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R100 ENERGY LIMITED

R100 ENERGY, SPALDINGTON

NOISE ASSESSMENT REPORT

NOVEMBER 2022

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DATE ISSUED:	**4th November 2022**
JOB NUMBER:	**ST19734**
REPORT NUMBER:	**0002**
VERSION:	**V1.0**
STATUS:	**Final**

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EXECUTIVE SUMMARY

Wardell Armstrong LLP has carried out a noise assessment to accompany a planning application for the proposed installation of an oil separator at the existing R100 Energy Ltd site in Spaldington, Goole.

A background noise survey was undertaken in October 2022, at existing residential dwellings nearest to the existing anaerobic digestion plant, during the day and night-time periods. The noise survey data was used to assess the potential noise impact of the development upon nearby receptors. Noise measurements of a similar oil separator plant to the one proposed were carried out at a similar site, which were used to inform the assessment.

Noise modelling was undertaken to predict the potential noise impact from the proposed development at the nearest existing sensitive receptors.

The results of the model calculations demonstrate that any noise associated with the new development is unlikely to exceed the background sound levels at the nearest sensitive receptors. On this basis, no mitigation measures are proposed, and existing sensitive receptors would not experience any adverse effect due to noise relating to the proposed development.

When considering the proposed development in accordance with national planning guidance, the predicted noise impact is below the Lowest Observed Adverse Effect Level (LOAEL). Therefore, noise should not be considered a material issue when determining the planning application.

1 INTRODUCTION

1.1.1 Wardell Armstrong LLP (WA) was commissioned to undertake a noise impact assessment to accompany a planning application for the proposed installation of an oil separator at the existing R100 Energy Ltd site in Spaldington, Goole.

1.1.2 Planning permission was originally granted for the site in February 2018 (Planning Reference: 17/03450/CM) for the Installation of an Anaerobic Digestion (AD) Plant including AD Digester tanks; a biomethane gas to grid plant; CHP (Combined Heat and Power) unit; flare; buffer and treatment tanks; and a digestate storage lagoon with associated works.

1.1.3 The site now currently operates an AD Plant and a Gas to Grid Plant. The AD Plant treats organic waste and a large proportion of the biogas which is produced from the AD process is currently fed into the Gas to Grid plant to be upgraded for export into the National Gas Grid network.

1.1.4 The assessment detailed in this report considers the potential noise impact of the proposed equipment to be installed, at the nearest existing sensitive receptors to the site, which are located to the north and to the north-east.

1.1.5 The report assesses the results of baseline noise monitoring and noise modelling carried out in accordance with current guidance and considers any need for noise mitigation, if and where appropriate, to comply with national planning policy and British Standards.

2 ASSESSMENT METHODOLOGY

2.1 Policy, Standards & Guidance

2.1.1 The noise assessment has considered the following standards and guidance:

- National Planning Policy Framework, 2021 (NPPF).
- Noise Policy Statement for England (2010) (NPSE)
- Planning Practice Guidance – Noise (2019).
- British Standard BS4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound (BS4142).
- British Standard 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings (BS8233:2014).

2.1.2 Further details of these documents are included in **Appendix A.**

2.2 Proposed Development

2.2.1 We understand that R100 Energy Ltd intend to install new plant at the Spaldington site and make slight alterations to the layout, including:

- 2 new gas CHPs (altered position from approval)
- New battery storage system (approx. 6m x 3m)
- LNG Storage tank (approx. 80 cubic metres / 11 metres high)
- Vaporisers
- Transformer and distribution switches
- Oil separator

2.2.2 With regard to the new plant installations and changes listed above, it is understood that everything listed, with the exception of the proposed oil separator, falls within the existing planning consent.

