



ARCUS

**BRANXTON ENERGY STORAGE FACILITY
NOISE IMPACT ASSESSMENT**

EASTCOASTGRIDSERVICES LTD

NOVEMBER 2022



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1 INTRODUCTION

Arcus Consultancy Services Ltd (Arcus), part of ERM Group, has been commissioned by EastCoastGridServices Ltd ('the Client') to undertake a noise assessment in relation to the development of a battery electricity storage facility ('the Development') on land located near Thorntonloch, approximately 2.5 km east of Innerwick, at approximate OS grid reference 374300, 673200 ('the Site').

The aim of the assessment is to determine the existing acoustic climate, predict the sound levels due to the operation of the Development, and assess these levels against relevant guidance to ensure that the amenity of residents in the locality of the Development is not unreasonably impacted by the Development.

2 DEVELOPMENT OVERVIEW

The Development consists of containerised battery storage units, along with electrical infrastructure including inverters, transformers, and auxiliary transformer and electrical control rooms.

The Site is located to the south of Torness Nuclear Power station. To the north and east, the Site is bound by a railway line, and agricultural land surround the Site at all sides. The A1 road is located approximately 250m east from the site boundary.

The closest residential receptors are Linkshead and 9 Thorntonloch which lie approximately 188 m (meters) and 215 m respectively to the north of the site boundary. Other receptors surrounding the Site are over 300 m away.

Site context, noise monitoring locations, and locations of Noise Sensitive Receptors (NSRs) are presented in Figure 1, (see Section 5 of this report).

A figure detailing the Development layout is presented in Appendix 1.

3 RELEVANT GUIDANCE

The following guidance and standards are pertinent to the assessment:

- Planning Advice Note 1/2011: Planning and Noise (PAN 1/2011)¹;
- Technical Advice Note: Planning and Noise (TAN)²; and
- BS4142:2014+A1:2019 '*Method for Rating and Assessing Industrial and Commercial Sound*'³.

3.1 Planning Advice Note 1/2011: Planning and Noise

Scottish Government's Planning Advice Note PAN 1/2011 provides advice on the role of the planning system in helping to prevent and limit the adverse effects of noise, with information and advice on assessment methods provided in TAN.

The PAN promotes the principles of good acoustic design and the appropriate location of new noise-generating development. The selection of a site, the design of a development and conditions that may be attached to a planning permission can all play a part in preventing, controlling, and mitigating the effects of noise. The level of detail required for a noise assessment should be balanced against the degree of risk to environmental quality, public health, and amenity.

¹ The Scottish Government 2011, Planning Advice Note 1/2011: Planning and Noise

² The Scottish Government 2011, Technical Advice Note: Assessment of Noise

³ BSI 2019, BS4142:2014 Method for Rating and Assessing Industrial and Commercial Sound

In relation to industrial sources, the PAN advises that as background noise levels vary throughout a 24-hour period, it will usually be necessary to assess the acceptability of noise levels for separate periods.

3.2 Technical Advice Note: Planning and Noise

The associated Technical Advice Note (TAN) offers advice on the assessment of noise impact and includes details of the legislation, technical standards and codes of practice appropriate to specific noise issues. Appendix 1 of TAN identifies BS 4142 as the preferred code of practice for the rating and assessment of industrial noise.

The TAN provides guidance which may assist in the technical assessment of noise, although it is neither prescriptive nor exhaustive. It provides a summary of relevant and current (at the time of publication) technical standards, guidance and codes of practice. For a noise generating development (such as industrial, commercial or recreational developments) affecting a noise sensitive building, the TAN assesses the noise impact based on the principals described in BS 4142, as described in Section 3.3.

3.3 BS 4142:2014+A1:2019

BS 4142:2014+A1:2019 (BS 4142) describes methods for rating and assessing sound in order to provide an indication of its likely impact upon nearby premises (typically residential dwellings).

The specific sound emitted from the Development (dB, L_{Aeq}) is rated by taking into account both the level and character (i.e., tonal elements, impulsivity, intermittency and distinctiveness) of the sound. This is achieved by applying appropriate corrections to the specific sound level externally at the receptor location, which gives the rating level of the sound in question. This is then assessed against the existing prevailing background sound level (dB, L_{A90}) at that location in order to determine a likely level of impact.

The level by which the rating level exceeds the prevailing background sound level indicates the following potential impacts:

- A difference of 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; and
- Where the rating level does not exceed the background level, this is an indication of the specific sound source having a low impact, depending on the context.

When considering the level of impact, BS 4142 emphasises the importance of the context in which a sound occurs. The standard, therefore, takes great care in the use of the words "sound" and "noise." Sound can be measured by a sound level meter or another measuring system, whereas noise is related to human response and is routinely described as unwanted sound or sound that is considered undesirable or disruptive.

4 CONSULTATION AND ASSESSMENT CRITERIA

Consultation was undertaken with the Environmental Health Department (EH) of East Lothian Council in September 2022 to agree on the assessment criteria and survey approach, the following methodology was proposed:

- Background monitoring will be undertaken at two locations representative of nearest sensitive receptors (NSR): to the south of Thorntonloch Holdings and Linkshead representative of NSRs to the east and north along the A1;
- Measurements will be undertaken over 24 hours or more;
- Measurements will be in accordance with BS 4142, measuring $L_{A90, 15min}$ parameters;
- BS4142 criteria of '*no more than 5 dB above background*' was proposed; and

- Noise due to construction will not be included in the assessment.

The above approach was agreed upon by the EH, however, it was requested that an additional location to the south be included.

5 BACKGROUND SURVEY

In order to establish the ambient sound environment in the locality of the Development, a background sound survey was undertaken between 10th and 11th October 2022 at locations considered representative of the closest residential receptors, identified as:

- Linkshead;
- 9 Thorntonloch Holdings;
- 12 Thorntonloch Holdings;
- 13 Thorntonloch Holdings; and
- Lawfield Cottage.

Three monitoring locations were selected:

- Location 1: Harp Law (within Site boundary field);
- Location 2: Linkshead; and
- Location 3: Lawfield Cottage.

Location 1 is representative of receptors west of the site (12 & 13 Thorntonloch Holdings), location 2 is considered representative of receptors to the east and north along the A1 (Linkshead and 9 Thorntonloch Holdings), while location 3 is representative of receptors south of the site (Lawfield Cottage).

Observations during the survey showed that the acoustic environment at location 2 was dominated by road traffic on the A1, while the acoustic environment at locations 1 and 3 were more agricultural in nature. Although close to Torness Power Station, sound from the facility was not noted to be audible.

