MORAY WEST
OFFSHORE WINDFARM

Onshore Transmission Infrastructure Environmental Impact Assessment (EIA)

Moray Offshore Windfarm (West) Limited

Technical Appendix 10.1 Noise Baseline Report

Table of Contents

List of Figures

List of Tables

List of Graphs

Acronyms	
Acronym	**Expanded Term**
BS	British Standard
dB	Decibel
EIA	Environmental Impact Assessment
NSR	Noise Sensitive Receptor
OnTI	Moray West Onshore Transmission Infrastructure
SLM	Sound Level Meter

1 Introduction

1.1 Purpose of this Report

Wood Environment & Infrastructure Solutions UK Limited (Wood) has been appointed by GoBe Consultants, on behalf of Moray Offshore Windfarm (West) Limited, to undertake studies relating to the Environmental Impact Assessment (EIA) for the proposed Moray West Onshore Transmission Infrastructure (OnTI).

There is potential for onshore noise and vibration effects during construction, operation and decommissioning of the OnTI. This baseline report sets out the measured baseline data undertaken in October 2017 at Noise (and vibration) Sensitive Receptors (NSRs) identified by Amec Foster Wheeler to inform the assessment of potentially significant onshore noise and vibration effects from these activities.

Derived baseline data, such as that associated with the road traffic assessment of the OnTI, is not presented within this report. The derived road traffic baselines and the associated modelling methodology are fully presented within Appendix 10.2 of the EIA Report (Prediction and Assessment Methodology).

The scope of this onshore noise baseline report has been developed through consultation with key statutory consultees. Consultation has included formal EIA Scoping and subsequent discussion with Moray Council, the determining authority at the proposed location of an onshore substation as part of the OnTI.

Terminology for this report is provided in Annex A.

1.2 Site Overview

The OnTI is required to connect the Moray West Offshore Wind Farm to the National Grid network. Infrastructure sources of sound and / or vibration include the construction, operation and decommissioning of:

- Buried cable circuits and associated buried infrastructure; and
- Onshore substation.

The area in and around the proposed location of the OnTI largely comprises a mix of rural uses (e.g. both arable and livestock farming), with scattered residential areas, the largest of with is the town of Keith in Moray. Key noise sources include road and rail traffic, agricultural machinery and activities, and the sea when close to the coast.

2 Technical Guidance

The planning policy, standards and technical guidance used to inform the baseline survey are listed in Table 2.1.

Table 2.1: Summary of Standards and Technical Guidance

Technical guidance	Summary
British Standards Institution 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise, 2014 (BS5228-1:2009:A1:2014, 2014).	Provides a recommended scope for construction and demolition noise assessment (the ABC Method) presented in Annex E, British Standard (BS) 5228-1:2009+A1:2014, and also gives example threshold values for potential significant effects at noise sensitive receptors based upon the results of ambient sound monitoring.
British Standards Institution 4142:2014 Methods for rating and assessing industrial and commercial sound, 2014 (BS 4142:2014, 2014).	BS 4142:2014 describes methods for rating and assessing sound of an industrial nature (using outdoor sound levels), such as from factories, industrial premises, or fixed installations affecting people who might be inside or outside a dwelling.

The ambient and background sound survey work has been required in order to inform the assessment of potential effects on NSR caused by construction, operation and decommissioning of the proposed onshore substation. Sound measurements at locations representative of the closest NSR have been undertaken in order to determine the existing representative baseline ambient and background sound levels at these locations.

3 Consultation

In addition to EIA Scoping, the consultation outlined in Table 3.1 was undertaken regarding sound monitoring. It should be noted that the onshore substation site is located within the Moray Council area, as are all the NSRs identified for the purposes of sound monitoring.

Table 3.1: Consultation Regarding Sound Monitoring

Date	Consultation Document	Further Documentation	Conclusion
07/11/2017	Email communications with the Environmental Health Officer at Moray Council to introduce the noise and survey and assessment methodology and agree suitable sound monitoring locations.		Survey methodology and NSRs agreed.

4 Methodology

4.1 Noise and Vibration Sensitive Receptors

The identified residential NSRs are outlined in Table 4.1 and shown on Figure 4.1.

Table 4.1: Noise Sensitive Receptors

NSR	Name	Description
NSR1	Marypark	Residential and agricultural area identified south-east of Keith to be potentially affected by noise from the construction, operation and decommissioning of the onshore substation.
NSR2	Newtack Farm	Residential and agricultural area identified south-east of Keith to be potentially affected by noise from the construction, operation and decommissioning of the onshore substation.
NSR3	Mains of Pitlurg	Residential and agricultural area identified south-east of Keith to be potentially affected by noise from the construction, operation and decommissioning of the onshore substation.
NSR4	Whitehillock	Residential and agricultural area identified south-east of Keith to be potentially affected by noise from the construction, operation and decommissioning of the onshore substation.

4.2 Data Collection Locations

Ambient and background sound monitoring was undertaken over a period from Wednesday 18 to Wednesday 25 October 2017. The monitoring consisted of only long-term measurements, approximately 7 days in duration, which were undertaken at locations representative of residential NSR (with the North Whitley location representing Marypark). The monitoring locations are summarised in Table 4.2 and are shown in Figure 4.1.

Table 4.2: Monitoring Locations

Location Reference	Location Description	Duration	Description	Latitude	Longitude
C1	North Whitley	7 Days	Measurement of typical ambient noise levels at North Whitley.	57.510843°	-2.9418665°
C2	Newtack Farm	7 Days	Measurement of typical ambient noise levels at the dwellings on Newtack Farm.	57.497622°	-2.9247230°
C3	Mains of Pitlurg	7 Days	Measurement of typical ambient noise levels at the dwellings on the Main of Pitlurg.	57.496996°	-2.9404143°
C4	Whitehillock	7 Days	Measurement of typical ambient noise levels for the dwellings on Whitehillock.	57.504419°	-2.9281974°