2.2.3 It is on this basis that the following assessment considers the noise impact from the proposed oil separator only.

2.3 Scope of Assessment

2.3.1 This report details the following:

- The baseline noise survey carried out at the site to determine the background noise levels at the nearest existing sensitive receptors, to inform the noise assessment.
- Specific sound measurements of an operational oil separator at an alternative AD site in Hemswell, to obtain representative data for the assessment.
- A computer noise model to predict the emissions from the proposed oil separator at ESRs, and the calculation of the total worst-case noise emissions from the site at ESRs, using the manufacturers' data provided within the initial noise assessment submitted in September 2017 by WA for the existing site planning consent (document reference: MW/JS/ST15903/002).
- A full BS4142 assessment of the likely impacts at the nearest ESRs to the proposed oil separator, quantifying the additional noise impact.

2.4 Existing Sensitive Receptors

2.4.1 The receptors detailed in Table 1 below have been considered as part of this assessment. Other receptors beyond those identified may be impacted by the development proposals, however the impact is expected to be equal to or less than the receptors listed, based upon distance to the site.

Table 1: Existing Sensitive Receptors for Consideration in the Noise Assessment

Receptor	Receptor Location	Grid Reference		Bearing from Site
		North	West	
ESR1	Properties on Wood Ln, Goole, DN14 7NU	53°47'27.0"N	0°52'40.1"W	North, 700m
ESR2	Properties in Spaldington, Goole DN14 7NP	53°47'35.3"N	0°51'06.3"W	North-East, 1.1km

3 NOISE SURVEY

3.1 Introduction

3.1.1 Between the hours of 11:15 AM on Tuesday 18th and 10:50 AM Wednesday 19th October 2022, WA carried out a noise survey to measure existing ambient and background sound levels at ESRs in the vicinity of the proposed development site.

3.1.2 Unattended measurements were taken at two Monitoring Locations (ML1 and ML2) to capture the background sound levels. The monitoring locations are shown on Figure 1.

3.1.3 Table 2 shows the monitoring periods, together with associated observations undertaken during the installation and decommissioning of the sound level meters.

Table 2: Noise Monitoring Periods

Monitoring Location	Start Date and Time	Finish Date and Time
ML1 – Representative of Existing Dwellings to the north of the existing R100 Energy site.*	18/10/2022 11:15:00 AM	19/10/2022 10:50:00 AM
ML2 – Representative of dwellings in Spaldington Village to the east of the existing R100 Energy site.	18/10/2022 12:00:00 PM	19/10/2022 10:50:00 AM

*Due to access restraints, measurements were taken 700m south of the site on the western boundary of Boothferry Golf Course, as opposed to 700m north at nearby receptors on Wood Lane. The topography surrounding the site in all directions is mainly flat, and the meter was positioned at a similar distance from the B1228 as the ESR on Wood Lane is situated. This road was the main source of noise at both the receptor and monitoring location (ML1). ML1 is therefore considered representative of the baseline noise conditions at ESR1, Wood Lane.

3.1.4 During the monitoring periods, occasional vehicles passing on the local road network (B1228 and the immediately adjacent country lanes) were the dominant source of noise. Agricultural noise in the adjacent fields was also occasionally audible.

3.1.5 The noise measurements were made using two Class 1, integrating sound level meters. The microphones were mounted on tripods 1.5m above the ground and more than 3.5 metres from any other reflecting surfaces. The sound level meters were calibrated to a reference level of 94dB at 1kHz both before and on completion of the noise survey. No significant drift in the calibration during the survey was noted.

3.1.6 A-weighted[1] L_{eqs}[2], maximum sound pressure levels, A-weighted L_{90s}[3], A-weighted L_{10s}[4] were measured and are presented in full in Appendix B.

3.2 Meteorological Conditions

3.2.1 The weather conditions were obtained on site during the noise survey. On the 18th and 19th October 2022, the weather conditions were as follows:

- Temperatures between 4°C and 16°C.
- NE winds with speeds between 1 and 4m/s.
- Dry and overcast.

3.3 Existing Background Noise Levels

3.3.1 The noise measurements obtained at ML1 and ML2 have been analysed to establish representative background sound levels for a 1-hour daytime and 15-minute night-time period as required by BS4142. This assessment of background sound levels is provided in detail in Section 4 below.