Figure 1 below shows the location of the closest NSRs to the Development and the noise monitoring locations.

Figure 1: Noise Measurement Locations and Nearest Sensitive Receptors



The monitoring equipment consisted of Class 1 sound level meters, calibrated to traceable standards and housed in an all-weather case with long-life batteries. The microphones were positioned at a height of 1.4 m above ground level, with suitable proprietary windshields. The meters were field-calibrated at the start and end of the survey period; no significant calibration drift was found.

Various indices were measured by the equipment during the survey period, including $LA_{90,15min}$ for both day and night-time. The LA_{90} index represents the A-weighted sound pressure level exceeded for 90% of a time period, in this case 15 minutes (i.e., the background sound level).

Survey record sheets showing details of the monitoring location and photographs of equipment in situ are presented in Appendix 2.

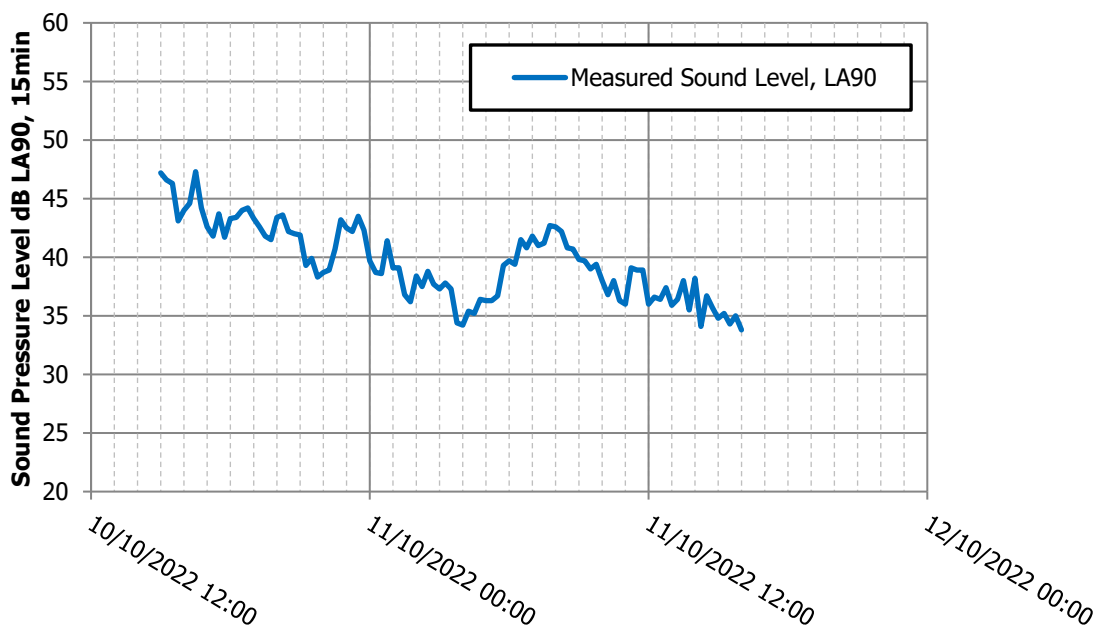
A Davis Weather Station was installed at location 2 to monitor the weather during the survey. Weather conditions were found to be appropriate throughout the survey period (i.e., wind speeds were under 5 m/s and no precipitation) with temperatures ranging from 9 °C to 20 °C.

6 MEASUREMENT RESULTS

6.1 Location 1 – Thorntonloch Holdings

Chart 1 provides a summary of the background sound levels measured during the survey period at location 1, detailing $LA_{90, 15min}$ sound levels.

Chart 1: Sound Levels at Location 1



Whilst the sound environment experienced at this location is not significantly diurnal in nature, it is expected that at the nearest receptors (12 & 13 Thorntonloch Holdings) the acoustic environment will be dominated by anthropogenic activities such as the traffic on its nearby access lane and surrounding farm operations. Therefore, this measurement is considered a conservative background level at these receptors.

When determining typical daytime and night-time levels for assessment purposes, BS 4142 advises against assuming that it can be determined using any single approach (e.g., mean, median, mode etc.). To determine the prevailing background noise levels for the purposes of this assessment, Charts 2 and 3, therefore, present the range of $LA_{90,15min}$ noise levels

recorded, along with the percentage of periods for which they occurred for daytime (0700-2300) and night time (2300-0700) periods respectively.

It should be noted that $L_{A90,15min}$ were used for both daytime and night-time periods for consistency and ease of comparison. BS 4142 permits the use of $L_{A90,1hour}$ measurements for daytime periods, however, the use of $L_{A90,15min}$ for both daytime and night-time periods is a conservative approach, as $L_{A90,15min}$ values are more sensitive to short-term noise events.