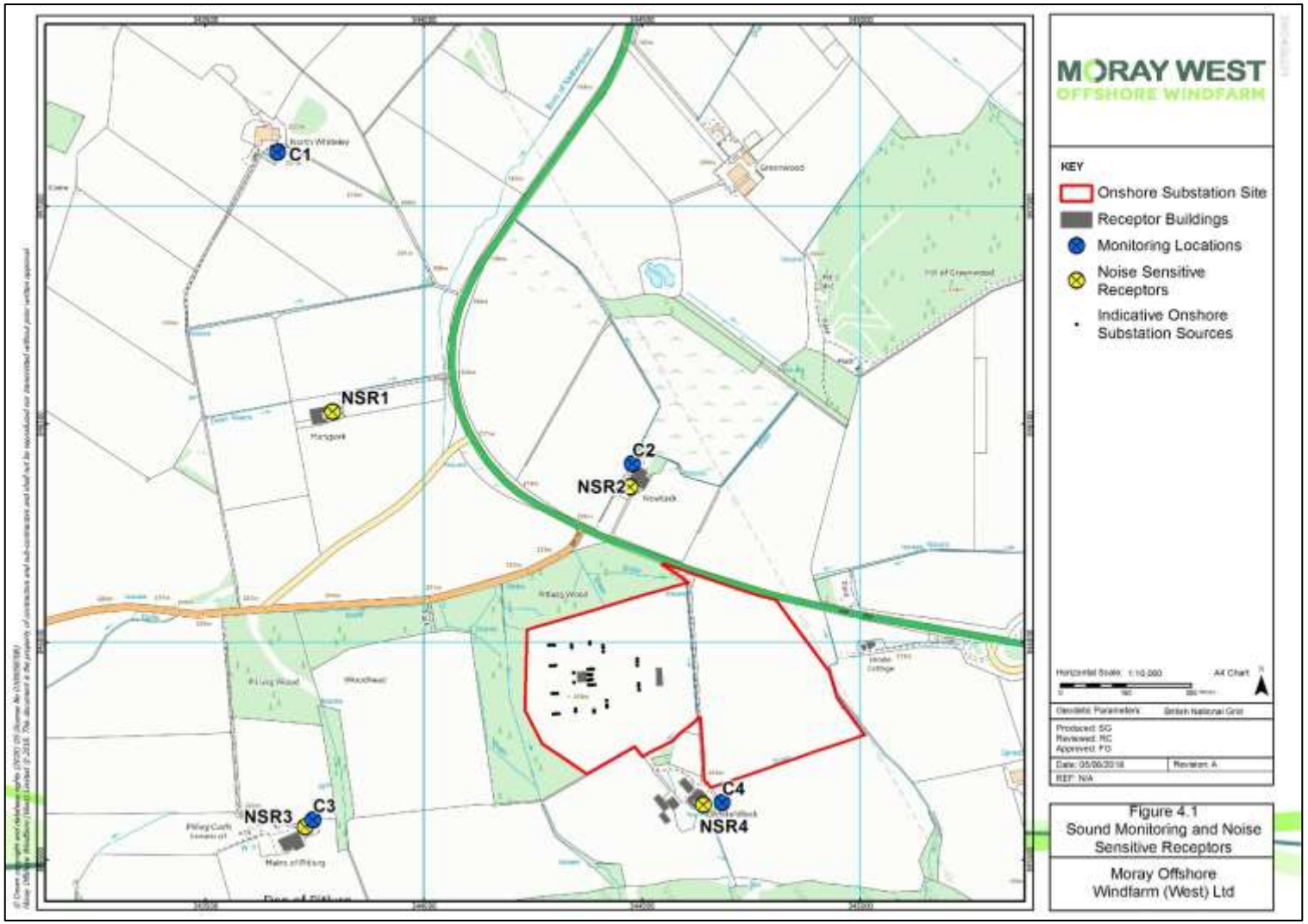


Figure 4.1: Noise Monitoring and Receptor Locations

4.3 Data Collection Methodology

All ambient and background sound measurements were undertaken by suitably qualified Amec Foster Wheeler personnel. 'Suitably qualified' means qualified to the Institute of Acoustics Certificate of Competence in Environmental Noise Monitoring, as a minimum.

Ambient and background sound monitoring equipment at the long-term locations was left to measure sound continuously for approximately one week, between 18 October and 25 October 2017. The sound monitoring equipment was left unmanned for a majority of the survey period and observations of the sound environment were made during its deployment. The one week survey duration allowed for an adequate understanding of potential changes in the baseline and background sound environments.

All ambient and background sound measurements were undertaken in accordance with BS 4142:2014 Methods for rating and assessing industrial and commercial sound (2014) and BS 7445 1:2003 Description and Measurement of Environmental Noise - Part 1: Basic Quantities and Procedures (2003), i.e. with microphones mounted to a minimum height of 1.2 m to 1.5 m above ground level, and no less than 3.5 m from any reflecting surface other than the ground. The measurement logging consisted of 15 minute and 100 ms resolution, in a full suite of energetic and statistical parameters including: $L_{Aeq,T}$, $L_{A90,T}$, $L_{A10,T}$ and L_{AFmax}.

At each location sound levels were measured using integrating averaging sound level meters (SLM) conforming to Class 1 or better as defined by BS EN 61672: Part 1:2013 Electroacoustics, Sound Level Meters, Specifications (2013). The SLMs were field calibrated before and at the end of each survey period, by applying an acoustic calibrator, conforming to BS EN 60942:2003 Electroacoustics - Sound Calibrators (2003), to the microphone to check the sensitivity of the measuring equipment. Any drift in calibration levels was noted upon collection.

For all ambient and background sound surveys, the equipment used had undergone laboratory calibration within a period not exceeding two years prior to use (calibrators used are within a period not exceeding one year of calibration).

Meteorological measurement equipment was deployed at location C1 to monitor local wind speeds and direction, precipitation and air temperature during each of the ambient and background sound monitoring surveys. The results of the meteorological surveys have been used in the analysis of the ambient and background sound data to ensure that only data collected under appropriate weather conditions has been used in defining the baseline sound levels. Adverse weather conditions are considered to comprise periods with: wind speeds above 5 $m \cdot s^{-1}$; precipitation; frozen ground or snow coverage; temperature inversions; and/or fog/mist. This approach is advocated within British Standards BS4142:2014 and BS5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise (2014).

4.4 Baseline Vibration

Baseline vibration surveys were not required as acceptable vibration levels are not dependant on pre-existing levels.

5 Results

5.1 Data Analysis

Baseline levels were calculated from the sound monitoring results using Microsoft Office 365 ProPlus Excel 2013 for each of the monitoring locations described. For each monitoring location the statistical parameters, and the associated assessment requirements, are listed in Table 5.1.

Table 5.1: Summary – Ambient and Background Sound Survey Statistical Parameters

Assessment	Assessment Period	Statistical Parameters (decibels [dB])
Construction assessment night-time.	Monday – Sunday 23:00 – 07:00.	$L_{Aeq, T}$
Construction assessment evening and weekends.	Monday – Friday 19:00 – 23:00. Saturday 13:00 – 23:00. Sunday 07:00 – 23:00.	$L_{Aeq, T}$
Construction assessment daytime.	Monday – Friday 07:00 – 19:00. Saturday 07:00 – 13:00.	$L_{Aeq, T}$
Operational assessment night-time.	Monday – Sunday 23:00 – 07:00.	$L_{Aeq, T}$ and $L_{A90, T}$ [mean / modal average]
Operational assessment daytime.	Monday – Sunday 07:00 – 23:00.	$L_{Aeq, T}$ and $L_{A90, T}$ [mean / modal average]

Meteorological data were used to identify periods when adverse weather conditions (see section 4.3.6) occurred during the ambient and background monitoring surveys. A 45-minute period from 19:15 on 24 April 2017 has been removed from the final ambient and background sound data set due to rainfall. There were no other periods of adverse weather during the sound monitoring.

5.2 Sound Monitoring Results

The results of the ambient and background sound monitoring and the statistical parameters are summarised in Table 5.2. Annex B provides further details, including associated time-history graphs.

Table 5.2: Summary – LT Ambient and Background Sound Monitoring Results

Location Reference	Monitoring Location	Weekday Monitoring Period	$L_{Aeq, T}$ (dB)	$L_{A90, T}$ [mean average] (dB)	$L_{A90, T}$ [modal average] (dB)*
C1	North Whiteley	Daytime (07:00 – 23:00).	53	43	47
		Night-time (23:00 – 07:00).	49	36	30
C2	Newtack Farm	Daytime (07:00 – 23:00).	50	41	42
		Night-time (23:00 – 07:00).	46	34	28
C3	Mains of Pitlurg	Daytime (07:00 – 23:00).	46	36	36
		Night-time (23:00 – 07:00).	44	32	27
C4	Whitehillock	Daytime (07:00 – 23:00).	48	38	39
		Night-time (23:00 – 07:00).	43	32	26

*Modal averages rounded to the nearest whole number

The sound environment noted during SLM deployment and collection of the long-term locations had a variety of noise as a dominant contributor; these noises included road traffic, livestock and farm machinery. Location specific sound environment observations are detailed within Annex B.

6 References

British Standards Institution (2003a). BS 61672-2:2003 Electroacoustics: Sound level meter.

British Standards Institution (2003b). BS 7445-1:2003 Description and measurement of environmental noise. Guide to quantities and procedures.

British Standards Institution (2014a). BS 4142:2014 Method for rating industrial noise affecting mixed residential and industrial areas.

British Standards Institution (2014b). BS 5228-1: 2009 +A1: 2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.

Annex A – Noise and Vibration Terminology

The term 'noise' is used to describe an 'unwanted sound', and is generally applied when describing assessment methodologies or the predictions of emissions at receptors for the purpose of assessment. In keeping with relevant policy, Standards and guidance, calculated or measured emissions associated with the existing acoustic environment (such as ambient or background levels), and not associated with road traffic are described as 'sound'.

While it is recognised that road traffic noise is not always considered 'unwanted', the term 'noise' is applied when describing their measurement.

The term 'noise' refers to airborne noise, and 'vibration' to ground-borne vibration. For all other terminology, a full technical description is used, such as 'ground-borne noise'. Additional technical terminology of relevance is presented in Table A-1.

Table A-1: Noise and Vibration Terminology

Term	Definition
Acoustic calibrator	The Acoustic Calibrator fits over the microphone and outputs a consistent sound level for the microphone to detect. The software in the sound level meter recognises the defined output from the calibrator and if any variation is detected the sound level meter offsets the difference to ensure all measurements are consistent and accurate against a consistent noise source.
Acoustic environment	Sound from all sources as modified by the environment.
Ambient sound	Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far.
Ambient sound level	The $L_{Aeq, T}$ of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T.
A-weighting	A frequency weighting derived to attempt to take into account the fact that human response to sound is not equally sensitive to all frequencies.
Background sound level	The underlying level of sound over a period, T, and is represented by $L_{A90, T}$
dB	A measure of sound pressure level in decibels, as specified BS EN 61672-2:2003 'Electroacoustics. Sound level meter'.
Façade level	A measurement that is undertaken within the acoustic influence of a reflective façade. BS 8233:2014 states that façade level measurement is typically 1 dB to 2 dB higher than corresponding free-field measurements because of the reflection from the façade.
Fast time weighting	A time interval of 125 ms that the sound level meter records sound levels.
Free-field level	A measurement that is undertaken away from the acoustic influence of a reflective façades.
Hertz (Hz)	The number of waves per second. The unit of measurement for frequency of a sound wave.
Inverse square law	Any condition in which the magnitude of a physical quantity follows an inverse relationship to the square of the distance. In pure spherical divergence of sound from a point source in free space, the sound pressure level decreases 6 dB for each doubling of the distance.
$L_{A10, 18h}$	The L_{A10} over the period 06:00 – 24:00 (local time), with a fast time weighting.
$L_{A10, T}$	The A-weighted sound pressure level that is exceeded for 10% of a given time interval, *T*, measured using a fast time weighting. It is used to measure road traffic sound levels.
$L_{A90, T}$	The A-weighted sound pressure level that is exceeded for 90% of a given time interval, *T*, measuring using a fast time weighting.