[1] A' Weighting — An electronic filter in a sound level meter which mimics the human ear's response to sounds at different frequencies under defined conditions.
[2] L_{eqs} — Equivalent continuous noise level; the steady sound pressure which contains an equivalent quantity of sound energy as the time-varying sound pressure levels.
[3] L_{90} — The noise level which is exceeded for 90% of the measurement period.
[4] L_{10} — The noise level which is exceeded for 10% of the measurement period.

4 ASSUMPTIONS, LIMITATIONS AND UNCERTAINTY

4.1 Introduction

4.1.1 This assessment is affected by the following assumptions and limitations.

4.2 Assumptions

4.2.1 The following assumptions have been made:

- Noise Sensitive Receptors (ESRs) are positioned at a height of 1.5 m above ground level during the daytime period, and 4.5m during the night-time, to represent the typical usage of a dwelling.
- The assessment assumes the site operates 100% of the time, day and night, therefore the proposed oil separator will be operational 100% of the time. This presents a worst-case scenario.
- The proposed oil separator and proposed location of installation has been determined from the scale drawings prepared by WA (drawing reference 'ST19734-003-P3 Proposed Layout Plan-A1L').
- The worst-case existing industrial noise emissions from the site have been assumed to be equal to the noise levels stated in the original planning application assessment as prepared by WA (document reference: MW/JS/ST15903/002).
- A window open at 20% provides around 13 dB of noise attenuation.[5]

4.3 Limitations

4.3.1 The noise model has been created using SoundPLAN version 8.2, which uses the noise prediction methodology set out in *ISO 9613-2:1996 'Attenuation of sound during propagation outdoors*' which accounts for downwind propagation.

4.3.2 Care has been taken when setting up the noise model to ensure its accuracy, and that it represents the proposed site layout and the local environment local area (i.e., topography and existing buildings), however, some assumptions have had to be made which might limit the accuracy of the output of the model to a small degree. Assumptions used to inform the computer noise model have been stated above.

4.3.3 SoundPLAN takes into account the effects of ground attenuation, in which the total area to be calculated is assigned a coefficient based upon the ratio of soft to hard

[5] Acoustics, Ventilation and Overheating – Residential Design Guide, January 2020

surfaces. For this model, the coefficient 0.75 has been assigned (where 1 = soft and 0 = hard), as the surrounding area to the site is predominantly soft ground.

4.4 Uncertainty

4.4.1 To reduce measurement uncertainty the following steps have been taken:

- The background sound measurement locations were selected to be representative of the background sound levels at the closest receptors to the site. In accordance with guidance, the sound level meters were mounted vertically on tripods 1.5m above the ground. The monitoring locations were also more than 3.5 metres from any other reflecting surfaces.
- The background sound measurements were undertaken during dry and calm weather conditions.
- The background sound monitoring was undertaken over approximately 23 continuous hours, and then analysed to establish the most representative background sound level of a typical 1 hour period for the daytime and 15 minute period for the night-time.
- The results of each measurement period are reported to the nearest 0.1dB; and;
- Noise measurements were made using Class 1, integrating sound level meters.

5 INDUSTRIAL NOISE MODEL

5.1 Modelling

5.1.1 The following plant item is proposed to be installed at the Spaldington R100 Energy site, which is not covered under the current planning consent:

- Installation of an oil separator to remove vegetable oil after the pasteurisation unit (for recycling into biofuel or similar use).

5.2 Oil Separator Measurements

5.2.1 On Tuesday 19th October 2022, Wardell Armstrong carried out a site visit to a similar existing operational AD energy site in Hemswell, where the proposed oil separator plant is currently undergoing a trial operational period. Specific sound measurements were obtained of the oil separator at a distance of 1m. The data collected was used to convert the sound pressure level of the plant into an overall sound power level.