Chart 2: Daytime Background Statistical Analysis – Location 1

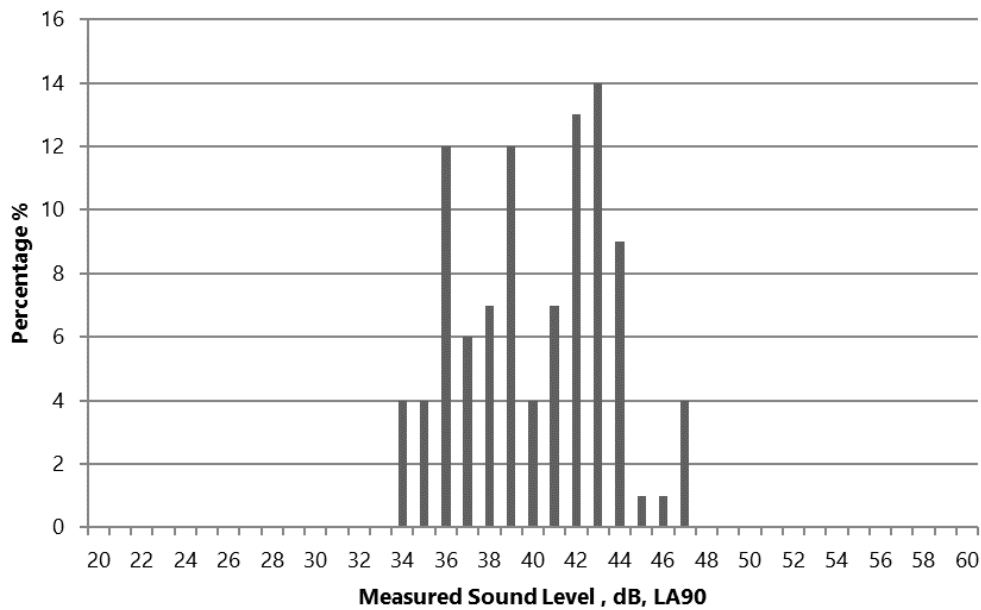


Chart 3: Night-time Background Statistical Analysis – Location 1

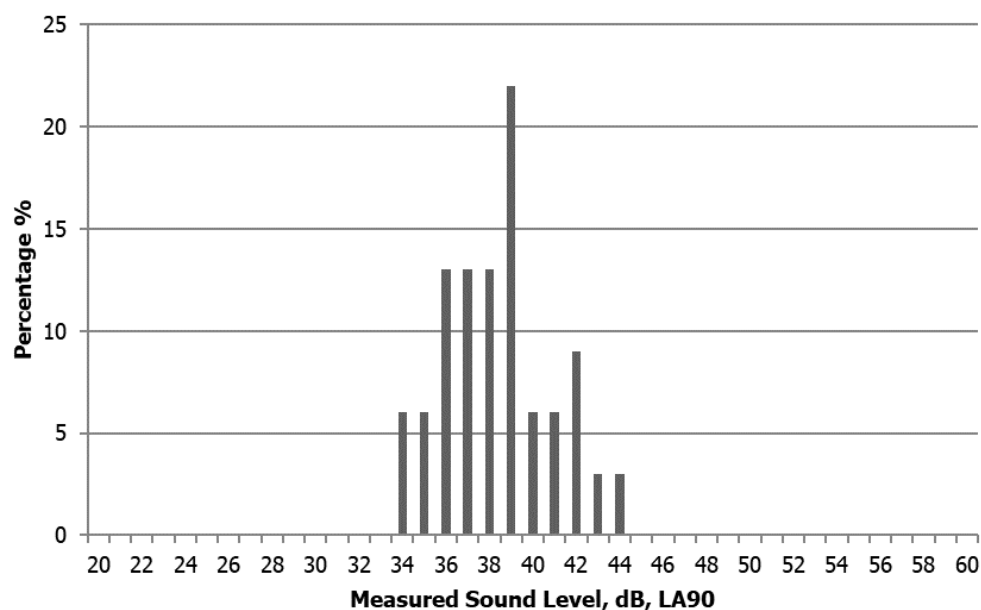


Table 1 presents the mode, median and mean averages of the above dataset.

Table 1: Background Sound Survey Results – Location 1

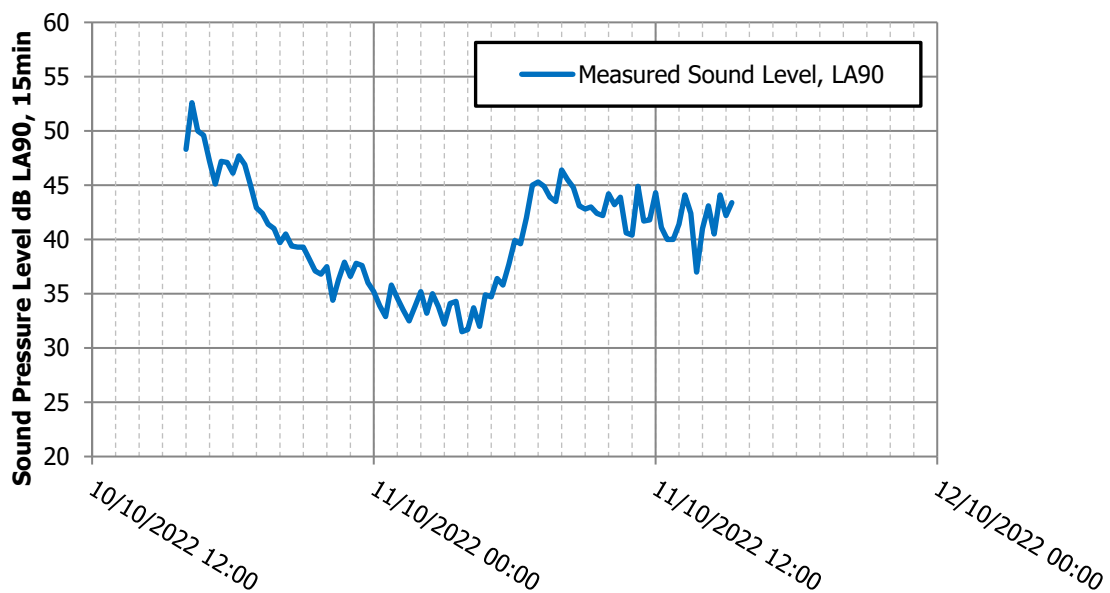
Period	Mode	Median	Mean	Representative
Day	43.0	41.0	40.2	40.2
Night	39.0	38.5	38.4	38.4

Based upon the results presented in Table 1, along with the spread of data presented in Charts 2 and 3, a daytime background noise level of 40.2 dB, L_{A90} and a night time level of 38.4 dB, L_{A90} is appropriate for the purposes of this assessment.

6.2 Location 2 - Linkshhead

Chart 4 provides a summary of the background sound levels measured during the survey period, detailing $L_{A90, 15min}$ sound levels.

Chart 4: Sound Levels at Location 2



As seen in Chart 4 above, the sound environment at location 2 follows a diurnal pattern (i.e., lower noise levels at night when road / industrial sources are quieter) typical of an area dominated by anthropogenic activities, such as road traffic on the A1. This measurement is considered representative of the background experienced at Linkshhead and 9 Thorntonloch.

Charts 5 and 6 present the range of $L_{A90,15min}$ noise levels recorded, along with the percentage of periods for which they occurred, for daytime (0700-2300) and night time (2300-0700) periods respectively.

