12. NOISE AND VIBRATION

12.1 Executive Summary

12.1.1 This report has considered the potential noise effects that could arise due to the Proposed Development at the closest noise sensitive receptors in the vicinity of the site. The assessment has taken account of applicable planning policy and current guidance.

12.1.2 The impact of construction noise at receptors is below noise limits, and therefore rated as ***Minor*** *and not* significant**.** Whilst no additional mitigation is required, construction noise would be managed via a Construction Environmental Management Plan (CEMP), which would be prepared by the Principal Contractor prior to construction works starting on-site and would set out best practice measures to be implemented during the construction stage.

12.1.3 The impact of the operational noise assessment predicts noise is below impact thresholds. The operation of the Proposed Development would result in ***Minor effects*** *and would not be significant*. Accordingly, no additional mitigation would be required.

12.1.4 No significant cumulative effects are predicted from the assessment.

12.2 Introduction

12.2.1 This chapter details the noise impact assessment for the Proposed Development. It assesses the potential effects on noise sensitive receptors associated with the construction and operation of the overhead line (OHL). This chapter (and its associated figures) is not intended to be read as a standalone assessment and reference should be made to the introductory chapters of this Environmental Impact Assessment Report (EIAR) (**Chapters 1-5, EIAR Volume 2**), as well as **Chapter 13: Traffic and Transport (EIAR Volume 2).**

12.2.2 The assessment has been undertaken by a member of Wood VDN (Vibration Dynamics and Noise), who is an associate member of the IOA (Institute of Acoustics) with over 5 years of experience in noise assessments across a variety of sectors, including the assessment of electrical transmission infrastructure.

12.2.3 This chapter is supported by the following Figures and Technical Appendices:

- **Technical Appendix 12.1 – Acoustics Glossary**
- **Technical Appendix 12.2 – Operational TR(T)94 Assessment Results**
- **Figure 12.1 – Noise Sensitive Receptors (NSRs) and Noise Measurement Locations**
- **Figure 12.2 – Operational Noise Mapping**

Noise Source Type

12.2.4 An energised electrical transmission OHL can be the source of an audible phenomenon known as 'corona discharge'. This is a limited electrical breakdown of the air in the vicinity of the OHL conductors. While OHL conductors are designed and constructed to minimise corona discharge, surface irregularities such as damage, attached raindrops, insects and other types of contamination can increase local electric field strength beyond the inception level for local corona discharge at these sites. Such corona discharge can be the source of audible noise, a crackling sound accompanied sometimes by a low frequency hum.

12.2.5 The highest noise levels generated by an OHL usually occur during light rain when water droplets, collecting on the surface of the conductor, can initiate corona discharge. The number of droplets that collect, and hence the amount of noise, depends on the rate of rainfall. Mist or fog can also cause corona discharge from droplets condensing on and attaching to the conductor surface. Sometimes, after a prolonged spell of dry weather, conductors can become contaminated with accumulated dust particles and other materials on which corona discharge can occur and audible noise can be generated. Later rain showers have the effect of washing the conductors clean of such debris.

12.2.6 There are no known vibrational effects as the result of the operation of the OHL.

12.3 Assessment Methodology and Significance Criteria

Policy and Legislative Requirements

Planning Advice Note (PAN) 1/2011: 'Planning and Noise'

12.3.1 Published in March 2011[1], this document provides advice on the role of the planning system in helping to prevent and limit adverse effects of noise (Scottish Government, 2011). Information and advice on noise assessment methods are provided in the accompanying Technical Advice Note (TAN): *Assessment of Noise*. Included within the PAN document and the accompanying TAN are details of the legislation, technical standards, and codes of practice for specific noise issues.

12.3.2 Neither PAN 1/2011 nor the associated TAN provides specific guidance on the assessment of noise from fixed plant, but the TAN includes an example assessment scenario for 'New noisy development (incl. commercial and recreation) affecting a noise sensitive building', which is based on British Standard (BS) 4142:1997: *Method for rating industrial noise affecting mixed residential and industrial areas*. This British Standard has been replaced with BS 4142:2014: *Methods for rating and assessing industrial and commercial sound*.

British Standard 5228-1:2009 +A1:2014 (BS5228), Code of Practice for Noise and Vibration Control on Construction and Open Sites[2]

12.3.3 Guidance on the prediction and assessment of noise and vibration from construction sites is provided in BS 5228 2009 +A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise. BS5228-1 provides recommended limits for noise from construction sites.

12.3.4 The construction noise impact assessment (CNIA) has been carried out according to the ABC method specified in Table E.1 of BS5228-1, in which noise sensitive receptors (NSRs) are classified in categories A, B or C according to their measured or estimated background noise level.

British Standard 4142:2014+A1:2019: Methods for rating and assessing industrial and commercial sound (BS 4142)

12.3.5 British Standard 4142[3] describes methods for rating and assessing the following:

- Sound from industrial and manufacturing processes.
- Sound from fixed installations which comprise mechanical and electrical plant and equipment.
- Sound from the loading and unloading of goods and materials at industrial and/or commercial premises.
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train movements on or around an industrial and/or commercial site.

12.3.6 The methods use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

12.3.7 In accordance with the assessment methodology, the specific sound level ($L_{Aeq,T}$) of the noise source being assessed is corrected, by the application corrections for acoustic features, such as tonal qualities and/or

[1] Planning Advice Note, PAN 1/2011, Planning and Noise. The Scottish Government, 2011.

[2] British Standard 5228: Code of practice for noise and vibration control on construction and open sites (BS 5228), BSI, 2009, amended 2014 .

[3] BS 4142:2014, 2014. Methods for Rating and Assessing Industrial and Commercial Sound, BSI.

distinct impulses, to give a "rating level" ($L_{Ar,Tr}$).The British Standard effectively compares and rates the difference between the rating level and the typical background sound level ($L_{A90,T}$) in the absence of the noise source being assessed.

12.3.8 The British Standard advises that the time interval ('T') of the background sound measurement should be sufficient to obtain a representative or typical value of the background sound level at the time(s) when the noise source in question is likely to operate or is proposed to operate in the future.

12.3.9 Comparing the rating level with the background sound level, BS 4142 states:

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

TR(T)94 - A Method for Assessing the Community Response to Overhead Line Noise

12.3.10 The National Grid has derived a procedure[4] to assess the impact of OHL noise in both dry and rainy conditions. The guidance of the British Standard BS 4142: 2014 can also be used to assess the impact of the noise from a specific industrial source at NSRs.