5.2.2 Table 4 below details the sound power level of the oil separator per octave band.

Table 4: Measured Oil Separator Sound Power Levels

Plant Item	Frequency (Hz)								
	63	125	250	500	1000	2000	4000	8000	Overall L_w (dBA)
Oil Separator	103	92	88	86	80	82	72	63	89

5.2.3 The noise emissions of the oil separator, as shown in Table 4, have been input into the modelling software SoundPLAN 8.2 and used to calculate the noise level of the proposed plant at the nearest ESRs, located to the north on Wood Lane and to the north-east in Spaldington.

6 BS4142 ASSESSMENT

6.1 Modelling of the Specific Industrial Sound

6.1.1 The specific sound levels from the proposed oil separator have been predicted at each of the ESRs. In accordance with BS4142, the specific sound levels for the daytime and night-time have been presented for 1-hour (daytime) and 15-minute (night-time) periods respectively. The predicted specific sound levels are presented in Table .

Table 5: Predicted Specific Sound Levels				
Description	**Daytime $L_{Aeq,\ 1\text{-}hour}$ (dB)**		**Night-time $L_{Aeq,\ 15min}$ (dB)**	
	ESR1	**ESR2**	**ESR1**	**ESR2**
Specific Noise Level (dB)	6	7	6	8

6.2 Selection of the Background Sound

6.2.1 Section 8 of BS4142 provides guidance on the selection of the background sound to be used in the assessment. BS4142 states that the background sound levels used for the assessment should be representative of the period being assessed (i.e., daytime or night-time periods), and that there is no "single" background sound level.

6.2.2 Therefore, an assessment of the measured background sound levels is required to select the most appropriate and representative background sound level. An assessment has been carried out based upon the measured sound levels during the daytime, and night-time. Table shows the selected background sound levels used in the assessment.

6.2.3 Further analysis of the background sound levels for the assessment is shown in Figures 1B – 4B of Appendix B.

Table 6: Representative Background Sound Levels		
Monitoring Location	**Daytime Background Sound Level ($L_{A90,1hour}$)**	**Night-time Background Sound Level ($L_{A90,15min}$)**
ML1	33	35
ML2	31	30

6.3 Rating level

6.3.1 BS4142 includes guidance on the application of an additional weighting which should be applied to the specific sound level should the industrial noise be tonal, impulsive, intermittent or have any other characteristics that are readily distinctive against the residual acoustic environment, as experienced at receptors.

6.3.2 The specific noise levels from the oil separator are expected to be between 23dB and 30dB below the existing background sound levels at both ESRs, during the daytime and night-time periods. Therefore, the proposed plant is considered to not be audible at receptors, and acoustic character corrections have not been applied.

6.4 Comparison of the Background and Rating Levels

6.4.1 In accordance with BS4142, the predicted rating levels of operations from the proposed commercial park, at two existing sensitive receptors (which are nearest to the proposed development), have been compared with the representative background sound levels, this is shown in Table 7 below.

Table 7: Comparison of Rating Levels and Background Sound Levels

Description	Daytime		Night-time	
	ESR 1	ESR 2	ESR 1	ESR 2
Specific Noise Level, L_{Aeq} (dB)	6	7	6	8
Acoustic Character Corrections	0	0	0	0
Calculated Rating Level (dB)	6	7	6	8
Measured Background Sound Level L_{A90} (dB)	36	32	35	31
Excess of the rating level over the Background sound level	-30	-29	-29	-23

6.4.2 As shown in Table 7, the predicted rating levels at ESR1 and ESR2 are very low, and significantly lower than the background sound levels, during both the day and night-time.

6.4.3 For robustness, the cumulative impact of adding a new plant item to the existing operational plant items at the site has also been considered.

6.4.4 With reference to the 2017 assessment prepared by WA (report MW/JS/ST15903/002), the predicted noise levels at ESR1 from the existing consented AD plant items was 33 dBA externally at properties at Wood Lane (ESR1).