Chart 5: Daytime Background Statistical Analysis– Location 2

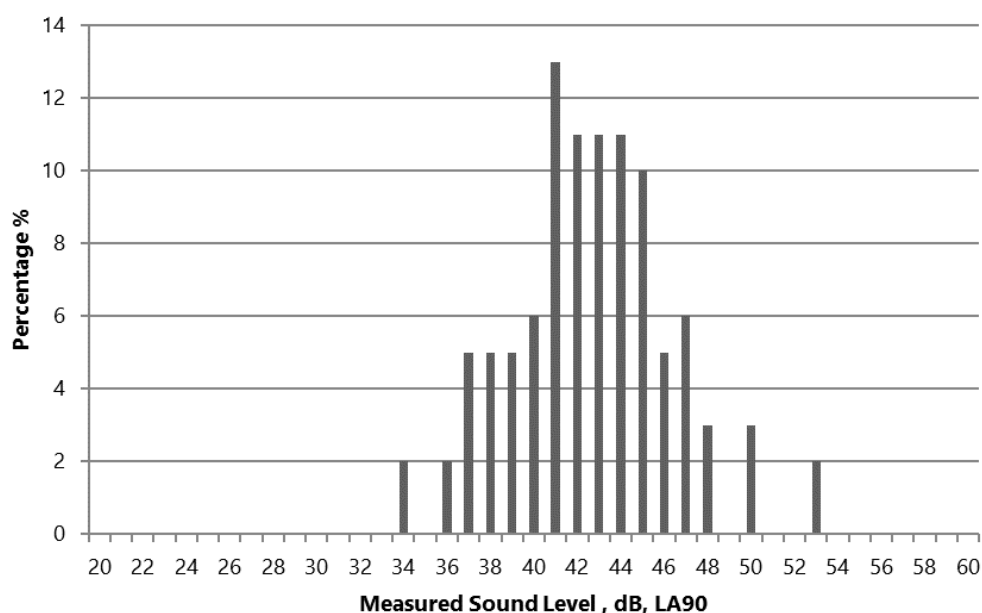


Chart 6: Night-time Background Statistical Analysis - Location 2

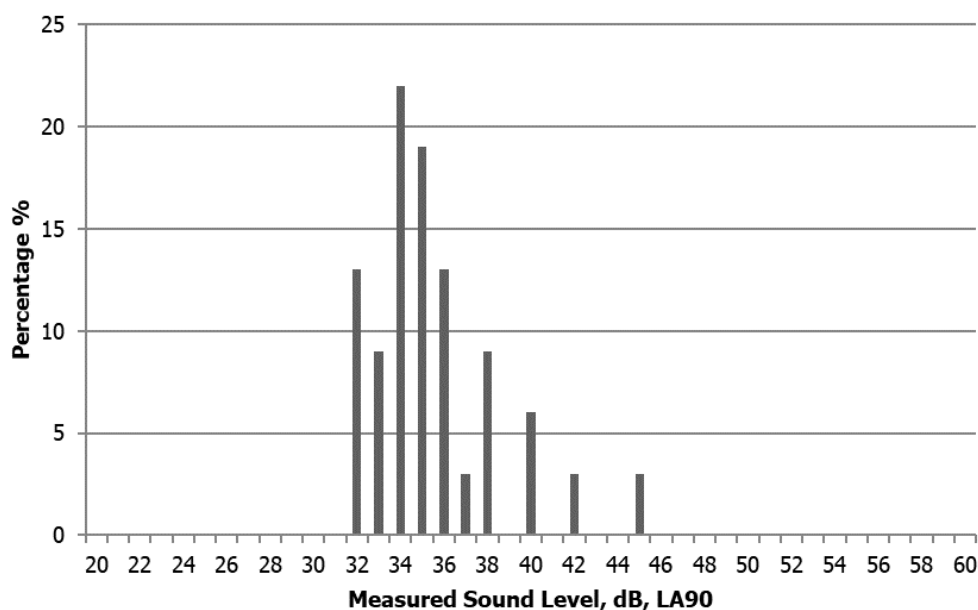


Table 2 presents the mode, median and mean averages of the above dataset.

Table 2: Background Noise Survey Results – Location 2

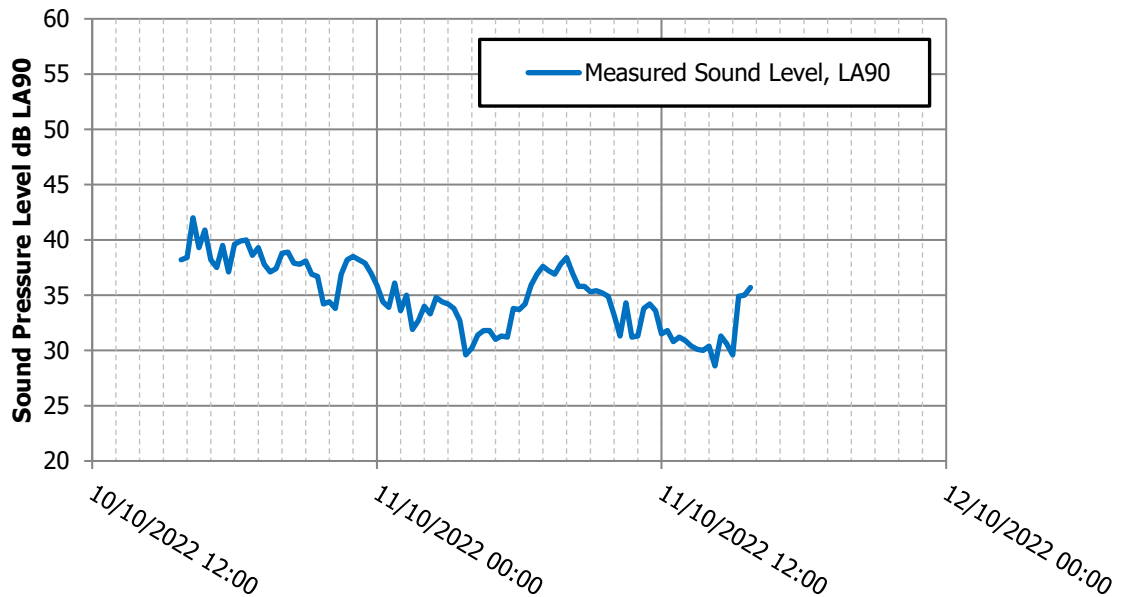
Period	Mode	Median	Mean	Representative
Day	41.0	43.0	42.7	41.0
Night	34.0	35.0	35.5	34.0

Based upon the results presented in Table 2, along with the spread of data presented in Charts 5 and 6, a daytime background noise level of 41.0 dB, LA90 and a night time level of 34.0 dB LA90 is considered appropriate for the purposes of this assessment.

6.3 Location 3 – Lawfield Cottage

Chart 7 provides a summary of the background sound levels measured during the survey period, detailing LA90, 15min sound levels.

Chart 7: Sound Levels at Location 3



Similar to location 1, the sound environment experienced at this location isn't diurnal in nature. Whilst not diurnal in nature, the sound environment is expected to contain influences from anthropogenic activities such as agricultural operations with noise from the A1 still audible.

