic crane Mobile telescopic crane	BS 5228-1:2009+A1:2014: Annex C
Q7	Cranes (T10)	Mobile telescopic crane Mobile telescopic crane	BS 5228-1:2009+A1:2014: Annex C
Q7	Cranes (T11)	Mobile telescopic crane Mobile telescopic crane	BS 5228-1:2009+A1:2014: Annex C

Operating scenario	Construction activity	Specific Machinery/Activity	Source
Q7	Backfilling & Landscaping (T9)	Wheeled Excavator Dumper	BS 5228-1:2009+A1:2014: Annex C
Q7	Backfilling & Landscaping (T10)	Wheeled Excavator Dumper	BS 5228-1:2009+A1:2014: Annex C
Q7	Backfilling & Landscaping (T11)	Wheeled Excavator Dumper	BS 5228-1:2009+A1:2014: Annex C
Q7	Turbine Delivery (South TCC)	Lorry	BS 5228-1:2009+A1:2014: Annex C
Night	Compound Generators (South TCC)	Diesel generator Diesel generator	BS 5228-1:2009+A1:2014: Annex C
Night	Compound Generators (North TCC)	Diesel generator Diesel generator	BS 5228-1:2009+A1:2014: Annex C

Annex C – Noise Sensitive Receptor Results

Notes:
Receptors also considered as CNALs are highlighted in the table below.
Relevant threshold levels are detailed in Section 4.3, Table 4.1.

NSR (H / CNAL)	ITM Coordinates		Dwelling Status	Predicted Construction Noise Level per Scenario (dBA)					
	Eastings	Northings		1	2	3	4	5	Night
H001 / CNAL02	553264	756150	Dwelling	61	54	54	55	54	33
H002 / CNAL04	554551	755067	Dwelling	41	41	45	45	43	20
H003 / CNAL05	555425	755249	Dwelling	48	48	48	48	41	19
H004 / CNAL11	553591	757438	Dwelling	41	39	41	41	36	24
H005 / CNAL07	555610	758076	Dwelling	42	40	43	38	32	29
H006	554119	755079	Dwelling	41	39	42	45	44	20
H007	554115	755040	Dwelling	41	39	43	45	43	20
H008 / CNAL03	553850	755166	Dwelling	42	38	40	41	40	20
H009 / CNAL06	556377	756904	Dwelling	43	39	42	40	37	19
H010	554985	754922	Dwelling	43	42	42	43	38	18
H011	554498	754972	Dwelling	39	38	41	41	39	19
H012	554682	754862	Dwelling	39	38	41	41	39	18
H013	554464	754920	Dwelling	39	37	40	40	38	19
H014	554078	754944	Dwelling	39	36	39	40	38	19
H015	554217	754912	Dwelling	39	36	40	44	43	19
H016	554241	754900	Dwelling	39	36	40	44	43	19
H017	556558	757028	Dwelling	40	36	39	36	30	19
H018	555047	754810	Dwelling	43	45	46	48	45	17
H019	554833	754776	Dwelling	42	41	43	46	43	17
H020	553806	754971	Dwelling	40	38	40	42	38	19
H021	555696	755188	Dwelling	51	51	51	51	36	17
H022	556354	758060	Dwelling	43	36	38	33	29	21
H023	553968	758242	Dwelling	43	42	45	41	38	26
H024	554727	754731	Dwelling	37	36	39	39	36	17
H025	555689	755136	Dwelling	46	46	46	46	35	17
H026	556649	756967	Dwelling	41	36	39	37	33	25
H027	553557	755114	Dwelling	40	41	41	45	43	19
H028	553699	754977	Dwelling	40	40	41	45	42	18
H029	556324	758140	Dwelling	38	35	38	33	28	21
H030	553641	758100	Dwelling	41	39	40	40	38	22
H031	556319	758155	Dwelling	38	35	38	33	28	21
H032	553965	758301	Dwelling	43	41	46	43	34	33
H033	556388	758118	Dwelling	43	35	38	34	34	20
H034	553721	758186	Dwelling	41	39	40	41	39	22
H035	556686	756957	Dwelling	43	40	43	41	36	24
H036	556318	758211	Dwelling	38	35	38	33	28	21
H037	556430	758119	Dwelling	43	35	38	36	34	20
H038	555570	758511	Dwelling	40	36	41	39	31	26
H039	556714	756950	Dwelling	39	35	38	35	31	18