6.4.5 During the survey, existing plant noise from the R100 Energy Spaldington site was not audible at either receptor. If the overall existing plant level at the ESRs is taken to be 33 dBA (as predicted in the 2017 assessment), the addition of a 6-8 dB level from the oil separator plant would still result in an overall level of 33 dBA at the receptors. Therefore, the noise from the additional plant item is unlikely to be audible.

6.4.6 This is an indication of a low impact, the lowest category set out in BS4142, depending on context of the environment in which the sound resides.

6.5 BS4142 Context Assessment

6.5.1 BS4142:2014 states "The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound sources exceeds the background sound level and the context in which the sound occurs".

6.5.2 The first requirement of this statement has been determined within the noise impact assessment section above. To determine the context in which the industrial sound will reside, three factors must be considered, these are;

- The absolute level of sound;
- The character and level of the residual sound compared to the character and level of the specific sound; and;
- The sensitivity of the receptor.

Absolute Level of Sound

6.5.3 In accordance with BS4142, it is necessary to determine whether the residual and background sound levels are high or low. Section 11 of BS4142 states:

> *"Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.*
>
> *Where residual sound levels are very high, the residual sound might itself result in adverse impacts or significant adverse impacts, and the margin by which the rating level exceeds the background might simply be an indication of the extent to which the specific sound source is likely to make those impacts worse."*

6.5.4 The level of the background sound level is low-moderate, and the rating levels are very low at both receptors. Therefore, the absolute sound would not change the outcome of the assessment in this case.

Character and Level of Residual Sound Compared with the Specific Sound

6.5.5 The specific sound levels at both receptors are significantly lower than the residual sound levels, and are likely to be inaudible. This is a positive indication that the noise impact from the proposed additional plant would be low due to the existing ambient sound environment being significantly higher than the expected noise contribution from the proposed plant item.

Sensitivity of Receptor

6.5.6 With regard to pertinent factors to be taken into consideration, Section 11 of BS4142 states;

> *"The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions, such as:*
>
> *i) facade insulation treatment;*
>
> *ii) ventilation and/or cooling that will reduce the need to have windows open so as to provide rapid or purge ventilation; and*
>
> *iii) acoustic screening."*

6.5.7 Sensitive external areas at ESR1 and ESR2 will have moderate to high sensitivity given their residential nature. However, the specific sound from the proposed oil separator is predicted to be inaudible, therefore the sensitivity of the receptor does not need to be considered for this assessment.

6.6 Summary of the BS4142 Assessment

6.6.1 The assessment in Table shows that the rating levels of activities associated with proposed development would be significantly lower than the background sound levels during the daytime and night-time at ESR1 and ESR2 and have a low impact, which the lowest category set out in BS4142.

6.6.2 In accordance with BS4142, the context in which the sound resides must be considered as part of the assessment. As demonstrated in this assessment, and when considering context, the noise from the oil separator will not be audible. Therefore, the BS4142 assessment indicates that the noise associated with the proposed development will have a low impact at all ESRs.

6.6.3 Based on the results of this assessment, no mitigation has been proposed, and it is considered that the installation of the oil separator at the R100 Energy Spaldington site would have a low impact, and is very likely to be inaudible, at ESRs nearest to the site.

7 CONCLUSIONS

7.1.1 Wardell Armstrong LLP (WA) has carried out a noise impact assessment to accompany a planning application for the proposed installation of an oil separation plant at the existing R100 Energy Ltd site in Spaldington, Goole.

7.1.2 An assessment of noise impact in accordance with BS4142 was undertaken and shows that noise from the proposed plant items is likely to be significantly below existing background noise levels, and is likely to be inaudible. Therefore, even when considered in context, the proposed plant will generate no more than a low impact at the nearest ESRs, which is the lowest category set out in BS4142.

7.1.3 Therefore, it is thought that existing receptors located to the north and north-east of the development site would not experience any adverse effect due to the installation of the oil separator plant.

7.1.4 When considering the proposed development in accordance with national planning guidance, the predicted noise impact is below the Lowest Observed Adverse Effect Level (LOAEL), and should therefore, not be a significant consideration when determining the planning application.