12.3.11 The procedure requires that the background noise (BGN) at NSRs within a set distance from the OHL (usually 200 to 300 m) be measured during quiet night times and in dry conditions with little wind. The nature of the ground surface around the sensitive receptors is noted so that the contribution to BGN of the surface noise attributable to the rainfall can be derived from empirically derived curves (Miller curves). The logarithmic sum of the measured BGN and the empirically derived contribution for rainfall is adopted as the BGN level, in rainy conditions, against which to compare the predicted received noise from the OHL. Using the parameters provided in TR(T)94 the likelihood of an adverse impact can be assessed.

12.3.12 The assessment procedure follows TR(T)94, and has been conducted in the following stages:

- the attended collection of night-time BGN levels at NSRs, or groups of such NSRs, within 200 m of the centreline of the OHL during suitable dry weather conditions, before construction;
- allowance for the effects of rainfall on BGN;
- prediction of contribution from conductors; and
- determination of total excess at the most likely rain rate.

Scope of the Assessment

12.3.13 This chapter focusses on the effects of the operational and construction phases of the Proposed Development upon Noise Sensitive Receptors (NSRs) aligning with the relevant British Standards (BS) and National Grid's Technical Reference 94, TR(T)94. This chapter has also been prepared with reference to the applicable legislative framework and national and local planning policy; these are outlined in its Policy and Legislative Requirements section. Baseline noise measurements were conducted at NSRs to establish representative background noise in the project area. A desk-based construction noise appraisal has been prepared for the purpose of assessing the effects of all construction works on any nearby residents. This appraisal has been

[4] Technical Report No. TR(T)94, 1993. A Method for Assessing the Community Response to Overhead Line Noise, National Grid Technology & Science Laboratories.

produced in line with British Standard 5228-1:2009 +A1:2014 (BS5228), Code of Practice for Noise and Vibration Control on Construction and Open Sites.

Issues Scoped Out

Noise from Operational Maintenance

12.3.14 Any operational maintenance works required will be short-term and intermittent and are not expected to give rise to significant effects relating to noise and vibration. Therefore, this aspect is scoped out of the EIA.

- Noise from Construction Traffic.
- An indicative construction programme established that the Proposed Development would generate a total peak of 82 two-way HGV trips in month 20 and 21 of construction, and 150 two-way staff car trips per day. When applying this level of trip generation to baseline traffic levels within the Study Area, the assessment concludes that the percentage impact of the Proposed Development would not exceed a 30 % increase in total traffic levels other than the A819 (between B840 and Substation Access Point)Study Area. The impact of construction HGVs on the Study Area will also not exceed a 30 % increase on all road links, with the exception of the A819 in the vicinity of the site access point. Therefore, as set out in **Chapter 13: Traffic and Transport**, the impact of increased total traffic and HGV levels associated with the Proposed Development along the A85 (T), A819 between the A85 (T) and B70, the B840 and A83 (T) is considered to be negligible and does not require further assessment of effects in accordance with the IEMA guidelines. Whilst the level of traffic is predicted to increase by more than 30 % as a result of construction HGVs along the A819 between the B840 and Substation access point, this road link is not considered to be a sensitive receptor. Accordingly, it can therefore be concluded that the Proposed Development would not give rise to any significant traffic impacts or associated environmental impacts.

Vibration

12.3.15 There are no known vibrational noise issues associated with the operation of the OHL at nearby NSRs. Therefore, vibration is scoped out of the assessment.

Extent of the Study Area

12.3.16 The Proposed Development will comprise the construction of new 275 kV double circuit OHL supported by lattice steel towers, between a proposed new substation at Creag Dhubh and the existing Scottish Power Energy Networks (SPEN) 275 kV OHL that runs from Dalmally to Inverarnan, near Succoth Glen, connecting via a Tie-In connection. The NSRs within 1 km of the Proposed Development have been highlighted for assessment in Figure 12.1 **(EIAR Volume 3a)**.

Consultation Undertaken to Date

12.3.17 Consultation with the local authority is detailed in **Table 12.1**.

Table 12.1: Summary of Consultation Undertaken to Date

Organisation	Type of consultation	Response	How response has been considered within this EIA Report
Argyll and Bute Council	Pre Application Consultation - Noise queries 12.11.2021	Methodology and noise sensitive receptors seem satisfactory. Queried if any receptors are considered in Loch Awe village 08.12.2021	Applied described methodology to the assessment. Receptors in Loch Awe village are not considered as impact is negligible due to distances (over 1 km) from project.

Method of Baseline Data Collation

12.3.18 Background noise measurements were conducted at a number of NSRs within 1 km of the Proposed Development on the night of the 15th November 2021. The measurements consisted of attended spot measurements for a period of 5 minute intervals at night-time in free field conditions in accordance with BS4142.

12.3.19 The background noise measurements were undertaken using the following Class 1 specification noise measuring equipment:

- Rion NL-52 S/N 01265412

12.3.20 Measured parameters are listed below:

- L_{Aeq} (5 minutes)
- L_{Aeq} (5 minutes) one-third octave band spectrum
- L_{A90} (5 minutes)
- L_{A90} (5 minutes) one-third octave band spectrum

12.3.21 The measurement positions are detailed in **Table 12.2** and **Table 12.14**, and shown on Figure 12.1, located in **Volume 3a** of the EIAR.

Table 12.2: Measurement Location Coordinates

NSR	Coordinates (British National Grid) X	Coordinates (British National Grid) Y
M 1	208918	715873
M 2	210956	720398
M 3	207418	721268
M 4	208256	721386
M 5	209737	721677
M 6	210394	722811
M 7	211154	723409
M 8	212046	724665
M 9	214041	725996
M 10	217122	727174
M 11	217853	727027

Assessment Modelling

Construction – Noise

12.3.22 The construction of the overhead line is split into three phases. These are the foundations, tower erection and stringing with the conductors. **Table 12.3** to **Table 12.5**, show the plant activities, items, their quantities, utilisation, and associated noise levels at 10 m from the source, based on worst-case construction activities from a similar overhead line construction. Combining the utilisation and quantity of equipment, an equivalent noise level at 10 m can be calculated for each row. These are then logarithmically summed to give a total value for the construction noise at 10 m. To ensure a worst-case assessment, it has been assumed that all works within the same phase will take place simultaneously.