Table A-1: Noise and Vibration Terminology	
Term	**Definition**
$L_{Aeq,\ 16hr}$ / $L_{Aeq,\ 8hr}$	The L_{Aeq} over the periods 07:00 – 23:00 (local time), and 23:00 – 07:00 (local time), respectively, measured using a fast time weighting.
$L_{Aeq,\ T}$	The A-weighted equivalent continuous sound pressure level measured using a fast time weighting. It is a notional continuous level that, at a given position and over the defined time period, *T*, contains the same sound energy as the actual fluctuating sound that occurred at the given position over the same time period, *T*.
$L_{AFmax,\ T}$	The maximum recorded sound level within a given time period, *T*, measured using a fast time weighting.
$L_{ASmax,T}$	The maximum recorded sound level within a given time period, *T*, measured using a slow time weighting.
Longitudinal wave	A wave in which vibrations are in the direction of propagation of sound, for example, sound waves in air
Mean (average)	The arithmetic average of a set of numbers, e.g. add up the numbers and divide by the number of numbers.
Modal (average)	The mode is the number in a dataset that is repeated more often than any other number in the same set
Noise	A term used to describe “unwanted sound” or any sound that is undesired by the recipient.
Noise Level Indices (L_n parameters)	Noise levels usually fluctuate over time, so it is often necessary to consider an average or statistical noise level. This can be done in several ways, so a number of different noise indices have been defined, according to how the averaging or statistics are carried out.
Octave Frequency Bands	A range of frequencies where the upper frequency limit is twice that of the lower frequency limit. For example, the 1000 Hertz octave band contains acoustic energy at all frequencies from 707 to 1414 Hz.
One Third Octave Frequency Bands	Octave bands that are sub-divided into three parts, equal to 23% of the centre frequency. Used when octave analysis is not discrete enough. Divides the audio spectrum into 33 or more equal parts where the cut-off frequencies have a ratio of 21/3, which is approximately 1.26. For example, a 1 kHz third-octave band filter has a centre frequency of 1000 Hz with lower and upper frequencies of 891 Hz and 1112 Hz, respectively.
Slow time weighting	A time interval of 1 s that the sound level meter records sound levels.
Sound	Any pressure variation that the human ear can detect. Depending on the medium, sound extends and affects a greater area (propagates) at different speeds. In air, sound propagates at a speed of approximately 343 $m \cdot s^{-1}$. In liquids and solids, the propagation velocity is greater - 1480 $m \cdot s^{-1}$ in water and 5120 $m \cdot s^{-1}$ in steel, for example.
Sound Exposure Level (SEL)	Is the $L_{Aeq,\ T}$ noise level normalised to 1 s and is commonly used to determine noise levels from trains, for example.
Sound level meter (SLM)	SLM is the instrument used for acoustic (sound that travels through air) measurements. It is commonly a hand-held instrument with a microphone. The diaphragm of the microphone responds to changes in air pressure caused by sound waves.
Sound Power Level (L_W)	The total sound energy radiated by a source per unit of time.

Table A-1: Noise and Vibration Terminology	
Term	**Definition**
Sound pressure level (L_p)	Sound pressure level is the RMS value of the Instantaneous Sound Pressures measured over a specified period of time, measured in decibels (dB) to a given reference pressure level.
Specific sound level	An $L_{Aeq,\ T}$ measurement of a specific sound source at the assessment location of a given time period, *T*.
Threshold of hearing	The minimum sound pressure level of a pure tone that can be perceived by a person with good hearing. A sound pressure of 20x10-6 Pascal (0.0002 mBar) is defined as 0 dB L_p.

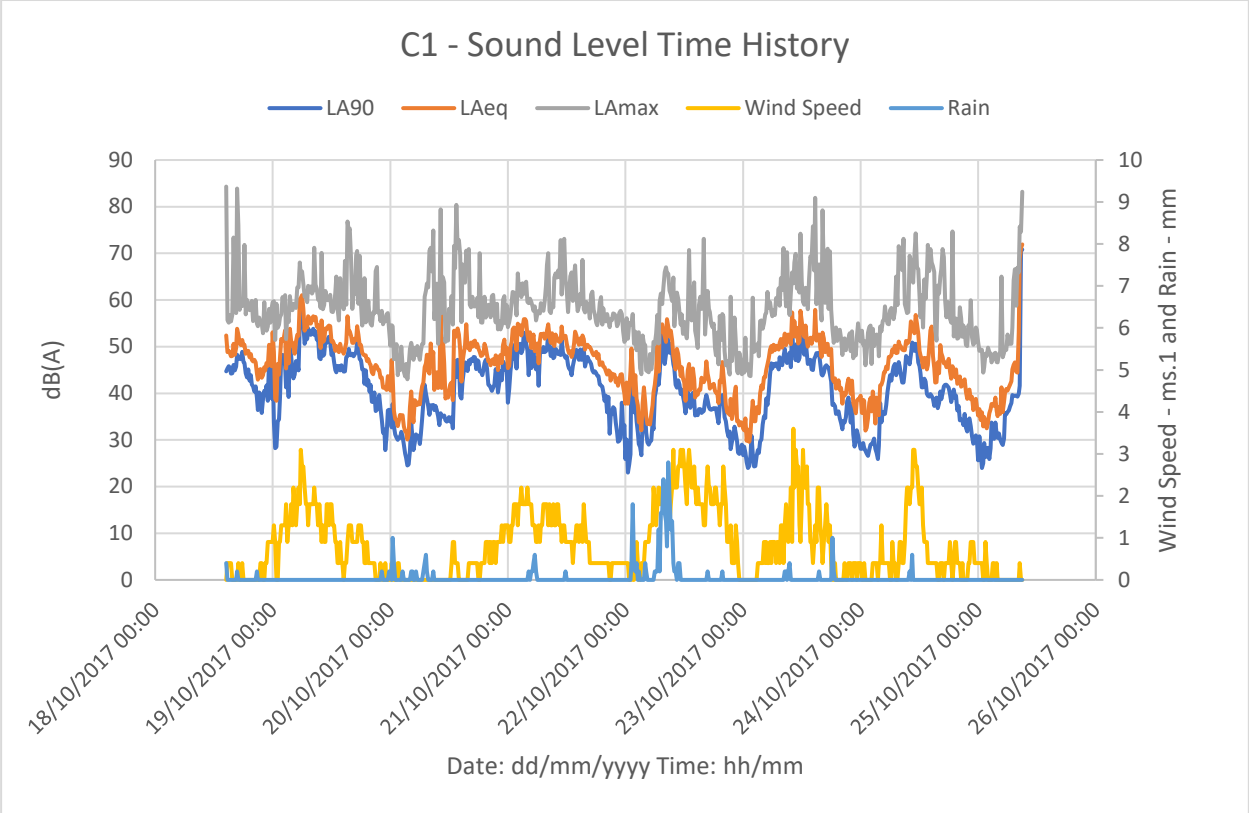
Annex B – Ambient and Background Sound Monitoring Results

Position	Description of Monitoring Location	Figure C.1 Monitoring Location C1
Position C1 **Location** North Whiteley Farm, Keith **Period** 18/10/2017 – 25/10/2017	**Description of Monitoring Location** C1 was located in the garden of the property on North Whiteley, along with the weather station. The area was identified to be potentially affected by noise and vibration from the construction of the onshore cable route associated with Moray West. The SLM was positioned in a free-field location near the property, approximately 10 m from the western façade of the house. **General Observations** The dominant sound source was the A96 road, east of the property. Other noise sources audible throughout observations included, rustling from the leaves on trees, bird song and noise from machinery on the farm.	