Charts 8 and 9 present the range of LA90,15min noise levels recorded, along with the percentage of periods for which they occurred, for daytime (0700-2300) and night time (2300-0700) periods respectively.

Chart 8: Daytime Background Statistical Analysis– Location 3

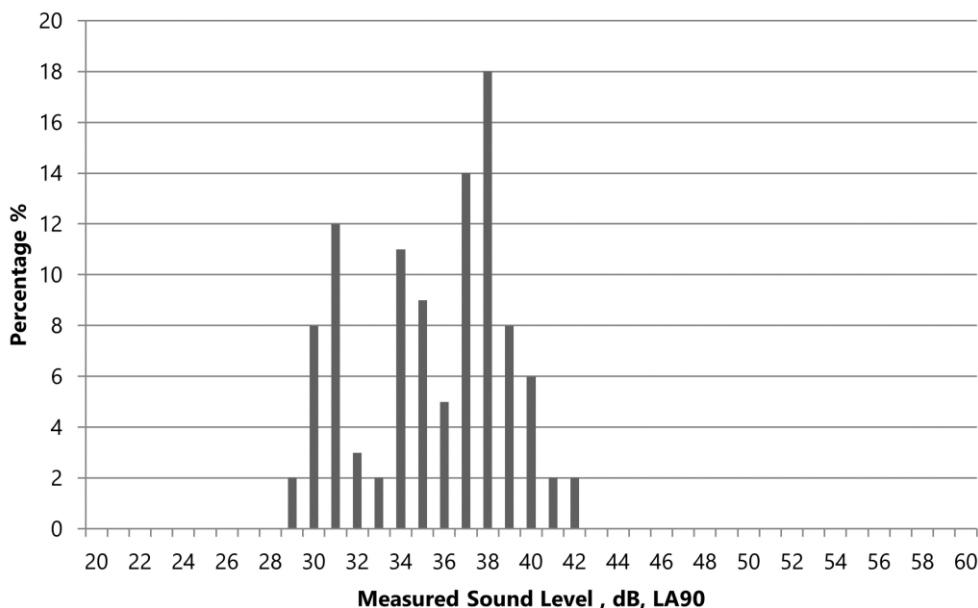


Chart 9: Night-time Background Statistical Analysis - Location 3

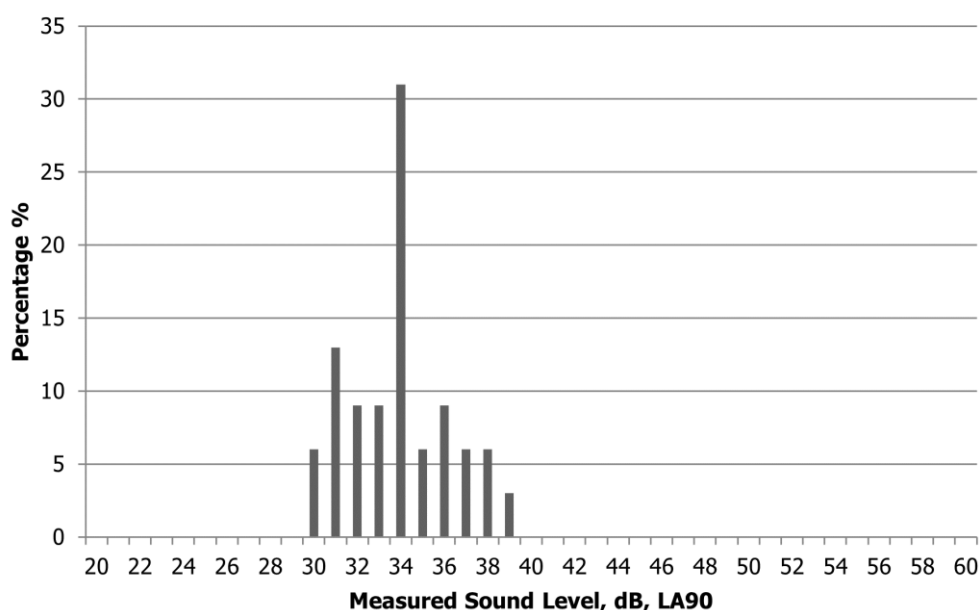


Table 3 presents the mode, median and mean averages of the above dataset.

Table 3: Background Noise Survey Results – Location 3

Period	Mode	Median	Mean	Representative
Day	38.0	36.0	35.5	38.0
Night	34.0	34.0	34.0	34.0

Based upon the results presented in Table 3, along with the spread of data presented in Charts 8 and 9, a conservative daytime background noise level of 38.0 dB, LA90 and a night-time level of 34.0 dB LA90 is considered appropriate for the purposes of this assessment.

7 NOISE MODELLING

7.1 Model Overview

The Specific sound level⁴ at the nearest noise-sensitive receptors has been calculated in SoundPlan 8.1, using the environmental noise propagation model ISO 9613-2:1996 – Acoustics; 'Attenuation of sound during propagation outdoors – Part 2: General method of calculation'⁵. Predictions have been made at a height of 1.5 m, equivalent to head height in external amenity areas.

The ISO 9613-2 method predicts the level of sound at a receptor by taking the octave-band sound power level spectrum of the source, and applying a number of attenuation factors that determine the resulting specific level at the receptor location. The following parameters were used in the prediction model and are considered to provide a conservative prediction of the noise levels likely to be experienced in practice:

- Atmospheric conditions of 10°C and 70% relative humidity;
- A ground factor of G=1 (soft) for land surrounding the Site;
- A receiver height of 1.5 m (approximating head height at the external amenity space of each assessed dwelling);

⁴ The sound level produced by a source, without corrections for acoustic features as discussed in Section 7.1.

⁵ ISO 9613-2:1996 Acoustics; Attenuation of sound during propagation outdoors – Part 2: General method of calculation.

- Includes local terrain and buildings with respective heights above ground level.

A noise map showing predicted specific levels (i.e., noise levels prior to any rating corrections) is presented in Appendix 3.

7.2 Noise Emission Levels

The Development comprises of the following sound emitting plant:

- 4x Primary Transformers within the transformer compound;
- 8x Auxiliary Transformers within the transformer compound;
- 278x PCS Inverter Transformer units (one per BESS block; and
- 278x BESS blocks each containing 4x Battery units.

Noise emission data for the above sound-emitting plant are presented in Table 4 below. The Sound Power Levels have been derived from manufacturers' data sheets as provided by the Applicant. Octave band levels are shown as un-weighted dB levels, with A-weighted total Sound Power Levels L_w in dB(A).