APPENDICES

DRAWINGS

Appendix A

Policy, Standards and Guidance

National Planning Policy Framework

In July 2021 the 'National Planning Policy Framework' (NPPF) was amended as the current planning policy guidance within England.

Paragraph 185 of the NPPF states:

'Planning policies and decisions should also ensure that new development is appropriate for its location taking in account the likely effects (including cumulative effects) of pollution on heath, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impact that could arise from the development. In doing so they should:

a. Mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development - and avoid noise giving rise to significant adverse impact on health and the quality of life;

b. Identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason'…

Paragraph 187 of the NPPF states:

'Planning policies and decisions should ensure that new development can be integrated with existing business and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.'

Noise Policy Statement for England

With regard to 'significant adverse impacts on health and the quality of life' the NPPF refers to the 'Noise Policy Statement for England' (NPSE).

The Noise Policy Statement for England refers to the World Health Organisation when discussing noise impacts and introduces observed effect levels which are based on

established concepts from toxicology that are applied to noise impacts by WHO.

Three levels are defined as follows:

'NOEL – No Observed Effect Level

- This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level

- This is the level above which adverse effects on health and quality of life can be detected.

SOAEL – Significant Observed Adverse Effect Level

- This is the level above which significant adverse effects on health and quality of life occur'.

The first aim of the NPSE states that significant adverse effects on health and quality of life should be avoided. The second aim refers to the situation where the impact lies somewhere between LOAEL and SOAEL, and it requires that all reasonable steps are taken to mitigate and minimise the adverse effects of noise. However, this does not mean that such adverse effects cannot occur.

Planning Practice Guidance – Noise

The Planning Practice Guidance (PPG) provides further detail about how the effect levels can be recognised. Above the NOEL noise becomes noticeable, however it has no adverse effect as it does not cause any change in behaviour or attitude. Once noise crosses the LOAEL threshold it begins to have an adverse effect and consideration needs to be given to mitigating and minimising those effects, taking account of the economic and social benefits being derived from the activity causing the noise. Increasing noise exposure further might cause the SOAEL threshold to be crossed. If the exposure is above this level the planning process should be used to avoid the effect occurring by use of appropriate mitigation such as by altering the design and layout. Such decisions must be made taking account of the economic and social benefit of the activity causing the noise, but it is undesirable for such exposure to be caused. At the highest extreme the situation should be prevented from occurring regardless of the benefits which might arise. Table 1 summarises the noise exposure hierarchy.

Table A1 - National Planning Practice Guidance noise exposure hierarchy			
Perception	**Examples of Outcomes**	**Increasing Effect Level**	**Action**
No Observed Effect Level			
Not noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for non-awakening sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

The PPG summarises the approach to be taken when assessing noise. It accepts that noise can override other planning concerns, but states:

> "Neither the Noise Policy Statement for England nor the National Planning Policy Framework (which reflects the Noise Policy Statement) expects noise to be considered in isolation, separate from the economic, social and other environmental dimensions of proposed development"

British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings

British Standard 8233 "Guidance on sound insulation and noise reduction for buildings" 2014, suggests the following guideline noise levels and states that they are based on guidelines issued by the World Health Organisation;

- 35 dB $L_{Aeq\ (16\ hour)}$ during the day time in noise sensitive rooms
- 30 dB $L_{Aeq\ (8\ hour)}$ during the night time in bedrooms
- 45 dB $L_{Amax,F}$ during the night time in bedrooms
- 50 dB $L_{Aeq\ (16\ hour)}$ desirable external noise levels for amenity space such as gardens and patios
- 55 dB $L_{Aeq\ (16\ hour)}$ upper guideline value which would be acceptable in noisier environments.

In addition, for internal noise levels it states;

> "Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved."

Furthermore, with regard to external noise, the Standard states;

> "However, it is also recognised that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited".