Table 12.3: Worst Case Construction Activities and Associated Noise Levels for Foundations

Activity	Plant Item	Quantity	Utilisation %	Sound Power, LW (dB(A))	Sound Power corrected for quantity and utilisation, LW (dB(A))	LAeq at 10 m (dB)	Total Equivalent Noise Level at 10 m (dB)
Foundations	C4.7 Concrete mixer truck	2	50	107	87	79	59
	C4.24 Concrete pump	2	80	96	78	68	50
	C2.15 Excavator	2	60	104	85	76	57
	C4.33 Poker Vibrator	2	50	106	86	78	58
	C4.95 Impact Wrench	2	80	101	83	73	55
Total					**92**	**83**	**64**

Table 12.4: Worst Case Construction Activities and Associated Noise Levels for Tower Erection

Activity	Plant Item	Quantity	Utilisation %	Sound Power, LW (dB(A))	Sound Power corrected for quantity and utilisation, LW (dB(A))	LAeq at 10 m (dB)	Total Equivalent Noise Level at 10 m (dB)
Tower Erection	D7.121 Lorry (pulling up)	1	20	98	71	70	43
	D12.5 Wheeled loader	1	50	114	91	86	63
	C4.57 Telehandler	2	40	95	74	67	46
	C4.41 Crane	2	50	99	79	71	51
Total					**92**	**87**	**64**

Table 12.5: Worst Case Construction Activities and Associated Noise Levels for Stringing with Conductors							
Activity	**Plant Item**	**Quantity**	**Utilisation %**	**Sound Power, LW (dB(A))**	**Sound Power corrected for quantity and utilisation, LW (dB(A))**	**LAeq at 10 m (dB)**	**Total Equivalent Noise Level at 10 m (dB)**
Stringing with Conductors	C3.7 Hydraulic jack	2	50	98	78	70	98
	C.457 MEWP	2	60	95	76	67	95
Total					**80**	**72**	**52**

12.3.23 The total equivalent noise level at 10 m for each activity can be used in a propagation calculation to find the specific noise at each receptor.

Operation – Noise

12.3.24 A summary of conductor audible noise results have been provided in 'LT040 Corona Noise Calculations' are presented in **Table 12.6**.

Table 12.6: Noise Emission Data			
Tower Name	**Measurement Distance**	**Total Noise Pressure wet conductor (L50) dB(A)**	**Wet Noise (L50) dB(A)**
5 L8 Min	100	26.6	1.6
5 L8 Min	25	33.1	8.1
5 L8 Min	0	38.4	13.4

12.3.25 The data was implemented into the calculations of received noise at NSR locations.

12.3.26 The data does not include spectra, and therefore assumed broadband in nature. In line with advice form TR(T)94, it is known a tonal 100 Hz frequency can become prominent at higher rain rates and therefore a penalty of 5 dB is added at rain rates of 1 mm/hr.

12.3.27 Using published rainfall noise data and the above measured dry background noise levels together with a description of the ground cover and the sound power data for the conductors, the emission of conductor noise has been predicted and its impact on the NSRs assessed under wet conditions.

12.3.28 The distance between the line source and NSR have been calculated using line geometry. The calculation considers X,Y,Z coordinates of the OHL towers with respect to NSR coordinates to determine an accurate distance between from source to receiver.

12.3.29 A TR(T)94 assessment has been conducted to determine where the results indicate complaints are likely rather than no observed reaction. The TR(T)94 assessment assesses the impact of noise during dry and wet conditions, based on the sound power level per metre of the conductor and the background noise level. The predicted noise level at the receptor is calculated based on a propagation model.

Dry Assessment

12.3.30 The noise impact from the OHL during dry conditions has been assessed using the British Standard 4142:2014 noise assessment approach. The excess dry figure is calculated by assuming attenuation of 11.4 dB for each factor of 10 in distance or "11.4 dB/decade". This is consistent with the BPA method of calculating OHL noise. This assumes the OHL produces no tonal or other distinctive noise characteristics when dry.

12.3.31 The dry noise input level has been taken from the LT040 reference levels. Giving the following reference value:

12.3.32 1.6 dB(A) at reference distance 100 m.

12.3.33 This value has been used in the following formula for each receptor:

12.3.34 $AN(dry) = 1.6 - 11.4Log10\left(\frac{R}{100}\right) - BGN$

12.3.35 Where; R= geometric distance to receptor, including Z + height of the line. BGN = assigned background noise at the receptor.

Wet Assessment

12.3.36 During wet conditions, the noise output from OHLs varies according to the number and size of rain droplets accumulated on the surface of the conductors. Therefore, there is a strong relationship between the rainfall rate and the noise output from an OHL. Background noise levels also increase with rainfall rate, such that during very heavy rain noise is generally inaudible. For these reasons an alternative noise assessment method to deal with rain-induced noise is required. The external rain-induced noise levels will be assessed using the methodology developed by National Grid and detailed in their Technical Report TR(T) 94, which is recommended by the Department of Energy & Climate Change for the assessment of rain induced noise.

12.3.37 The excess wet figure is derived by integrating the total noise as a function of rain rate, weighted according to the probability of a given rain rate. The rain distribution is taken from Met Office data for Braemar, January 1990 to March 2020, assuming a lognormal distribution. These data have been used alongside the assumption that the percentage of the year is 14%, taken from previous EIAs.

- Mean Annual Rain (mm/year) = 932.318
- Mean Annual Rain = 1227.24 Hours
- Mean Rain Rate = 0.75969 (mm/hour)

12.3.38 The excess wet figure is compared against a background noise level calculated through the addition of dry background noise levels and predicted noise due to rainfall according to the Miller curve value for that specific NSR. Miller curve descriptions are provided in **Table 12.7.**

Table 12.7: Miller Curve Description

Miller Curve	Description
R-1	Essentially bare, porous ground (that is ploughed field or snow covered ground); no standing puddles or water. Relatively small-leafed ground cover vegetation, such as grass lawn, meadow, hayfield shortly after mowing, field of small-leaf plants.
R-2	Non-porous, hard, bare ground or pavement, falling raindrops splash on thin layers of puddles of collected water; or in or beside wooded area of deciduous trees without leaves or with only small leaves; or in or beside wooded area of coniferous trees or evergreens having needles rather than leaves; or thin-leafed ground cover of crop, such as hay, clover or grain.
R-3	A few small, fully leafed deciduous trees 15 to 30 m or a few large, fully leafed trees 30 to 90 m distance.
R-4	Large area of fully leafed trees or large-leafed crops or vegetation, such as corn starting 15 to 30 m distance.