Table 4: Noise Emitting Plant - Sound Power Levels and Spectra

Plant	Octave Sound Power Level, dBA								Total L_w
	63	125	250	500	1000	2000	4000	8000	dB(A)
Primary Transformer	75.2	81.2	88.2	91.2	91.2	86.2	80.2	74.2	96.0
Auxiliary Transformer	73.8	16.8	53.7	68.7	67.8	67.8	66.7	61.8	77.0
BESS Inverter	51.3	61.2	71.3	82.2	75.2	74.2	69.0	65.0	84.0
BESS unit	51.3	61.2	71.3	82.2	75.2	74.2	69.0	65.0	79.0

For each BESS block, the Battery units have been placed in sets of two (as shown in site layout in Appendix 1), with the noise-emitting side facing outwards. The orientation of the battery units and associated inverters have been designed to maximise shielding from the surrounding units in order to reduce noise propagation from the Development. As a worst case, the Development has been modelled assuming that all items of plant will be operating simultaneously and at maximum power.

7.3 Rating Level Corrections

BS 4142 states that corrections should be applied to account for certain acoustic features which have the potential to increase the level of noise impact at nearby dwellings.

The four acoustic features to be considered in the application of rating corrections are as follows:

- Impulsivity: Noise from the Development consist mainly of cooling systems as such, no impulsive characterises are anticipated from the Development;
- Tonal Elements: The BESS units are water-cooled and as such the sound emitted by the Development is likely to be characterised by the water pumps which are not tonal in nature. Whilst some transformers can emit a low frequency hum, they are unlikely to be audible above the existing background noise environment, therefore, no tonal correction is required.
- Intermittency: Whilst the cooling pumps for each individual unit may turn on/off in isolation, the units would not operate in synchronisation. Therefore, when taken as a whole, the Development is highly unlikely to have "identifiable on / off conditions" in terms of BS 4142; no correction for intermittency is therefore required.
- Distinctiveness: The primary sources of noise (cooling systems) are broadband in nature. Given that the Development is situated close to the busy A1, noise characteristics of the Development will not be distinctive from site context at

receptors; Linkshead and 9 Thorntonloch, and as such no correction for distinctiveness has been applied at these locations. Whilst sound from agricultural and localised anthropogenic activities is experienced at; 12 Thorntonloch, 13 Thorntonloch and Lawfield Cottage, it is possible that the Development may introduce novel noise characteristics into the sound environment. Therefore, as a worst case, a 3 dB penalty has been applied to the specific noise predicted at these receptors.

Based on the above, no corrections for acoustic features are required at Linkshead and 9 Thorntonloch, with a 3 dB rating correction applied to the remaining receptors.

8 ASSESSMENT OF IMPACT

8.1 Assessment

An assessment of the likely impact has been made based upon the difference between the Rating Levels and prevailing background levels for daytime and night-time periods, presented in Table 5 below.

Table 5: Assessment of Impact

Receptor Location	Specific Level, dB, LAeq	Rating Level, dB(A)	Background Sound Level, dB, LA90		Difference, dB	
			Day	Night	Day	Night
Linkshead	36.9	36.9	41.0	34.0	-4.1	2.9
9 Thorntonloch	28.8	28.8	41.0	34.0	-12.2	-5.2
12 Thorntonloch	36.2	39.2	40.2	38.4	-0.8	1.2
13 Thorntonloch	29.6	32.6	40.2	38.4	-7.4	-5.4
Lawfield Cottage	35.9	38.9	38.0	34.0	0.9	4.9

As seen in Table 5 above, the Rating levels do not exceed the criteria of no more than 5 dB above background at any of the nearest residential receptors. As discussed in Section 7, the assessment assumes that all plant is operating simultaneously and at maximum power, an unlikely occurrence in practice. As such, it is expected that noise levels will be lower than that predicted in Table 5.

8.2 Context

The existing acoustic environment in the locality of the Development consists of sound sources comprised of road traffic from A1, anthropological activity, and farm activities. The assessment applies corrections for distinctive characteristics at receptors further away from the A1, as such the assessment above is conservative and noise impact in practice will be lower than those presented.

Taking the context into account, noise from the Development is unlikely to have an adverse impact, in terms of BS 4142.

8.3 Uncertainty

Modelling of the proposed plant has been undertaken on a worst-case basis, and assuming all plant is operating simultaneously and at maximum power. Cooling plant are likely to be speed/thermostat-controlled; noise levels during typical operation are therefore likely to be lower than those presented.

The uncertainties inherent in the assessment will therefore not have a significant impact on the outcome of the assessment.

9 CONCLUSION

Arcus was commissioned by EastCoastGridServices Ltd to undertake a noise assessment in relation to the development of Branxton energy storage facility near Thorntonloch.

An assessment of noise impact has been undertaken in accordance with BS 4142. It has been found that Rating Levels do not exceed the agreed criteria of; 'no more than 5 dB above background' at the nearest, and therefore all noise-sensitive receptors.

The Development is therefore compliant with East Lothian Environmental Health's requirements in terms of noise.

10 GLOSSARY OF TERMS

Decibel (dB): The decibel is the basic unit of noise measurement. It relates to the cyclical changes in pressure created by the sound and operates on a logarithmic scale, ranging upwards from 0 dB. 0 dB is equivalent to the normal threshold of hearing at a frequency of 1000 Hertz (Hz). Each increase of 3 dB on the scale represents a doubling of the Sound Pressure, and is typically the minimum noticeable change in sound level under typical listening conditions.

dB(A): Environmental noise levels are usually discussed in terms of dB(A). This is known as the A-weighted sound pressure level, and indicates that a correction factor has been applied, which corresponds to the human ear's response to sound across the range of audible frequencies. The ear is most sensitive in the middle range of frequencies (around 1000-3000 Hz), and less sensitive at lower and higher frequencies.

A-Weighting: The A weighted noise level is derived by analysing the level of a sound at a range of frequencies and applying a specific correction factor for each frequency before calculating the overall level. In practice this is carried out automatically within noise measuring equipment by the use of electronic filters, which adjust the frequency response of the instrument to mimic that of the ear.

Frequency: The frequency of a sound is equivalent to its pitch in musical terms. The units of frequency are Hertz (Hz), which represents the number of cycles (vibrations) per second.

L_{Aeq,t}: This term is known as the A-weighted equivalent continuous sound pressure level for a period of time, t. It is similar to an average, and represents the sound pressure level of a steady sound that has, over a given period, the same energy as the fluctuating sound in question.