British Standard 4142:2014 + A1 2019 Methods for rating and assessing industrial and commercial sound (BS4142):

BS4142 is used to rate and assess sound of an industrial and/or commercial nature including:

- 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; and
- 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 or ship movements on or around an industrial and/or commercial site.

The standard is applicable to the determination of the following levels at outdoor locations:

- rating levels for sources of sound of an industrial and/or commercial nature; and
- ambient, background and residual sound levels, for the purposes of:

1) Investigating complaints;

2) Assessing sound from proposed, new, modified or additional source(s) of sound of an industrial and/or commercial nature; and

3) Assessing sound at proposed new dwellings or premises used for residential purposes.

The purpose of the BS4142 assessment procedure is to assess the significance of sound of an industrial and/or commercial nature.

BS4142 refers to noise from the industrial source as the 'specific noise' and this is the term used in this report to refer to noise which is predicted to occur due to activities associated with industrial noise.

BS4142 assesses the significance of impacts by comparing the specific noise level to the background noise level (L_{A90}).

Certain acoustic features can increase the significance of impacts over that expected from a simple comparison between the specific noise level and the background noise level. In particular, BS4142 identifies that the absolute level of sound, the character, and the residual sound and the sensitivity of receptor should all be taken into consideration. BS4142 includes allowances for a rating penalty to be added if it is found that the specific noise source contains

a tone, impulse and/or other characteristic, or is expected to be present. The specific noise level along with any applicable correction is referred to as the 'rating level'.

The greater the increase between the rating level over the background noise level, the greater the magnitude of the impact. The assessment criteria given by BS4142 are as follows:

- A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5dB 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.

During the daytime, BS4142 requires that noise levels are assessed over 1-hour periods. However, during the night-time, noise levels are required to be assessed over 15-minute periods.

Where the initial estimate of the impact needs to be modified due to context, BS4142 states that all pertinent factors should be taken into consideration, including:

- The absolute level of sound;
- The character and level of the residual sound compared to the character and level of the specific sound; and,
- The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.

Appendix B – Noise Monitoring Results

Table B1: Daytime Measured Noise Levels at ML1 - Properties on Wood Lane					
Period start	**Measured Noise Levels (dB)**				
	$L_{Aeq,15min}$	$L_{Amin,15min}$	$L_{Amax,15min}$	$L_{A90,15min}$	$L_{A10,15min}$
18/10/2022 11:15	40.4	30.4	63.8	33.3	43.3
18/10/2022 11:30	46.6	32.9	72.4	34.5	46.2
18/10/2022 11:45	42.7	28.1	61.3	30	44.6
18/10/2022 12:00	35.4	30.2	51.2	31.2	38.2
18/10/2022 12:15	38.2	29.7	64	31.4	41.2
18/10/2022 12:30	40.4	30	56.6	31.7	42.5
18/10/2022 12:45	39.6	32	58.2	33.8	43
18/10/2022 13:00	39.4	31.6	60	32.8	42.6
18/10/2022 13:15	40.7	34	63.3	36	43
18/10/2022 13:30	41.9	32	57.6	34.3	44.7
18/10/2022 13:45	45.3	30.8	65	32.7	44.5
18/10/2022 14:00	41.1	31.8	55.3	33.5	45.3
18/10/2022 14:15	39	30.2	61.6	32.9	42
18/10/2022 14:30	38.6	32.5	53	33.6	41.7
18/10/2022 14:45	38.5	30.2	58.5	32.1	40.9
18/10/2022 15:00	41.4	33	54.8	34.7	44.4
18/10/2022 15:15	36.4	28.9	59.7	30.6	38.4
18/10/2022 15:30	41.2	31.4	55.1	35.4	44.6
18/10/2022 15:45	40.5	32.5	59.8	33.5	44.1
18/10/2022 16:00	43.9	31.1	60	33	49.1
18/10/2022 16:15	44.5	32.6	62.5	33.7	49
18/10/2022 16:30	49.1	41.8	59.4	43.7	52
18/10/2022 16:45	46.9	39.3	56.6	41.9	49.8
18/10/2022 17:00	44.6	36.5	63.8	37.8	46.9
18/10/2022 17:15	41.4	34.8	62.5	36.4	43.1
18/10/2022 17:30	39.7	35.5	49.9	36.2	42.2
18/10/2022 17:45	40	35.8	54.8	36.6	40.7
18/10/2022 18:00	39.1	35.9	50.9	36.6	40.8
18/10/2022 18:15	57.3	35.6	73.2	36.4	56.7
18/10/2022 18:30	41.6	35.6	68	36.8	41.6
18/10/2022 18:45	41.3	35.8	47.7	37.7	43.7
18/10/2022 19:00	44.5	38.4	53.8	40.5	46.9
18/10/2022 19:15	38.8	34.1	51.3	35.8	40.9
18/10/2022 19:30	38.7	34.4	46.3	35.1	41.8
18/10/2022 19:45	42.2	34.3	59.4	35.2	46.4
18/10/2022 20:00	42.5	36.9	49.2	38.2	45.3
18/10/2022 20:15	43.8	35.4	55.8	37.8	47.2
18/10/2022 20:30	34.4	30	43.2	31.1	37.2
18/10/2022 20:45	34.4	29.3	43.7	29.7	38.1
18/10/2022 21:00	31.3	28.5	38.2	29	33