NSR (H / CNAL)	ITM Coordinates		Dwelling Status	Predicted Construction Noise Level per Scenario (dBA)					
	Eastings	Northings		1	2	3	4	5	Night
H040	556308	758233	Dwelling	38	35	38	33	28	21
H041	553608	754938	Dwelling	39	40	40	44	42	18
H042	553917	758357	Dwelling	41	35	43	42	33	23
H043	553565	758139	Dwelling	39	37	39	38	35	21
H044	556752	756936	Dwelling	39	34	38	35	30	17
H045	553538	758139	Dwelling	39	37	39	38	35	21
H046	556670	756419	Dwelling	39	35	38	40	37	17
H047	553914	754730	Dwelling	39	36	40	43	40	17
H048	556501	758130	Dwelling	43	42	44	36	34	20
H049	556655	756356	Dwelling	39	35	38	40	37	17
H050	555674	758514	Dwelling	39	36	40	38	30	25
H051	553575	754909	Dwelling	39	40	40	44	42	18
H052	553918	758417	Dwelling	42	35	44	43	34	32
H053	556544	758129	Dwelling	42	41	44	36	33	19
H054	556586	758083	Dwelling	42	41	44	36	33	19
H055	555123	754572	Dwelling	40	39	41	41	36	16
H056	553281	755184	Dwelling	40	40	39	44	45	18
H057	556884	757260	Dwelling	42	42	45	38	35	23
H058	556824	756923	Dwelling	38	34	37	34	29	17
H059	553013	755398	Dwelling	40	38	39	43	42	18
H060	555590	754733	Dwelling	38	38	38	39	34	16
H061	553066	755316	Dwelling	39	37	39	43	42	18
H062	556609	758134	Dwelling	42	41	43	35	33	19
H063	552801	755730	Dwelling	42	37	39	42	41	18
H064	553123	755242	Dwelling	38	36	37	42	41	18
H065	555619	754720	Dwelling	38	37	39	39	34	15
H066	556693	758078	Dwelling	42	41	43	35	30	18
H067	552785	755704	Dwelling	42	37	39	42	40	18
H068	552733	755852	Dwelling	42	38	39	42	41	18
H069 / CNAL08	554940	758884	Dwelling	43	34	45	44	34	24
H070	552674	756051	Dwelling	48	47	47	47	49	18
H071	553128	755167	Dwelling	41	41	41	44	43	18
H072	556798	756324	Dwelling	38	34	37	35	30	16
H073	553172	755129	Dwelling	41	41	41	45	44	18
H074	556899	756855	Dwelling	38	34	37	37	35	17
H075	552651	756077	Dwelling	48	48	48	48	49	18
H076	556983	757110	Dwelling	37	33	36	33	28	16
H077	556994	757060	Dwelling	38	34	38	38	34	23
H078	555208	754431	Dwelling	37	36	38	39	35	15
H079	557021	757429	Dwelling	43	41	43	38	36	22
H080	552792	755493	Dwelling	44	42	43	44	44	17
H081	557037	757270	Dwelling	41	41	44	39	34	23
H082	556954	756846	Dwelling	37	34	37	37	35	16

NSR (H / CNAL)	ITM Coordinates		Dwelling Status	Predicted Construction Noise Level per Scenario (dBA)					
	Eastings	Northings		1	2	3	4	5	Night
H083	557036	757236	Dwelling	41	37	40	39	34	23
H084	557047	757305	Dwelling	41	41	43	39	34	22
H085	557042	757193	Dwelling	41	37	40	38	34	23
H086	557042	757533	Dwelling	43	41	43	37	35	22
H087	555919	758698	Dwelling	37	34	38	35	28	22
H088	553997	758669	Dwelling	40	39	43	38	31	32
H089	557034	756968	Dwelling	37	33	36	37	34	16
H090	557081	757349	Dwelling	41	41	43	38	34	22
H091	557002	756839	Dwelling	37	33	36	36	34	16
H092	557070	757081	Dwelling	40	37	40	38	34	22
H093	557085	757466	Dwelling	43	41	43	37	35	22
H094	557086	757506	Dwelling	43	41	43	37	35	22
H095	557042	756918	Dwelling	37	33	36	37	34	16
H096	557095	757180	Dwelling	41	37	40	38	34	22
H097	557024	756843	Dwelling	37	34	36	34	34	16
H098	557085	757054	Dwelling	37	34	37	38	34	17
H099	557051	756864	Dwelling	37	33	36	37	34	16
H100	555310	754356	Dwelling	36	38	40	43	41	14
H101	557088	756993	Dwelling	37	33	36	36	34	16
H102	552424	757071	Dwelling	44	42	43	45	42	27
H103	557114	757542	Dwelling	42	40	42	37	35	22
H104	557094	757652	Dwelling	43	40	42	37	35	22
H105	555357	754363	Dwelling	39	40	41	43	41	14
H106	557076	757736	Dwelling	40	37	39	32	30	22
H107	557118	757562	Dwelling	42	40	42	37	35	22
H108	557073	756883	Dwelling	37	33	36	37	34	16
H109	557054	756825	Dwelling	37	33	36	34	29	16
H110	557070	757766	Dwelling	38	35	37	32	29	17
H111	557100	757673	Dwelling	42	40	42	37	35	22
H112	557094	756941	Dwelling	37	33	36	36	34	16
H113	556867	758180	Dwelling	36	39	40	34	32	17
H114	555941	758779	Dwelling	36	33	37	33	27	21
H115	557130	757597	Dwelling	42	40	42	37	35	22
H116	557153	757497	Dwelling	36	33	36	32	28	16
H117	556905	758175	Dwelling	35	39	40	34	32	17
H118	557170	757421	Dwelling	36	33	36	32	29	16
H119	557143	757622	Dwelling	37	34	37	32	28	17
H120	557032	757964	Dwelling	42	40	42	34	33	22
H121	557079	756634	Dwelling	36	32	35	33	28	15
H122	557078	756612	Dwelling	36	32	35	33	33	15
H123	553114	754905	Dwelling	41	40	42	44	43	16
H124	557179	757484	Dwelling	35	32	35	31	27	16
H125	557080	756600	Dwelling	36	32	35	33	33	15