L_{A90,t}: This term is used to represent the A-weighted sound pressure level that is exceeded for 90% of a period of time, t. This is used as a measure of the background noise level.

Noise: Unwanted sound. May refer to both natural (e.g. wind, birdsong etc.) and artificial sounds (traffic, industrial noise, aircraft etc.).

Sound pressure level (L_p): Sound pressure measured on the decibel scale, relative to a sound pressure of 2×10^{-5} Pa.

Noise sensitive receptors: Locations that may potentially be adversely affected by the addition of a new source of noise, such as residential properties.

Sound power level (L_w): Sound power measured on the decibel scale, relative to a reference value (W_0) of 10-12 W.

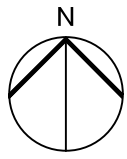
Background Sound: The background sound level is the underlying level of noise present at a particular location for the majority (usually 90%) of a period of time.

Rating Level: Sound levels which have been corrected for certain acoustic features, as required under BS4142 methodology.

Sound pressure level (L_p): Sound pressure measured on the decibel scale, relative to a sound pressure of 2×10^{-5} Pa.

Specific Level: In terms of BS4142 methodology, the specific level is the sound level produced by a source, without corrections for acoustic features.

APPENDIX 1: DEVELOPMENT LAYOUT



PERIMETER FENCE
(3.0m HEIGHT)

SECURITY COLUMN
(6.0m)

278 no. BESS BLOCKS
(6m x 19.2m FOOTPRINT,
3m HEIGHT)

LAYDOWN AREA (4.3 acres)



KEY PLAN

NOTES:
 - CLIENT LAND AREA (EXCLUDES TEMP. CONSTRUCTION COMPOUND AREA): 24.24 acres
 - SPT LAND AREA (EXCLUDES TEMP. CONSTRUCTION COMPOUND AREA): 1.7 acres
 - POC: 374768E, 673428N

HV TRANSFORMER
COMPOUND (74.8m x 22.2m)

EXISTING FARM ACCESS
TRACK TO BE MAINTAINED

BUSBAR

EXISTING FARM ACCESS
TRACK TO BE MAINTAINED

SPT TEMPORARY
CONSTRUCTION
COMPOUND

SITE ENTRANCE

SPT 400KV
SWITCHGEAR
51.7m x 34.1m

EXISTING FARM ACCESS
TRACK TO BE MAINTAINED

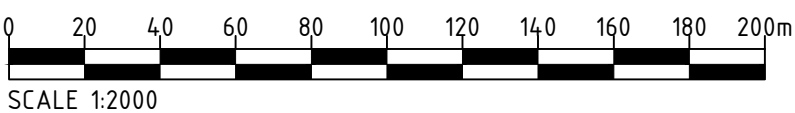
SPT CONTROL
BUILDING (15 x 12m)

CLIENT TEMPORARY
CONSTRUCTION AREA

SPT ACCESS GATE

POC: 374768E, 673428N

SPT ACCESS GATE



R4

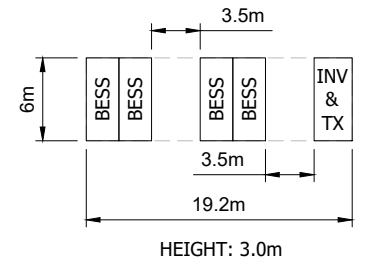
EXISTING STONE WALL (2m BUFFER)

SPARE PARTS AREA

LANDSCAPE SCREENING (3m WIDTH)

MV SWITCHGEAR (6m x 19.2m
FOOTPRINT, 3m HEIGHT)

BESS BLOCK DETAIL



Plot Date : November 15, 2022 10:43:37 AM
File Name D:\UK\BRANXTON\AE-BRANXT-GA-01_OPTION 1_JC(2022-11-15)

Project Title BRANXTON BATTERY STORAGE FACILITY	Drawing Title PRELIMINARY BESS LAYOUT OPTION 1	Purpose of issue PRELIMINARY				NOT FOR CONSTRUCTION	
		Designed JC	Drawn JC	Checked CB	Approved CB		
Client EastCoastGridServices Ltd.		Internal Project No. 00	Date 15/11/22			Drawing Number AE-BRANXT-GA-01	Rev 01
		Scale @ A3 1:2000					

APPENDIX 2: SURVEY RECORD SHEET

Noise Survey Record Sheet

Project Number:	4852	Project Name:	Branxton
Location (x of y):	1 of 3	Installed By:	BA
Lat/Long:	55.95306, -2.40487	Location Name:	Landowner Boundary
Start Date:	10/10/2022	Start Time:	1500

Equipment Details	Make / Model	Serial No.
Sound Level Meter:	Rion NL-52	709257
Calibrator:	Rion NC-74	34104515
Source of Equipment:	Arcus	
Meter Timestamp (Start/End, GMT/BST):	Start BST	

Location / Source:	At field fence
Distance from façade:	Free field
Noise sources observed:	Livestock, sheep. Traffic
Weather Conditions:	Windy, sunny
Additional notes:	None

Installation (Visit 1)

Date:	10/10/2022	Time:	1500
Filename:	Auto_0101	Calibration level:	94.0
Range setting:	20-130 dB	Meas. period:	15min
Freq weighting:	A	Weather Station:	No
Lp Logging?	Yes (1 sec)	Audio / Octave?	No
Notes:	None		

Visit 2

Date:	11/10/2022	Time:	1620
Visited by:	ET	Calibration level:	94.0
Level pre-calibration:	93.9	Batts replaced?	N/A
Equipment Removed?	Yes		
Notes:	None		

Noise Survey Record Sheet - Photos

Project No.	4852	Location (x of y)	1 of 3
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Noise Survey Record Sheet

Project Number:	4852	Project Name:	Branxton
Location (x of y):	2 of 3	Installed By:	BA
Lat/Long:	55.95508, -2.39493	Location Name:	Farm access road
Start Date:	10/10/2022	Start Time:	1600

Equipment Details	Make / Model	Serial No.
Sound Level Meter:	Rion NL-52	1276547
Calibrator:	Rion NC-74	34104515
Source of Equipment:	Arcus	
Meter Timestamp (Start/End, GMT/BST):	Start BST	

Location / Source:	At access road fence
Distance from façade:	Free field
Noise sources observed:	Traffic in A1
Weather Conditions:	Windy, sunny
Additional notes:	None

Installation (Visit 1)

Date:	10/10/2022	Time:	1600
Filename:	Auto_0201	Calibration level:	94.0
Range setting:	20-130 dB	Meas. period:	15min
Freq weighting:	A	Weather Station:	Weather Station
Lp Logging?	Yes (1 sec)	Audio / Octave?	No
Notes:	None		