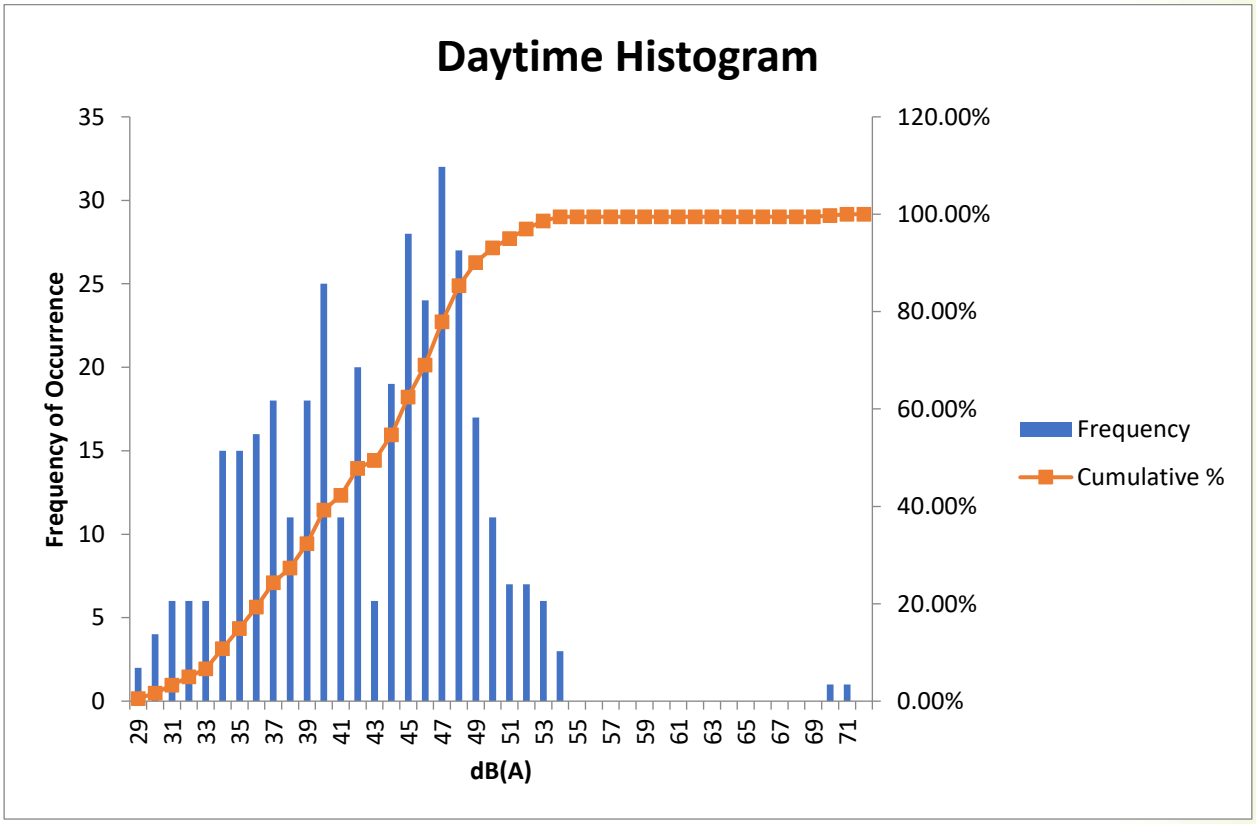
Table B-1: Summary of Sound Monitoring at Location C1

Assessment	Assessment Period	$L_{Aeq, T}$ (dB)	$L_{A90, T}$ [mean average] (dB)	LA90, T [modal average] (dB)*
Construction assessment night-time.	Monday – Sunday 23:00 – 07:00.	50	36	30
Construction assessment evening and weekends.	Monday – Friday 19:00 – 23:00. Saturday 13:00 – 23:00. Sunday 07:00 – 23:00.	45	39	40
Construction assessment daytime.	Monday – Friday 07:00 – 19:00. Saturday 07:00 – 13:00.	5	44	45
Operational assessment night-time.	Monday – Sunday 23:00 – 0:700.	49	36	30
Operational assessment daytime.	Monday – Sunday 07:00 – 23:00.	53	43	47

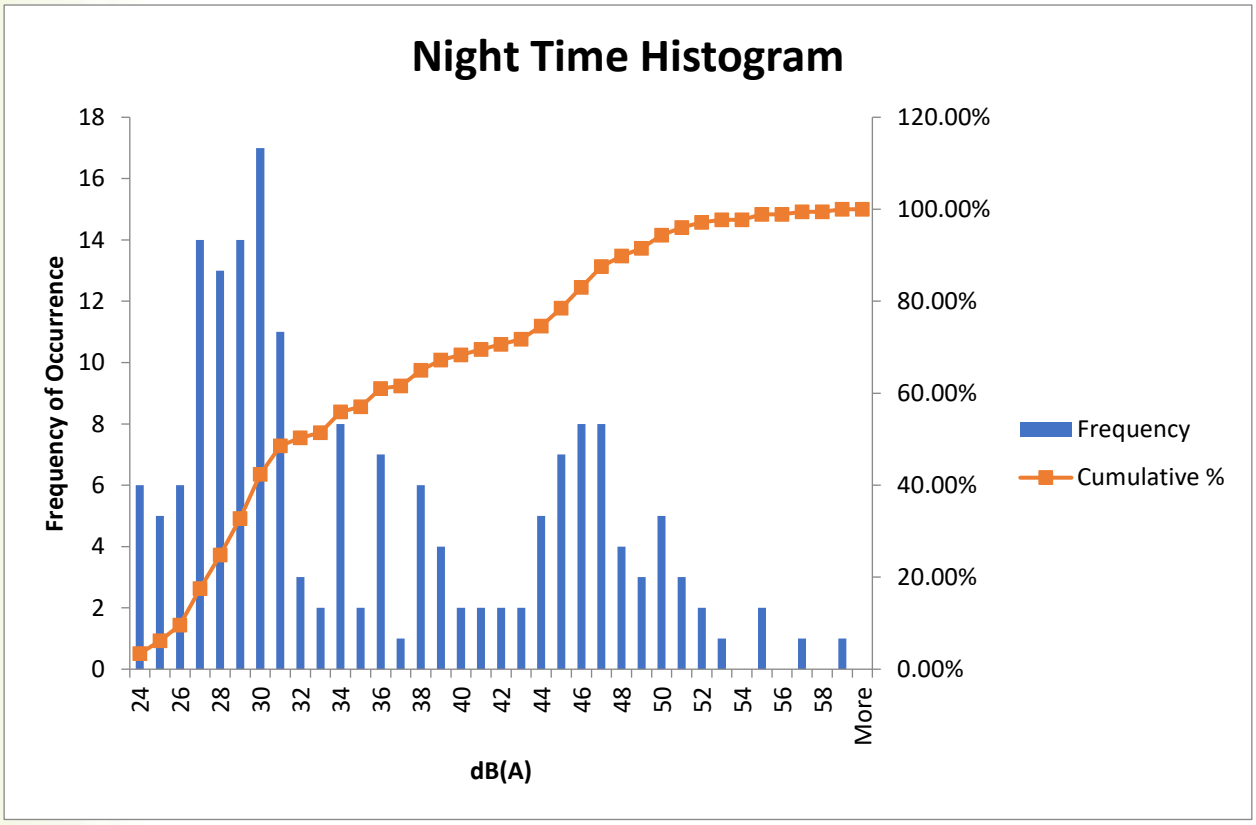
*Modal averages rounded to the nearest whole number.