Table 12.7: Miller Curve Description	
R-5	Large area of fully-leafed trees or large-leafed crops or vegetation entirely surrounding the area of interest.

12.3.39 The wet sound level is based on data in the EMF Study.

- 26.6 dB(A) for 275 kV L8 type at reference 100 m

12.3.40 A 5 dB tonal penalty has been applied at rain rates over 1 mm/hr in accordance with BS 4142.

Determining Impact Magnitude and Sensitivity of Receptors

12.3.41 The sensitivity of the NSR is estimated in its current state prior to any change implied by the Proposed Development. It is a measure of level of protection according to existing regulations and guidance, societal value, and vulnerability for the change. By the combination of the assessed value of these three components, the NSRs' sensitivity can be classified as Low, Moderate or High.

Table 12.8: Evaluation of Receptor Sensitivity

Level of Sensitivity	Definition
Low	The receptor has minor societal value, low vulnerability for the change and no existing regulations and guidance. Even a receptor which has major or moderate societal value may have low sensitivity if it is not liable to be influenced by the Project development.
Moderate	The receptor has moderate value to society, its vulnerability for the change is moderate, regulation may set reference values or recommendations, and it may be in a conservation program. Even a receptor which has major societal value may have moderate sensitivity if it has low vulnerability, and vice versa.
High	Legislation strictly conserves the receptor, or it is very valuable to society, or very liable to be harmed by the Project development.

12.3.42 All NSRs considered in this assessment are residential in nature and for the purposes of the assessment are rated as **High** sensitivity for a conservative assessment due to the rural nature of the surroundings.

12.3.43 The magnitude of an impact at a given receptor can be interpreted as the degree of alteration that is undergone by the receptor as a consequence of the impact. Magnitude criteria can be quantitative using specified standards. As reported in the table below, the impact magnitude is worked out on a case-by-case basis for each NSR and classified as Negligible, Minor, Moderate, or Major.

Table 12.9: Evaluation of the Impact Magnitude

Impact Magnitude	Definition
Negligible	Impact to the receptor is immeasurable, undetectable or within the range of normal natural background variation.
Minor	The impact is minor, affecting a specific area, group of localized receptors and of little concern over a short time period (it is undesirable but acceptable).
Moderate	The impact gives rise to some concern, likely to be tolerable or would require a value judgement as to its acceptability requiring mitigations.
Major	The impact gives rise to great concern; it should be considered unacceptable and requires mitigating or a significant change to the development if no alternative is available. If no mitigation is possible, then the impact would require a value judgement as to its acceptability.

Construction

12.3.44 A CNIA can be carried out according to the ABC method specified in Table E.1 of BS 5228-1, in which NSRs are classified in categories A, B or C according to their measured or estimated background noise during construction activities. BS 5228-1 recommends limits based on the local environment and time of day. The criteria provided for the ABC method detailed in BS 5228-1 are shown in **Table** 12.10.

Table 12.10: Construction Noise Impact Assessment Criteria

Assessment category and threshold value period	Threshold value, LAeq (dB)		
	Category A	Category B	Category C
Night-time	45	50	55
Evenings and weekends	55	60	65
Daytime and Saturdays	65	70	75

12.3.45 Night-time is defined to be between 23:00 and 07:00. Evenings and weekends are defined to be 19:00 – 23:00 on weekdays, 13:00 – 23:00 on Saturdays and 07:00 – 23:00 on Sundays. Daytime is defined to be 07:00 – 19:00 on weekdays and s 07:00 – 13:00 on Saturdays.

12.3.46 The NSR is defined as Category A if the ambient noise levels (rounded to the nearest 5 dB) are less than those stated for Category A.

12.3.47 The NSR is defined as Category B if the ambient noise levels (rounded to the nearest 5 dB) are equal to those stated for Category A.

12.3.48 The NSR is defined as Category C if the ambient noise levels (rounded to the nearest 5 dB) are greater than those stated for Category A.

12.3.49 Ambient noise levels for all receptors are below those stated in Category A. Therefore, all NSRs are defined as Category A.

12.3.50 Excess noise over Category A criteria will result in **Major** impact magnitude.

Operation

12.3.51 There are differences in assessment methods for dry and wet conditions, with dry assessments indicating the excess of rating level over background and wet conditions assessing the weighted mean increase in noise levels, dry and wet predictions are assessed differently.

Dry Line Noise Impacts

12.3.52 Comparing the rating level with the background sound level, BS 4142 states:

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

Wet Line Noise Impacts

12.3.53 TR(T)94, similarly to BS 4142: 2014, recognises the following thresholds by which the new sound level exceeds the background noise, and the likely community response. The criteria are outlined in **Table** 12.11.

Table 12.11: Subjective Effect of Changes in Noise Level (Hassall & Zaveri, 1988)

Amount in dB(A) by which the new sound level exceeds the background noise	Description	Related Impact Magnitude Category
0	No observed reaction	Negligible
5	Sporadic complaints	Minor
10	Widespread complaints	Moderate
15	Threats of community action	Major
20	Vigorous community action	Major

Effect Significance

12.3.54 After assessing the sensitivity of the NSR in its baseline state, and then the impact magnitude of the noise likely to affect the NSR, an estimate of the impact significance can be derived by applying a calculation matrix in **Table 12.12**.

12.3.55 The measure of significance is the key output of the impact assessment process and drives the requirement for mitigation measures to be applied during operation to offset or reduce potential Project generated impacts. An assessment result of Major or Moderate significance effects would require specific mitigation, the extent to which dependant on context.

12.3.56 The evaluation of impact significance shall be performed by following a conservative approach to account for potential uncertainties affecting baseline data.

Table 12.12: Evaluation of the Impact Significance

Significance		Sensitivity of the Receptor/Resource		
		Low	**Moderate**	**High**
Magnitude of Impact	**Negligible**	Negligible	Negligible	Minor
	Minor	Negligible	Minor	Moderate
	Moderate	Minor	Moderate	Major
	Major	Moderate	Major	Major

Limitations and Assumptions

Construction

12.3.57 Construction noise activities and plant items have not been provided for this specific project and therefore have been assumed from previous projects of a similar nature. These assumptions have been accepted as suitable inputs.