Visit 2

Date:	11/10/2022	Time:	1535
Visited by:	ET	Calibration level:	94.0
Level pre-calibration:	93.9	Batts replaced?	N/A
Equipment Removed?	Yes		
Notes:	None		

Noise Survey Record Sheet - Photos

Project No.	4852	Location (x of y)	2 of 3
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Noise Survey Record Sheet

Project Number:	4852	Project Name:	Branxton
Location (x of y):	3 of 3	Installed By:	BA
Lat/Long:	55.94971, -2.40067	Location Name:	Lawfield Farm
Start Date:	10/10/2022	Start Time:	1545

Equipment Details	Make / Model	Serial No.
Sound Level Meter:	Rion NL-52	709258
Calibrator:	Rion NC-74	34104515
Source of Equipment:	Arcus	
Meter Timestamp (Start/End, GMT/BST):	Start BST	

Location / Source:	At road verge to farm access road
Distance from façade:	Next to 1m wall
Noise sources observed:	Farm livestock, wind, traffic
Weather Conditions:	Windy, sunny
Additional notes:	None

Installation (Visit 1)

Date:	10/10/2022	Time:	1545
Filename:	Auto_0301	Calibration level:	94.0
Range setting:	20-130 dB	Meas. period:	15min
Freq weighting:	A	Weather Station:	No
Lp Logging?	Yes (1 sec)	Audio / Octave?	No
Notes:	None		

Visit 2

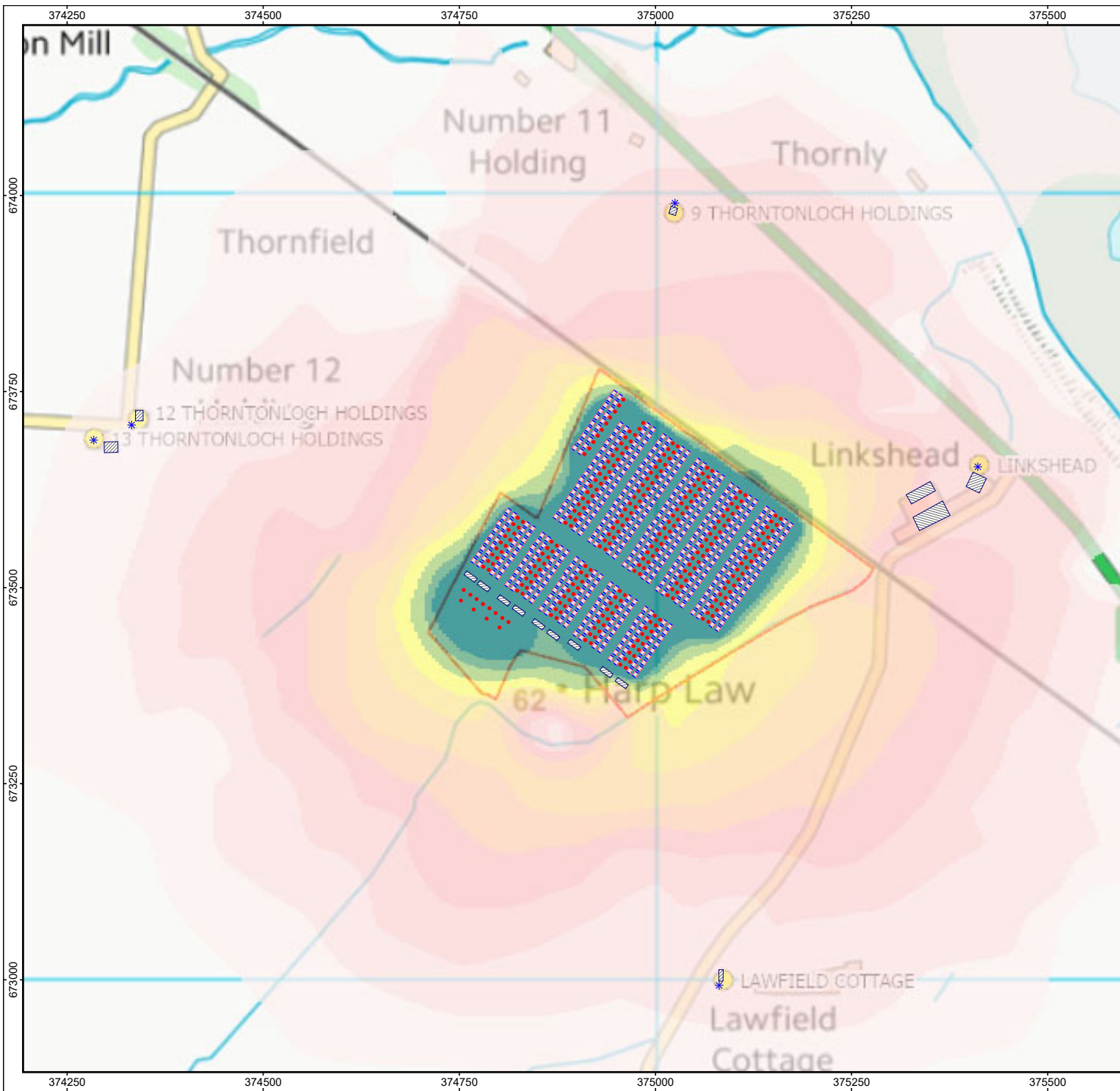
Date:	11/10/2022	Time:	1550
Visited by:	ET	Calibration level:	94.0
Level pre-calibration:	94.0	Batts replaced?	N/A
Equipment Removed?	Yes		
Notes:	None		

Noise Survey Record Sheet - Photos

Project No.	4852	Location (x of y)	3 of 3
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APPENDIX 3: NOISE GRID MAP



Client: EastCoastGridServices Ltd
 Project: Branxton Energy Storage Facility
 Project-No. 4852

Appendix

3

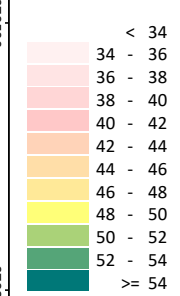
"03_4852_Branxtonmodel_ET_Revision_22021115

Result number 10

Calculation in 1.5 m above ground

Project engineer: ET
 Created: 18/11/2022
 Processed with SoundPLAN 8.2, Update 16/01/2020

Specific Level
 in dB(A)



Signs and symbols

- BESS unit
- Buildings
- Point receiver
- Point source



Length scale 1:5000