Graph B-1: C1 Sound Level Time History



Graph B-2: C1 Daytime Histogram



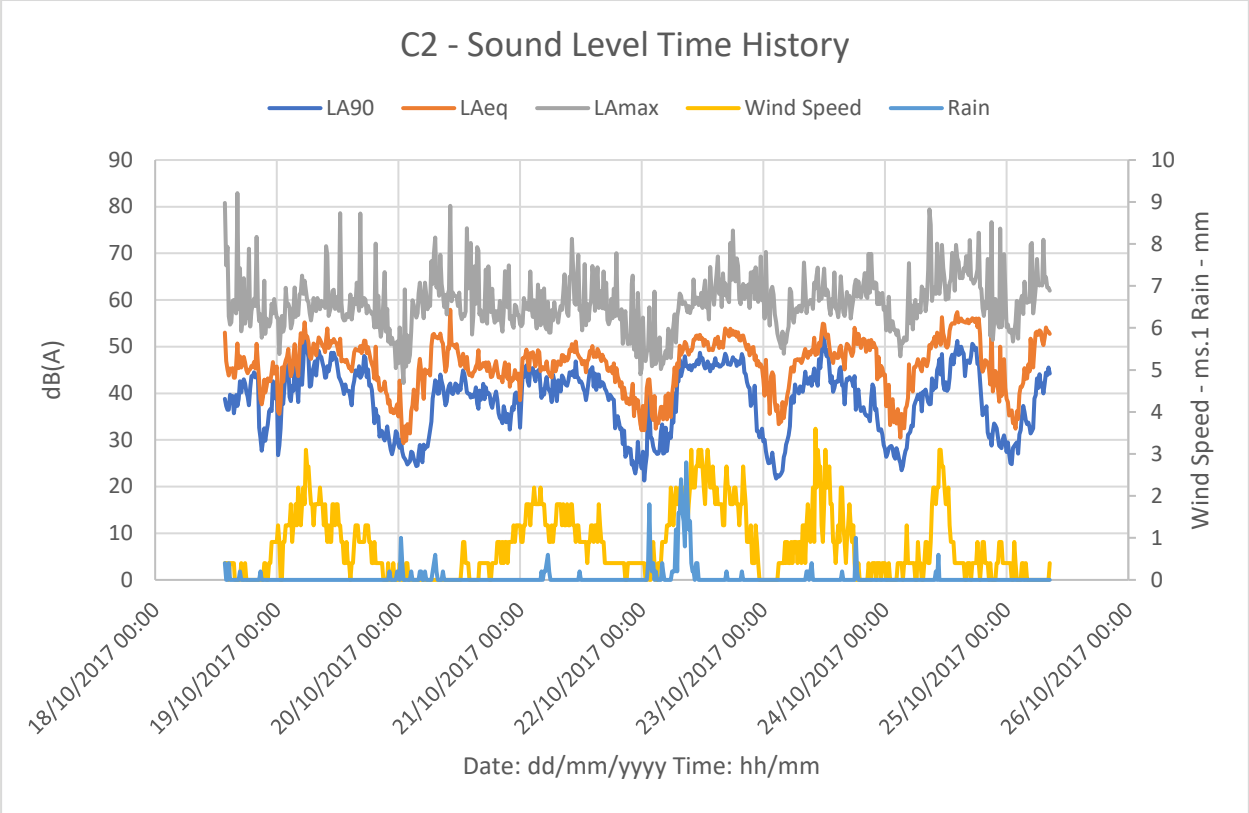
Graph B-3: C1 Night Time Histogram

Position	Description of Monitoring Location	Figure C. 2 Monitoring Location C2
Position C2 **Location** Newtack Farm, Keith **Period** 18/10/2017 – 25/10/2017	**Description of Monitoring Location** C2 was located north of the property on Newtack Farm, approximately by 30 m. The area was identified to be potentially affected by noise and vibration from the construction of the onshore cable route and the operation of the substation. The SLM was positioned in a free-field location near the property in an area representative of the background sound level at the noise sensitive receptor. **General Observations** The acoustic environment was mainly dominated by road traffic noise from the A96 road, south of the monitoring location. Livestock in the field west of the property became the dominant noise source on occasion but was not consistent. At the time observations were undertaken, no farm machinery was in operation.	

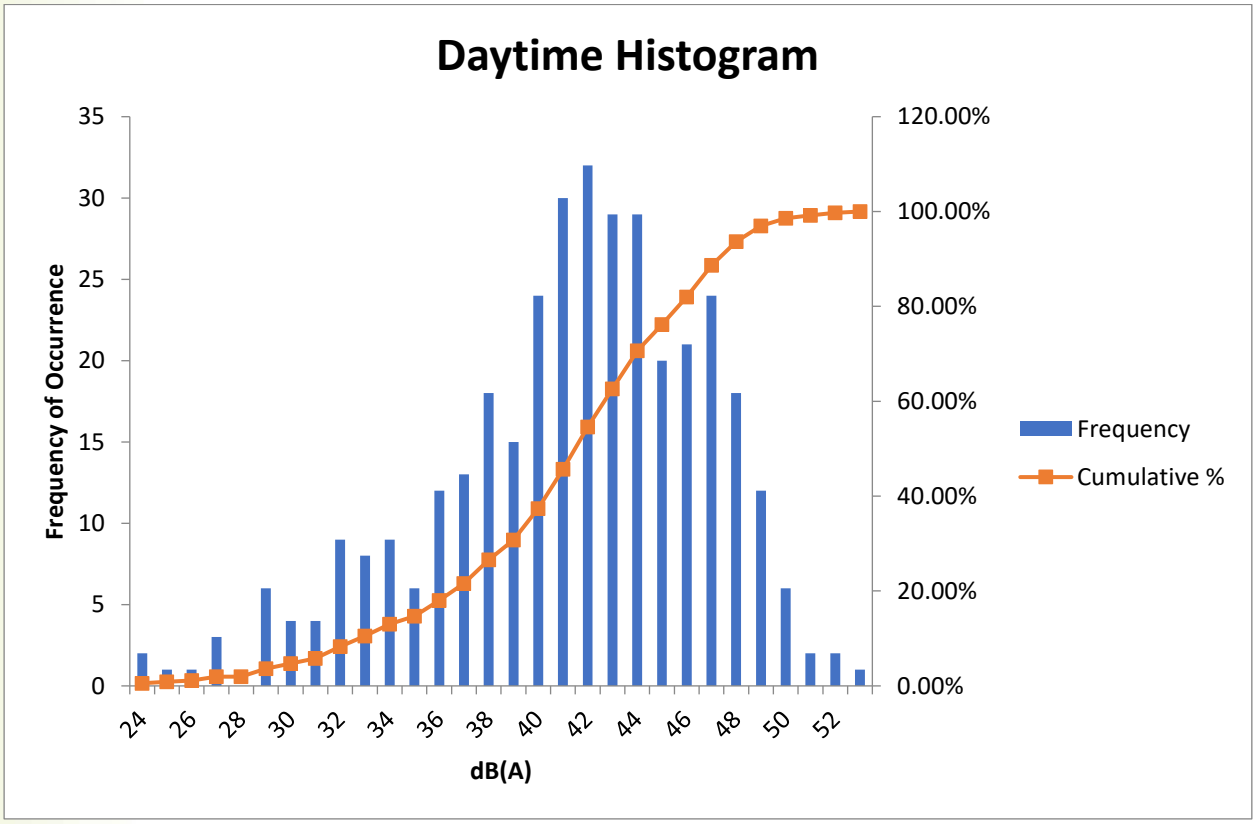
Table B-2: Summary of Sound Monitoring at Location C2

Assessment	Assessment Period	$L_{Aeq, T}$ (dB)	$L_{A90, T}$ [mean average] (dB)	LA90, T [modal average] (dB)*
Construction assessment night-time.	Monday – Sunday 23:00 – 07:00.	50	34	28
Construction assessment evening and weekends.	Monday – Friday 19:00 – 23:00. Saturday 13:00 – 23:00. Sunday 07:00 – 23:00.	50	38	46
Construction assessment daytime.	Monday – Friday 07:00 – 19:00. Saturday 07:00 – 13:00.	50	43	42
Operational assessment night-time.	Monday – Sunday 23:00 – 07:00.	46	34	28
Operational assessment daytime.	Monday – Sunday 07:00 – 23:00.	50	41	42