NSR (H / CNAL)	ITM Coordinates		Dwelling Status	Predicted Construction Noise Level per Scenario (dBA)					
	Eastings	Northings		1	2	3	4	5	Night
H126	557089	756642	Dwelling	36	32	35	33	33	15
H127	557060	757947	Dwelling	42	40	42	34	33	22
H128	557086	756591	Dwelling	36	32	35	33	28	15
H129	552385	757195	Dwelling	38	37	38	39	38	26
H130	557087	756575	Dwelling	36	32	35	33	28	15
H131	557010	756252	Dwelling	36	33	35	34	29	15
H132	557136	756863	Dwelling	36	33	36	36	34	15
H133	555387	754296	Dwelling	39	39	41	43	40	14
H134	557091	756557	Dwelling	36	32	35	33	28	15
H135	555899	758842	Dwelling	36	33	37	34	28	21
H136	557212	757386	Dwelling	36	34	36	33	29	17
H137	557098	756554	Dwelling	36	32	35	33	28	15
H138	555280	759099	Dwelling	41	32	43	41	31	32
H139	555844	758863	Dwelling	37	33	38	35	28	21
H140	553911	758793	Dwelling	38	33	38	36	29	30
H141	555474	754313	Dwelling	40	40	42	43	40	14
H142	557107	756554	Dwelling	36	32	35	36	34	15
H143	552326	757084	Dwelling	42	41	42	43	39	26
H144	555892	758864	Dwelling	36	33	37	34	27	21
H145	554013	758830	Dwelling	37	33	38	36	29	21
H146	552328	757156	Dwelling	41	40	42	42	39	26
H147	557111	756465	Dwelling	36	32	35	33	33	15
H148	555553	754321	Dwelling	40	41	42	43	40	14
H149	557173	756820	Dwelling	36	32	35	33	33	15
H150	557116	756421	Dwelling	36	32	35	37	34	15
H151	555521	754284	Dwelling	36	34	36	37	33	14
H152	555881	758907	Dwelling	36	32	36	34	27	21
H153	557158	756571	Dwelling	36	32	35	36	34	15
H154	557123	756382	Dwelling	36	32	35	37	34	15
H155	557159	756558	Dwelling	36	32	35	36	34	15
H156	557268	757455	Dwelling	34	31	34	31	26	15
H157 / CNAL09	554352	759072	Dwelling	40	32	41	40	30	21
H158	553154	754713	Dwelling	40	39	41	42	41	20
H159	552380	755933	Dwelling	41	39	40	40	40	21
H160	557282	757418	Dwelling	34	31	34	31	26	15
H161	555841	758954	Dwelling	37	32	37	35	28	21
H162	553169	754678	Dwelling	40	40	41	44	41	20
H163	557260	756911	Dwelling	37	32	35	36	33	15
H164	557110	756200	Dwelling	36	33	35	37	35	14
H165	557177	756428	Dwelling	35	32	35	36	34	15
H166	555814	758996	Dwelling	39	32	40	39	31	21
H167	557320	757453	Dwelling	34	31	34	30	26	15
H168	556376	758820	Dwelling	34	31	34	31	25	18