Operation

12.3.58 As is the nature of OHL noise, the magnitude of noise generation and excess is based on varying environmental factors. There will be periods under certain conditions where excess noise from the OHL is more prominent, and times when it is less prominent. The excess wet figure is derived by integrating the total noise as a function of rain rate, weighted according to the probability of a given rain rate. The TRT(94) assessment methodology seeks to apply an overall excess value according to these statistics.

12.4 Sensitive Receptors

12.4.1 Noise sensitive receptors (NSRs) in this assessment are defined as residential properties and other sensitive buildings in the vicinity of the Proposed Development. The NSR locations are listed in **Table 12.13** and displayed in **Figure 12.1,** located in **Volume 3a** of the **EIAR.**

Table 12.13: Noise Sensitive Receptor Coordinates

NSR	Coordinates (British National Grid) X	Coordinates (British National Grid) Y	Distance from the OHL (m)
NSR 1	208899	716119	1111.5
NSR 2	207333	721198	1780.3
NSR 3	211288	720380	1256.7
NSR 4	208355	721509	991.0
NSR 5	209685	721798	698.9
NSR 6	210344	722583	694.3
NSR 7	210964	723320	633.2
NSR 8	211199	723447	569.5
NSR 9	212140	724211	509.4
NSR 10	213537	725385	890.7
NSR 11	214903	724661	559.4
NSR 12	214316	726082	679.0
NSR 13	216398	724978	911.0
NSR 14	217192	727126	855.5
NSR 15	217664	727074	919.6
NSR 16	218052	726561	424.0

Baseline Measurements

12.4.2 The results of the baseline noise measurements for the relevant NSRs are summarised in **Table** 12.14**.**

Table 12.14: Baseline Measurement Summary

Measurement Location	LAeq (dB)	LA90 (dB)	Representative NSR
M 1	39.8	39.4	1
M 2	24.8	23.9	3
M 3	26.7	26	2
M 4	33	31.8	4
M 5	33.3	32	5

Table 12.14: Baseline Measurement Summary			
M 6	34.1	33	6
M 7	42.8	41.6	7 and 8
M 8	26.2	25.2	9
M 9	26.7	25.6	10, 11 and 12
M 10	31.3	28.8	13 and 14
M 11	33.1	31	15 and 16

12.5 Assessment of Effects, Mitigation and Residual Effects

Mitigation by Design

12.5.1 As part of the impact assessment process, mitigation measures are identified to minimise the significance of the identified potential impacts. Two types of measures can be distinguished, as follows:

- Mitigation measures, aimed at managing potential adverse impacts of moderate or major significance to reduce residual impacts to an acceptable level.
- Recommendations and good practices aimed at managing potential adverse impacts of minor significance.

Construction

12.5.2 No specific mitigation is identified at the design stage. A CEMP will be expected to offer reasonable recommendations to manage any potential impacts.

Operation

12.5.3 No specific mitigation is identified at the design stage.

Description of Effects – Construction Noise

12.5.4 The daytime construction limit for all receptors remains at 65 dB. A conservative estimate for the sound pressure level at each receptor was calculated by taking a logarithmic ratio of distances, with the total equivalent noise level at 10 m as a reference. The total equivalent noise level at 10 m for each phase is taken from **Table 12.3** to **Table 12.5**. The following tables, **Table 12.15** to **Table 12.17**, show each receptor, the distance to the nearest point of the OHL, the estimated sound pressure level at the receptor, and the exceedance compared to the limit. The noise level decreases a large amount while travelling from source to receiver – a decrease of between 32 to 45 dB is seen in this assessment. Topographical screening is not considered in this assessment to maintain a conservative estimate.

Table 12.15: BS 5228-1 Assessment – Foundations – Daytime

NSR	Shortest distance to OHL (m)	Daytime Construction Noise Limit (dB)	Total Equivalent Noise Level at 10 m from OHL (dB)	Sound Pressure Level at Receptor (dB)	Construction Noise Limit Exceedance
1	1111	65	64	23	-42
2	1780	65	64	19	-46
3	1257	65	64	22	-43

Table 12.15: BS 5228-1 Assessment – Foundations – Daytime

4	991	65	64	24	-41
5	699	65	64	27	-38
6	694	65	64	27	-38
7	633	65	64	28	-37
8	569	65	64	29	-36
9	509	65	64	30	-35
10	891	65	64	25	-40
11	559	65	64	29	-36
12	679	65	64	27	-38
13	911	65	64	25	-40
14	856	65	64	25	-40
15	920	65	64	25	-40
16	424	65	64	31	-34

Table 12.16: BS 5228-1 Assessment – Tower Erection – Daytime

NSR	Shortest distance to OHL (m)	Daytime Construction Noise Limit (dB)	Total Equivalent Noise Level at 10 m from OHL (dB)	Sound Pressure Level at Receptor (dB)	Construction Noise Limit Exceedance
1	1111	65	64	23	-42
2	1780	65	64	19	-46
3	1257	65	64	22	-43
4	991	65	64	24	-41
5	699	65	64	27	-38
6	694	65	64	27	-38
7	633	65	64	28	-37
8	569	65	64	29	-36
9	509	65	64	30	-35
10	891	65	64	25	-40
11	559	65	64	29	-36
12	679	65	64	27	-38
13	911	65	64	25	-40
14	856	65	64	25	-40
15	920	65	64	25	-40
16	424	65	64	31	-34

Table 12.17: BS 5228-1 Assessment – Stringing to Conductors – Daytime					
NSR	Shortest distance to OHL (m)	Daytime Construction Noise Limit (dB)	Total Equivalent Noise Level at 10 m from OHL (dB)	Sound Pressure Level at Receptor (dB)	Construction Noise Limit Exceedance
1	1111	65	52	11	-54
2	1780	65	52	7	-58
3	1257	65	52	10	-55
4	991	65	52	12	-53
5	699	65	52	15	-50
6	694	65	52	15	-50
7	633	65	52	16	-49
8	569	65	52	17	-48
9	509	65	52	18	-47
10	891	65	52	13	-52
11	559	65	52	17	-48
12	679	65	52	15	-50
13	911	65	52	13	-52
14	856	65	52	13	-52
15	920	65	52	13	-52
16	424	65	52	19	-46

12.5.5 All receptors fall significantly below the construction noise limit for all phases. At some NSRs the noise is at an audible level and therefore is rated as **Negligible/Minor** impact magnitude.