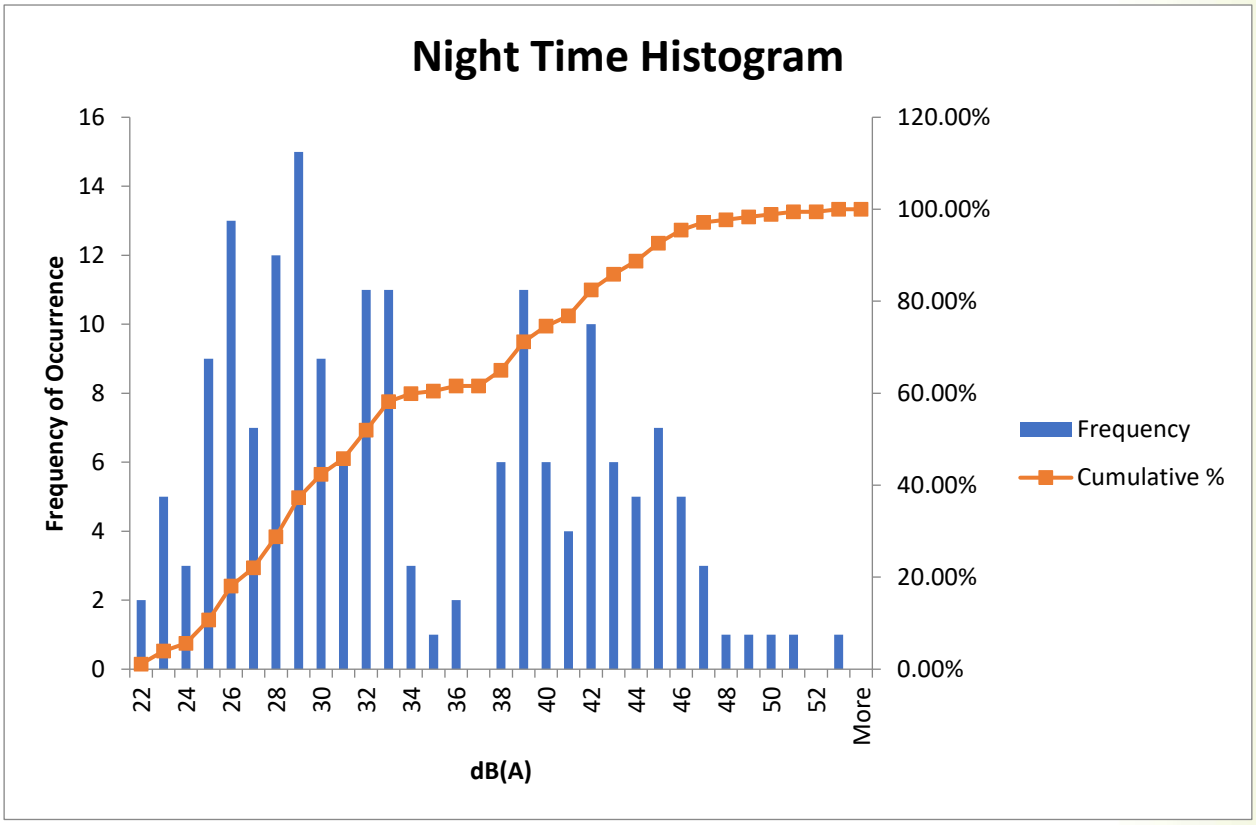
*Modal averages rounded to the nearest whole number.



Graph B-4: C2 Sound Time History



Graph B-5: C2 Daytime Histogram

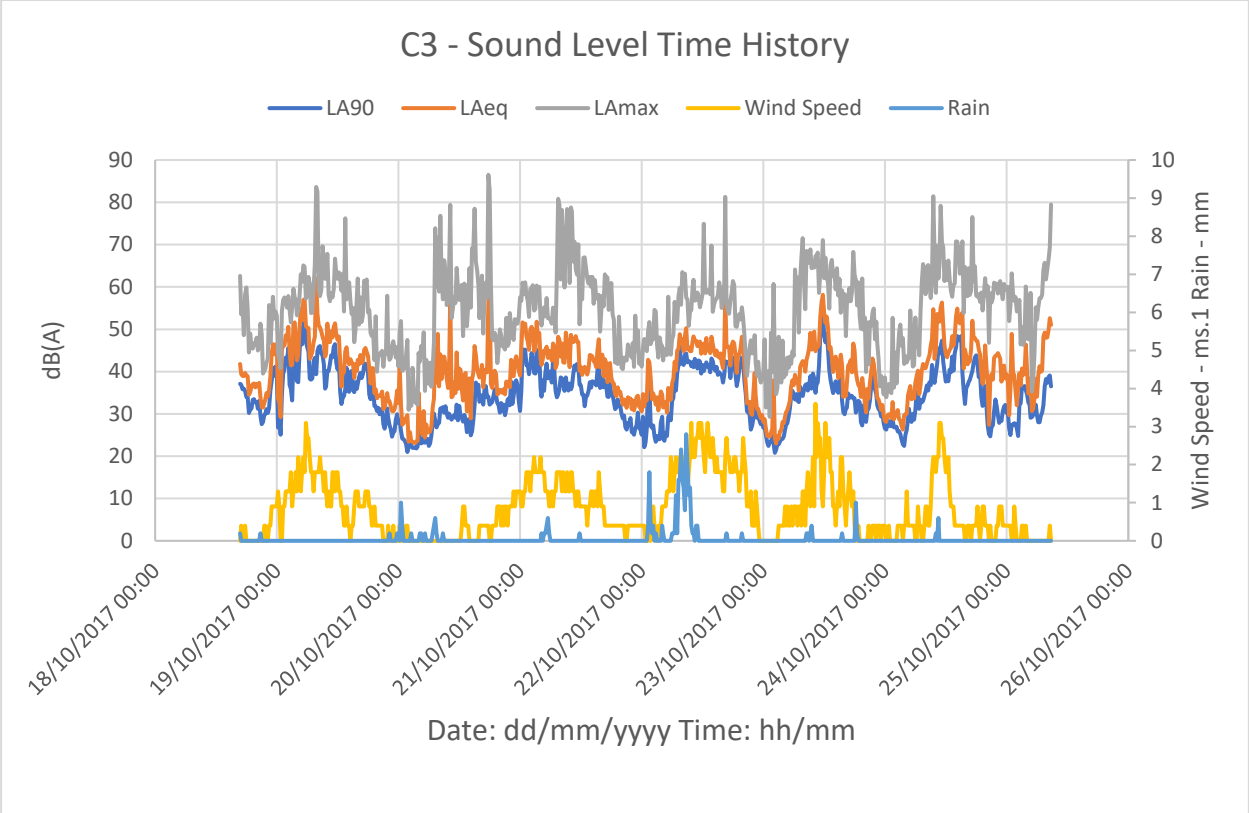


Graph B-6: C2 Night Time Histogram

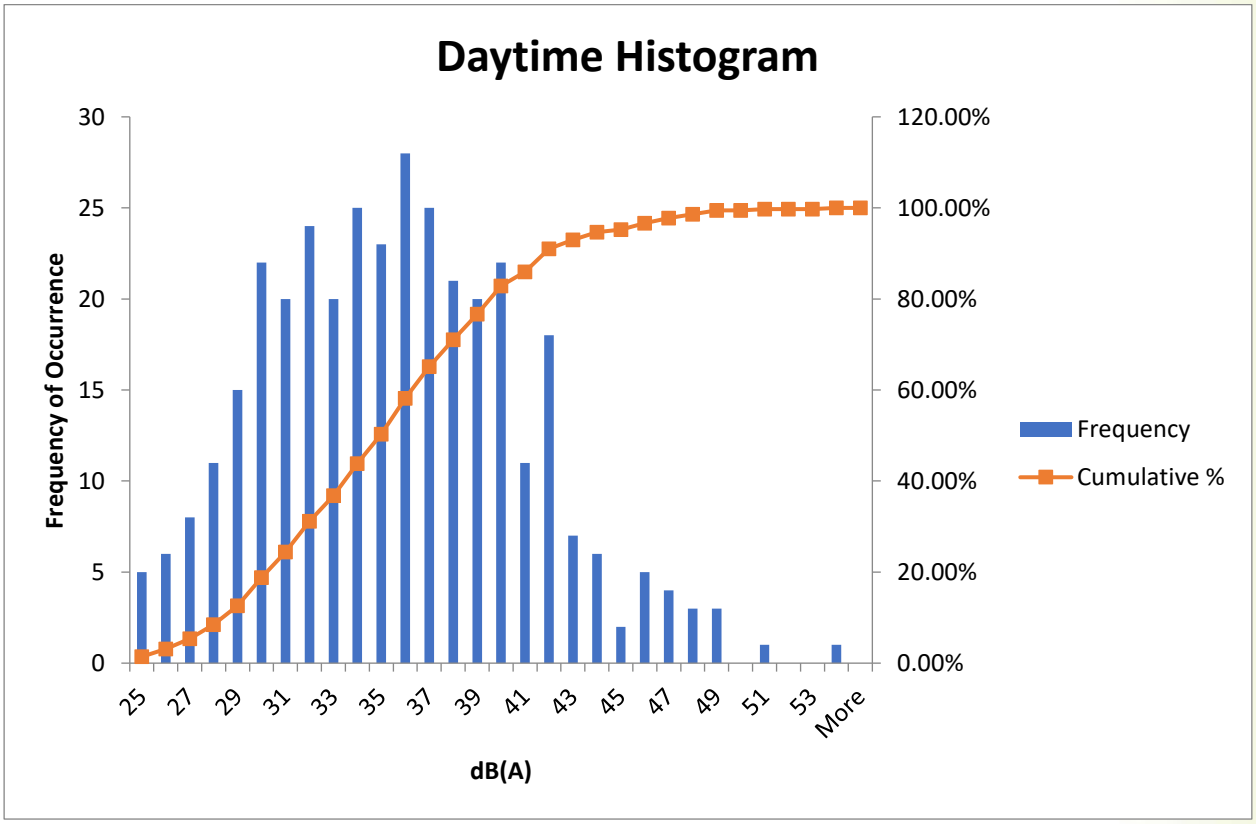
Position	Description of Monitoring Location	Figure C.3 Monitoring Location C3
Position C3 **Location** Mains of Pitlurg, Keith **Period** 18/10/2017 – 25/10/2017	**Description of Monitoring Location** C3 measurement location was in the garden of the residential property on the Mains of Pitlurg. The area was identified to be potentially affected by noise and vibration from the construction of the onshore cable route and the operation of the substation. The SLM was positioned in a free-field location near the property, approximately 10 m from the southern façade of the building. **General Observations** The acoustic environment was very calm, and for the majority of the observation period, the noise was dominated by livestock in the barn west of the measurement position. Noise from a windfarm north west of the measurement location was perceived on occasions when the wind became stronger, causing a low frequency rumble. Road traffic from the A96 could also be heard when bigger vehicles drove past.	