NSR (H / CNAL)	ITM Coordinates		Dwelling Status	Predicted Construction Noise Level per Scenario (dBA)					
	Eastings	Northings		1	2	3	4	5	Night
H169	554180	759047	Dwelling	38	32	38	37	29	20
H170	557013	758294	Dwelling	34	31	34	30	25	16
H171	552708	755085	Dwelling	35	32	35	39	38	16
H172	553168	754622	Dwelling	39	38	41	42	40	20
H173	557297	756944	Dwelling	38	36	39	37	33	15
H174	557155	758086	Dwelling	34	30	33	30	25	16
H175	557312	756989	Dwelling	35	31	34	32	27	15
H176	557307	756943	Dwelling	36	32	35	33	29	15
H177	557317	756986	Dwelling	35	31	34	32	27	15
H178	553247	754524	Dwelling	38	37	38	38	37	15
H179	557325	756981	Dwelling	35	31	34	31	27	15
H180	557318	756943	Dwelling	35	32	35	33	28	15
H181	557331	756977	Dwelling	35	31	34	31	27	15
H182	555694	754258	Dwelling	35	34	35	35	30	13
H183	557329	756939	Dwelling	35	32	34	32	28	15
H184	557339	756972	Dwelling	35	31	34	31	27	15
H185	557338	756937	Dwelling	35	31	34	32	28	15
H186	557347	756969	Dwelling	35	31	34	31	27	15
H187	557353	756965	Dwelling	34	31	34	31	27	15
H188	557350	756933	Dwelling	35	31	34	32	27	15
H189	557361	756961	Dwelling	34	31	34	31	26	14
H190	557390	757530	Dwelling	34	30	33	30	25	15
H191	554011	759036	Dwelling	36	31	37	36	28	20
H192	557357	756903	Dwelling	34	31	34	32	27	14
H193	556636	758773	Dwelling	34	30	34	30	25	17
H194	556704	758754	Dwelling	33	30	33	30	25	17
H195	557060	758418	Dwelling	33	30	33	29	25	16
H196	553273	754382	Dwelling	33	30	32	33	31	14
H197	556777	758742	Dwelling	33	30	33	29	25	17
H198	557419	756879	Dwelling	34	30	33	31	26	14
H199	557469	757470	Dwelling	33	30	33	30	25	14
H200	556814	758738	Dwelling	33	30	33	29	24	16
H201	555524	754032	Dwelling	32	30	33	33	29	13
H202	556014	754313	Dwelling	35	33	34	35	30	13
H203	556750	758815	Dwelling	33	30	33	29	24	17
H204	553698	754077	Dwelling	33	30	33	33	30	14
H205	557469	756887	Dwelling	34	30	33	31	26	14
H206	552452	755107	Dwelling	34	31	33	34	32	15
H207	557427	757937	Dwelling	33	29	32	29	24	14
H208	553586	754079	Dwelling	32	29	32	33	30	13
H209	553957	759194	Dwelling	35	32	37	34	27	19
H210	556718	758903	Dwelling	33	30	33	29	24	16
H211	556979	758698	Dwelling	32	29	32	29	24	16

NSR (H / CNAL)	ITM Coordinates		Dwelling Status	Predicted Construction Noise Level per Scenario (dBA)					
	Eastings	Northings		1	2	3	4	5	Night
H212	553087	758740	Dwelling	33	30	33	32	28	17
H213	557518	756834	Dwelling	33	30	33	30	26	14
H214	556169	754342	Dwelling	36	37	37	40	36	13
H215	556177	754308	Dwelling	36	36	37	39	36	12
H216	553437	754082	Dwelling	32	29	31	32	30	13
H217	556165	754288	Dwelling	35	36	37	39	36	12
H218	551996	757356	Dwelling	35	34	35	35	34	16
H219	557365	756007	Dwelling	34	32	34	34	28	13
H220	556206	754308	Dwelling	36	37	37	39	36	12
H221	557537	756657	Dwelling	33	30	33	31	26	13
H222	553439	754050	Dwelling	32	29	31	32	30	13
H223	557054	757699	Dwelling	43	40	43	37	35	22
H224	556318	754366	Dwelling	37	37	38	39	36	12
H225	557628	757597	Dwelling	32	29	32	29	24	14
H226	553165	754325	Dwelling	33	30	32	33	30	14
H227	557581	756919	Dwelling	33	30	32	30	25	13
H228	557439	757618	Dwelling	33	30	33	30	25	14
H229	557418	757590	Dwelling	33	30	33	30	25	15
H230	553483	755176	Dwelling	40	41	40	44	43	19
H231	555268	759094	Dwelling	42	32	44	42	32	32
H234	553992	758015	Dwelling	42	39	42	39	37	25
H237	552743	756385	Dwelling	50	49	50	49	50	19
H238 / CNAL10	557057	757938	Dwelling	42	40	42	34	33	22
H239	556463	756875	Dwelling	42	37	40	37	33	19
H240	556610	757412	Dwelling	40	37	39	34	30	19
H241	554042	758388	Dwelling	44	36	45	45	35	33
H242	553819	758049	Dwelling	42	39	41	39	37	23
H244	556678	756811	Dwelling	43	35	41	40	36	18