Mitigation

12.5.6 Construction noise limits are met according to BS5228. However, noise may be above the background noise level for the area and a perceived change in noise levels could occur. It is best practice that construction is controlled with a CNMP, in accordance with the guidance and procedures outlined in BS5228-1. Procedures should include:

- Minimising the noise as much as is reasonably practicable at source.
- Attenuation of noise propagation.
- Carrying out identified high noise level activities at a time when they are least likely to cause a nuisance to residents.
- Providing advance notice of unavoidable periods of high noise levels to residents.
- In order to maintain a low impact on the noise environment, consideration will be given to attenuation of construction noise at source by means of the following:
  - Giving due consideration to the effect of noise, in selection of construction methods.
  - Avoidance of vehicles waiting or queuing, particularly on public highways or in residential areas with their engines running.

  - Scheduling of deliveries to arrive during daytime hours only. Care should be taken to minimise noise while unloading delivery vehicles. Delivery vehicles will comply with the Traffic Management Plan (TMP), which should follow routes that minimise residential roads.
  - Ensure plant and equipment are regularly and properly maintained. All plant should be situated to sufficiently minimise noise impact at nearby properties.
  - Fit and maintain silencers to plant, machinery, and vehicles where appropriate and necessary.
  - Operate plant and equipment in modes of operation that minimise noise, and power down plant when not in use.
  - Use electrically powered plant rather than diesel or petrol driven, where this is practicable.
- Working typically will not take place outside of daytime defined hours. Daytime is defined to be 07:00 – 19:00 on weekdays and s 07:00 – 13:00 on Saturdays.
- Consideration will be given to the attenuation of construction noise in the transmission path by means of the following:
  - Locate plant and equipment liable to create noise as far from noise sensitive receptors as is reasonably practicable or use natural land topography to reduce line of sight noise transmission.
  - Noise screens, hoardings and barriers should be erected where appropriate and necessary to shield high-noise level activities.
  - Provide lined acoustic enclosures for equipment such as static generators and when applicable portable generators, compressors, and pumps.

12.5.7 The nature and effect of the construction operations, including increased traffic noise, results in the need to minimise noise produced during these activities. Best practicable means will be employed to minimise noise produced by the works. In establishing criteria, controls and working methods, account will be taken of guidance provided in BS5228-1.

12.5.8 In setting working hours, consideration is given to the fact that the level of noise through the normal working day is more easily tolerated than during the evening and night-time. After conducting a BS5228 assessment and confirming the noise levels, working can continue into the evenings, as long as the threshold noise levels in Category A are adhered to.

12.5.9 Essential work outside of defined daytime hours should be subject to prior notification to the Local Planning Authority (LPA) and consultation with the local community.

12.5.10 An updated CNIA will be undertaken by the Principal Contractor as part of their CEMP, which will include an assessment of mobile plant items based on expected vehicle movements. The CEMP will identify mitigation measures where appropriate to ensure appropriate construction noise levels are achieved at all NSRs.

Residual Effects

12.5.11 With the implementation of a CEMP, the level of construction noise will be below BS5228-1 limits (**Table 11.10**) for category. With an impact magnitude of Minor, and sensitivity of High, the effect of construction noise at NSRs is therefore rated as **Minor** significance***.***

Description of Effects – Operational Noise

12.5.12 The assessment has considered potential significant effects from operational OHL noise due to “corona discharge”, during both dry and wet conditions.

12.5.13 A summary of results is provided in **Table 12.18** below.

Table 12.18: Results of the Dry and Wet Noise Assessments

Assessment Criteria	Dry Conditions	Wet Conditions
No observed reaction	16	16
Sporadic complaints	0	0
Widespread complaints	0	0
Threats of community action	0	0
Vigorous community action	0	0

12.5.14 The breakdown of results shows that for dry conditions, the entirety of the receptors along the OHL receive a rating of ‘no observable reaction’.

12.5.15 For the wet noise conditions, the assessments rates the impact magnitude as **Negligible**.

Mitigation

12.5.16 No identified specific mitigation is required for the Proposed Development.

Residual Effects

12.5.17 For all receptors, the TR(T) assessment predicts an impact magnitude of Negligible. With an NSR sensitivity of High, the assessment predicts impacts are of **Minor** significance for the Proposed Development.

Cumulative Effects

12.5.18 The cumulative impacts of a number of developments have been scoped in **Table 12.19.** All cumulative developments considered are illustrated in **Figure 14.1: Cumulative Developments (EIAR Volume 3a).**

Table 12.19: Other developments considered in the cumulative assessment

Application reference name	Location (Distance from the OHL)	Status	Comment
Overhead Lines & Substations			
Inveraray to Crossaig 275 kV Overhead Line Reinforcement (under construction) – 18/01700/S37	7.6 km south at closest point.	Consented February 2019, in construction	Due to large distance between the proposed sites, no long term cumulative effects are predicted.
Creag Dhubh to Inveraray 275 kV Overhead Line (Pre-planning, reasonably foreseeable as part of the Argyll and Kintyre 275 kV Strategy)	0.5 km – the OHL would connect into Creag Dhubh substation.	Pre-planning, reasonably foreseeable	Projects relatively close due to the connection at Creag Dhubh, however at sufficient distance that there are no shared NSRs.
Blarghour Wind Farm Connection Project (Pre-planning, reasonably foreseeable as part of the Argyll and Kintyre 275 kV Strategy)	0.5 km southwest.	Pre-planning, reasonably foreseeable	Due to large distance between the proposed sites, no long term cumulative effects are predicted.
Blarghour Wind Farm Connection Project	This would connect the consented Blarghour Wind Farm to the proposed Creag Dhubh substation, and therefore would connect into the south eastern extent of the Proposed Development.	Pre-planning, reasonably foreseeable	Projects relatively close due to the connection at Creag Dhubh, however at sufficient distance that there are no shared NSRs.
Argyll and Kintyre 275 kV Substations	Approximately 13 km.	Pre-planning, reasonably foreseeable	Due to large distance between the proposed sites, no long term cumulative effects are predicted.
Proposed Creag Dhubh substation for the proposed Creag Dhubh to Dalmally 275 kV Connection wider project	0 km – SSEN Project, would tie into same substation.	Pre-planning, reasonably foreseeable	Substation and Overhead line noise are different in nature, both in terms of tonality and in terms of when they are most significant. Substation noise tends to be most significant at 100 Hz. at times of low background noise (particularly at night). The impact from the proposed Creag Dhubh Substation is rated as low in terms of noise. In dry conditions the OHL impact is low, in wet conditions, when