Table B-3: Summary of Sound Monitoring at Location C3				
Assessment	**Assessment Period**	**$L_{Aeq, T}$ (dB)**	**$L_{A90, T}$ [mean average] (dB)**	**LA90, T [modal average] (dB)***
Construction assessment night-time.	Monday – Sunday 23:00 – 07:00.	45	32	27
Construction assessment evening and weekends.	Monday – Friday 19:00 – 23:00. Saturday 13:00 – 23:00. Sunday 07:00 – 23:00.	40	34	31
Construction assessment daytime.	Monday – Friday 07:00 – 19:00. Saturday 07:00 – 13:00.	50	37	36
Operational assessment night-time.	Monday – Sunday 23:00 – 07:00.	44	32	27
Operational assessment daytime.	Monday – Sunday 07:00 – 23:00.	46	36	36

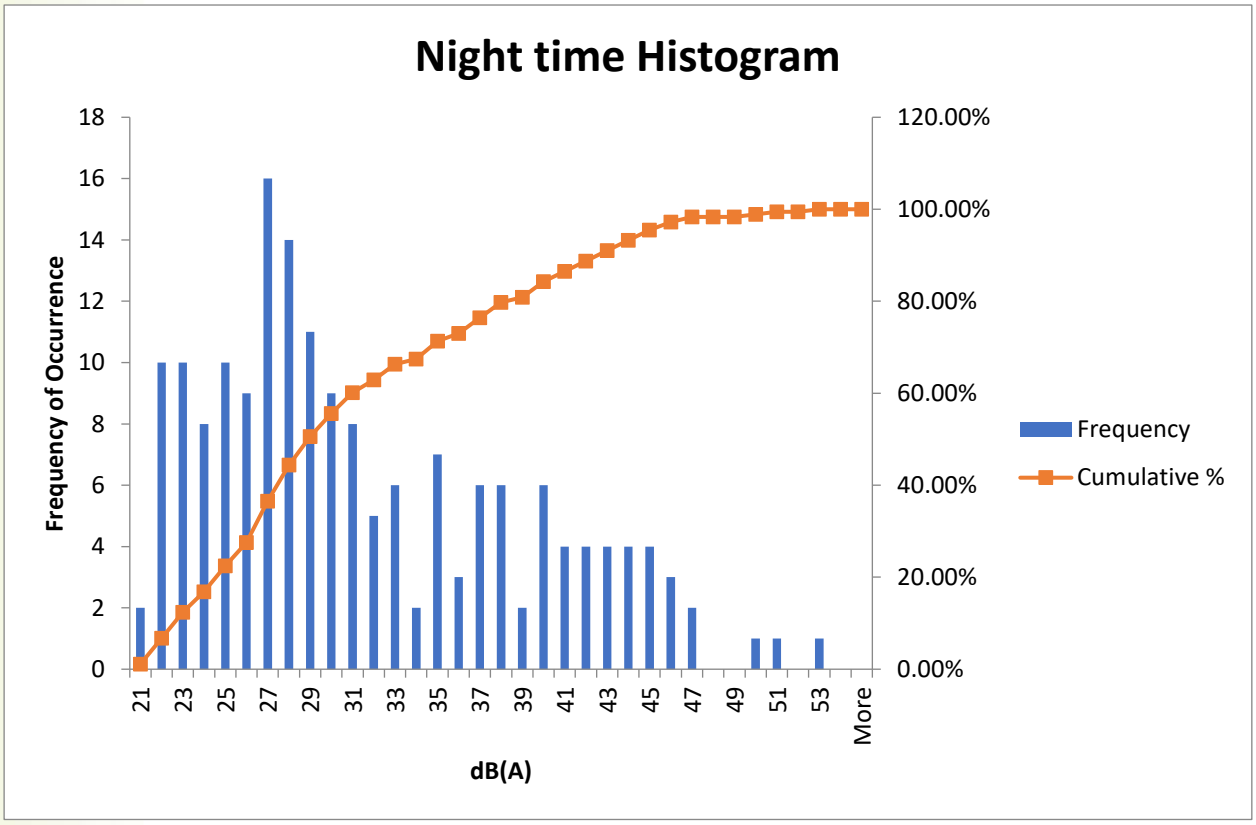
*Modal averages rounded to the nearest whole number.



Graph B-7: C3 Sound Level Time History



Graph B-8: C3 Daytime Histogram



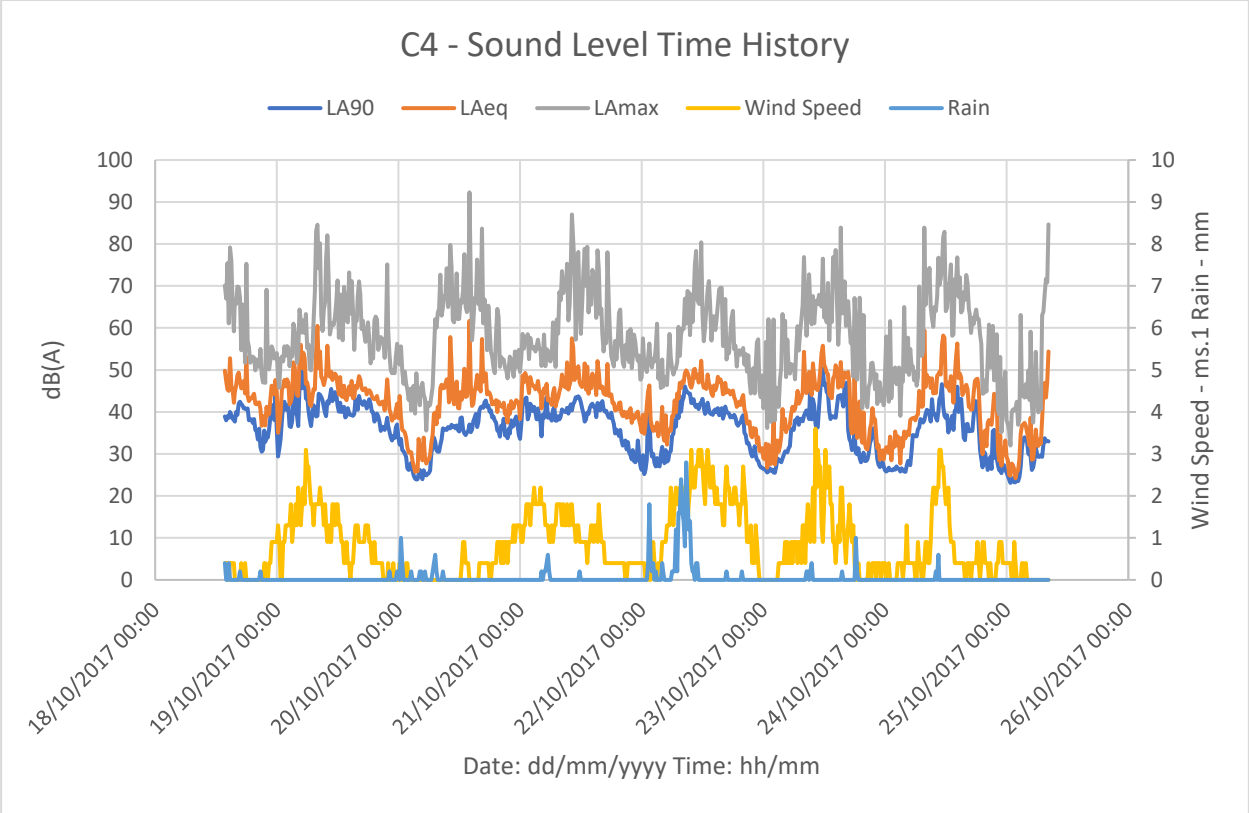
Graph B-9: C3 Night Time Histogram

Position	Description of Monitoring Location	Figure C.4 Monitoring Location C4
Position C4 **Location** Whitelock, Keith **Period** 18/10/2017 – 25/10/2017	**Description of Monitoring Location** C4 measurement location was in a field west of the property of Whitelock. The area was identified to be potentially affected by noise from the construction of the onshore cable route and the operation of the substation. The SLM was positioned in a free-field location near the property, approximately 40 m from the western façade of the building. **General Observations** The main feature of the acoustic environment was the A96 road, which is situated north east of the measurement location. Noise from farm machinery was also audible and dominant at times, however, the noise source was not consistent. A part from this, slight noise could be perceived by rustling of leaves on surrounding trees when wind became stronger.	

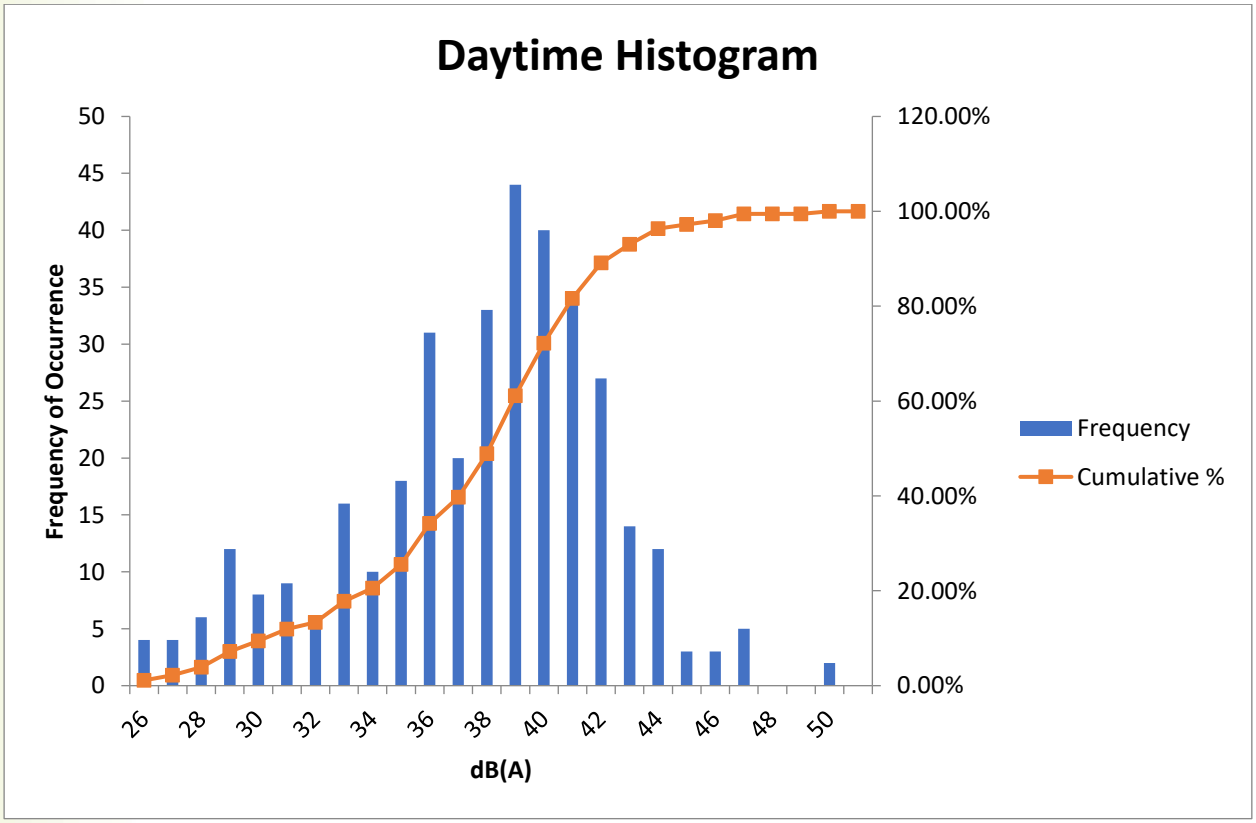
Table B-4: Summary of Sound Monitoring at Location C4

Assessment	Assessment Period	$L_{Aeq, T}$ (dB)	$L_{A90, T}$ [mean average] (dB)	LA90, T [modal average] (dB)*
Construction assessment night-time.	Monday – Sunday 23:00 – 07:00.	40	32	26
Construction assessment evening and weekends.	Monday – Friday 19:00 – 23:00. Saturday 13:00 – 23:00. Sunday 07:00 – 23:00.	40	35	40
Construction assessment daytime.	Monday – Friday 07:00 – 19:00. Saturday 07:00 – 13:00.	50	39	39
Operational assessment night-time.	Monday – Sunday 23:00 – 07:00.	43	32	26
Operational assessment daytime.	Monday – Sunday 07:00 – 23:00.	48	38	39

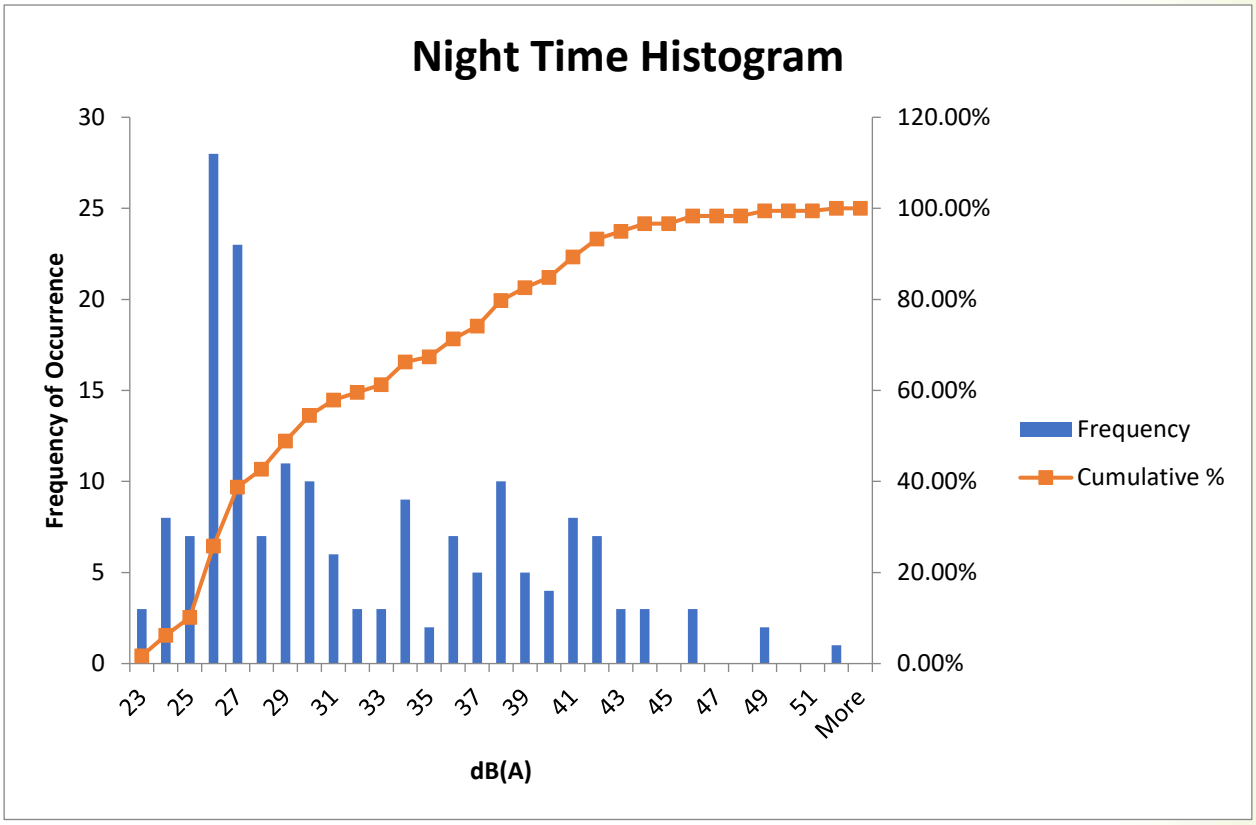
*Modal averages rounded to the nearest whole number.



Graph B-10: C4 Sound Level Time History



Graph B-11: C4 Daytime Histogram



Graph B-12: C4 Night Time Histogram

Annex C – Ambient and Background Sound Monitoring – Photographs

Table C-1: Ambient and Background Sound Monitoring – photographs	
Location Reference	**Photograph**
C1	
C2	Data corrupted
C3	
C4	

*Weather station moved to location C1.

MORAY WEST
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