Table 12.19: Other developments considered in the cumulative assessment			
			the OHL is at its loudest, background noise due to rain will generally increase and the impact from this line will still be low. The levels from the sites are so low that no long term cumulative effects are predicted.
Hydropower			
New Hydro Connection at Maltlands, Inveraray, Argyll – 18/00061/PP	Approximately 8.5 km south on the River Array.	Consented November 2018	Due to large distance between the proposed sites, no long term cumulative effects are predicted.
River hydroelectric scheme (revised pipeline route and intake positions), Inverlochy by Dalmally Argyll	3.5 km southeast on Eas A Ghaill.	13/01955/PP, constructed, active	Due to large distance between the proposed sites, no long term cumulative effects are predicted.
Run-of-river hydroelectric scheme, Glen Noe Estate Loch Etive Taynuilt Argyll and Bute	9.5 km northwest on the River Noe.	15/03129/PP, constructed, active	Due to large distance between the proposed sites, no long term cumulative effects are predicted.
Hydro Connection at Balliemeanoch Farm, East Lochaweside, By Dalmally, Argyll	9.1 km southwest at closest point, on the river Allt a' Chrosaid.	13/02892/PP, constructed, active	Due to large distance between the proposed sites, no long term cumulative effects are predicted.
Hydro Connection East of Cherrytree Lodge (erection of 33 kV single pole and 33 kV double pole), Portsonachan, By Dalmally, Argyll	5 km southwest.	17/00257/HYDRO, constructed, active	Due to large distance between the proposed sites, no long term cumulative effects are predicted.
Hydropower scheme, Land north of Edenonich, Dalmally, Argyll and Bute	1 km north.	18/02654/PP; Approved March 2019 and in-construction – likely completed	Due to large distance between the proposed sites, no long term cumulative effects are predicted.
Eas A Ghail Inverlochy by Dalmally, Addition of 3 intakes to the existing hydropower scheme (13/01955/PP). (19/00535/PP)	3 km southeast.	Status?	Due to large distance between the proposed sites, no long term cumulative effects are predicted.
Wind Farms			
Blarghour Wind Farm, Land 7 km Northwest of Inveraray – EC00005267	4.8 km southwest from OHL T1 at closest point	Consented	Should construction programmes overlap, HGV's for both projects would be routed along the A819. However, potential transport noise impacts would be mitigated through the project's TMPs, and significant effects would be avoided.

Table 12.19: Other developments considered in the cumulative assessment			
			Wind farm noise tends to be only significant at moderate wind speeds (6 to 9 m/s at 10 m) and in dry weather. At lower wind speeds, wind turbines are very quiet (or not turning) and at higher wind speeds, the background noise continues to rise, while the turbine levels off. Due to large distance between the proposed sites, no long term cumulative effects are predicted.
Other			
Erection of meteorological mast (up to 100 m high) | Land 1.5 km Northwest of Ladyfield Cottage Ladyfield Forest Inveraray Argyll and Bute – 20/02178/PP	Approximately 3.5 km.	Consented March 2021	Due to large distance between the proposed sites, no long term cumulative effects are predicted.
Erection of telecommunications equipment compound with 25 m lattice tower, land east of Keeper's Cottage, Cladich - 19/02207/PP	500 m northwest of OHL at closest point.	Consented February 2020	There are no expected operation noise impacts, therefore no long term cumulative effects are predicted.
Erection of Upper Telecommunications Mast, Land Northwest of Dalmally	Approximately 0.3 km at the closest Point.		There are no expected operation noise impacts, therefore no long term cumulative effects are predicted.
Commercial Forestry Schemes	Numerous applications for commercial planting and felling, as well as long-term forestry and land management plans.	Ongoing	Short term felling unlikely to cause a significant cumulative issue with the proposed site.
Proposed installation of SSE dish at 5 m and 338 degrees | Dalmally Upper Telecommunications Mast Dalmally Argyll and Bute	4 km south.		Due to large distance between the proposed sites, no long term cumulative effects are predicted.
Access Track			
Succoth Forest Dalmally Argyll and Bute, formation of forest track	Within 300 m of northern end of OHL.	21/01295/PNFOR; consented 2021	Road noise would be assessed for its own application. Road noise would form an increase in dry background noise when compared to the noise from the OHL. In wet weather, rain noise would largely mask road noise. An increase in road noise would help mask the OHL noise.

Table 12.19: Other developments considered in the cumulative assessment			
			Therefore, cumulative effects are predicted as low.
Succoth Forest Dalmally Argyll and Bute, formation of forest track	Within 500 m of northern end of OHL.	18/02018/PNFOR; Consented 2021	Road noise would be assessed for its own application. Road noise would form an increase in dry background noise when compared to the noise from the OHL. In wet weather, rain noise would largely mask road noise. An increase in road noise would help mask the OHL noise. Therefore, cumulative effects are predicted as low.
Succoth Forest Dalmally Argyll and Bute, formation of forest track	Within 500 m of northern end of OHL.	21/00106/PNFOR; Consented 2021	Road noise would be assessed for its own application. Road noise would form an increase in dry background noise when compared to the noise from the OHL. In wet weather, rain noise would largely mask road noise. An increase in road noise would help mask the OHL noise. Therefore, cumulative effects are predicted as low.
Allt Fhuaran Succoth Forest Dalmally Argyll and Bute	Within 500 m of northern end of OHL.	21/01022/PNFOR; Consented 2021	Road noise would be assessed for its own application. Road noise would form an increase in dry background noise when compared to the noise from the OHL. In wet weather, rain noise would largely mask road noise. An increase in road noise would help mask the OHL noise. Therefore, cumulative effects are predicted as low.
Land Opposite Kilchurn Castle Viewpoint Dalmally Argyll and Bute, formation of forest track	Within 500 m of the central portion of the OHL.	18/02659/PNFOR; Consented 2019	Road noise would be assessed for its own application. Road noise would form an increase in dry background noise when compared to the noise from the OHL. In wet weather, rain noise would largely mask road noise. An increase in road noise would help mask the OHL noise. Therefore, cumulative effects are predicted as low.
Kenachreachan Forest Dalmally Argyll and Bute, formation of forest access track	Within 500 m of northern end of OHL.	17/00302/PNFOR; constructed	Road noise would be assessed for its own application. Road noise would form an increase in dry background noise when compared to the noise from the OHL. In wet weather, rain noise would largely mask road noise.

Table 12.19: Other developments considered in the cumulative assessment			
			An increase in road noise would help mask the OHL noise. Therefore, cumulative effects are predicted as low.

12.6 Summary

12.6.1 This report has considered the potential noise effects that could arise due to the Proposed Development at the closest noise sensitive receptors within 1 km of the site. The assessment has taken account of applicable planning policy and current guidance.

12.6.2 With the implementation of measures within the CEMP, the level of construction noise will be below BS5228-1 limits for category A. The effect of construction noise at NSRs is therefore rated as ***Minor*** significance***.***

12.6.3 For all receptors, the TR(T) assessment predicts no observable reaction. The assessment predicts ***Minor*** significance for the Proposed Development.

12.6.4 No significant cumulative effects are predicted by the assessment.

12.6.5 Accordingly, no specific mitigation outwith standard control measures is required for the Proposed Development.

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APPENDIX 12.1 – ACOUSTICS GLOSSARY

A.1.1 Noise is defined as unwanted sound. Human ears can respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble) and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear.

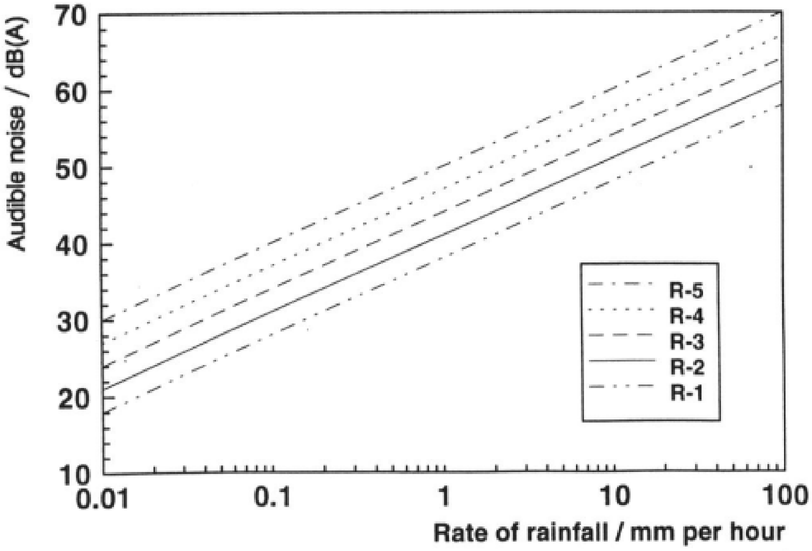
A.1.2 Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality or impulsiveness may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source.

A.1.3 The most widely used weighting mechanism that best corresponds to the response of the human ear is the 'A'-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or L_{Aeq}, L_{A90} etc., according to the parameter being measured.

A.1.4 The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective, but as a general guide a 10 dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions.

Acoustic Terminology

dB (decibel)	A unit of level derived from the logarithm of the ratio between the value of a quantity and a reference value and the scale on which sound pressure level is expressed. Sound pressure level is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure ($2x10^{-5}$ Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
$L_{Aeq,T}$	L_{Aeq} is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.
L_{10} & L_{90}	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L_{10} is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L_{90} is the 'average minimum level' and is often used to describe the background noise. It is common practice to use the L_{10} index to describe traffic noise.
Free-field Level	A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally as measured outside and away from buildings.
Façade Level	A sound field determined at a distance of 1 m in front of a large sound reflecting object such as a building façade.
Ambient Noise Level	The all-encompassing noise level measured in $L_{Aeq,T}$. The Ambient Noise Level incorporates background sounds as well as the industrial source noise under consideration.

Acoustic Terminology	
Residual Noise Level	The Ambient Noise Level in the absence of the industrial source noise under consideration, measured in $L_{Aeq,T}$.
Specific Noise Level	The noise level measured in $L_{Aeq;T}$ attributed to the industrial noise source under consideration alone.
Background Noise Level	The noise level in the absence of the industrial source noise under consideration, measured in L_{A90}.
Miller Curve	Miller (1978) conducted a study of rain induced noise, from which he produced five empirical curves for sound levels due to rainfall on various types of ground cover, ranging from bare, porous ground to fully-leafed trees. These curves are presented below with ground cover descriptions in Table 12.7. 

APPENDIX 12.2 – OPERATIONAL NOISE RESULTS

NSR ID	X	Y	Background Noise Level (LA90)		Miller Curve	Distance to Line (m)	Closest Tower	Dry Excess dB (rounded)	Wet Excess dB (rounded)	Dry Assessment	Wet Assessment
1	208899	716119	39.4		R-1	1111	1	-50	0	No Observed Reaction	No Observed Reaction
2	207333	721198	26.0		R-1	1780	5	-39	0	No Observed Reaction	No Observed Reaction
3	211288	720380	23.9		R-1	1257	10	-35	0	No Observed Reaction	No Observed Reaction
4	208355	721509	31.8		R-1	991	6	-42	0	No Observed Reaction	No Observed Reaction
5	209685	721798	32.0		R-1	699	9	-40	0	No Observed Reaction	No Observed Reaction
6	210344	722583	33.0		R-1	694	14	-41	0	No Observed Reaction	No Observed Reaction
7	210964	723320	41.6		R-1	633	17	-49	0	No Observed Reaction	No Observed Reaction
8	211199	723447	41.6		R-1	569	18	-49	0	No Observed Reaction	No Observed Reaction
9	212140	724211	25.2		R-1	509	22	-32	1	No Observed Reaction	No Observed Reaction
10	213537	725385	25.6		R-1	891	28	-35	0	No Observed Reaction	No Observed Reaction
11	214903	724661	25.6		R-1	559	31	-33	1	No Observed Reaction	No Observed Reaction
12	214316	726082	25.6		R-1	679	33	-33	0	No Observed Reaction	No Observed Reaction
13	216398	724978	28.8		R-1	911	37	-38	0	No Observed Reaction	No Observed Reaction
14	217192	727126	28.8		R-1	856	40	-38	0	No Observed Reaction	No Observed Reaction
15	217664	727074	31.0		R-1	920	42	-40	0	No Observed Reaction	No Observed Reaction
16	218052	726561	31.0		R-1	424	44	-37	1	No Observed Reaction	No Observed Reaction