18/10/2022 21:30	31.9	28.8	43.6	29.3	33.8
18/10/2022 21:45	37.7	30.4	52.4	31.9	39.8
18/10/2022 22:00	43.9	30.1	55.7	33.2	47.8
18/10/2022 22:15	41.3	30.4	53.8	31.6	45.2
18/10/2022 22:30	35.8	30.1	47.9	31	38.6
18/10/2022 22:45	41	31.3	51.2	33.7	44.7
19/10/2022 07:00	46.7	38	70.3	38.7	47.2
19/10/2022 07:15	44.6	39.4	57.1	40.8	46.6
19/10/2022 07:30	44.3	39	64.8	39.9	46.5
19/10/2022 07:45	43.9	40	62.7	41.3	45.3
19/10/2022 08:00	44.6	39.4	65.6	40.6	44.9
19/10/2022 08:15	45.3	39.2	58.7	41.6	47.9
19/10/2022 08:30	44.2	39.9	57.9	40.2	47.2
19/10/2022 08:45	42.3	40	57.5	40.4	43.1
19/10/2022 09:00	46.7	40.1	63.1	40.2	48.3
19/10/2022 09:15	46.5	39.1	66.8	40.1	44.7
19/10/2022 09:30	41.7	38.4	59.3	39.6	42.8
19/10/2022 09:45	40.2	36.2	57	37.6	41.3
19/10/2022 10:00	46.3	37.2	58.1	39.1	49.8
Overall	45.1	28.1	73.2	35.5	43.5

Table B2: Night-time Measured Noise Levels at ML1 - Properties on B5130					
Period start	**Measured Noise Levels (dB)**				
	$L_{Aeq,5min}$	$L_{Aeq,5min}$	$L_{Aeq,5min}$	$L_{Aeq,5min}$	$L_{Aeq,5min}$
18/10/2022 23:00	40.6	33.3	48.7	34.8	44.4
18/10/2022 23:05	41.1	33.9	52.2	34.3	44
18/10/2022 23:10	46.1	35.1	57.4	38	49.2
18/10/2022 23:15	46.4	35	58.2	35.8	50.9
18/10/2022 23:20	35.4	30.4	41.9	31.3	37.6
18/10/2022 23:25	31.5	28.9	36.2	29.5	33.2
18/10/2022 23:30	32.5	28.3	40	29.4	35.4
18/10/2022 23:35	42.8	28.3	56.7	28.7	48.4
18/10/2022 23:40	33.8	29.3	41.5	30	36.3
18/10/2022 23:45	31.6	29.4	39.5	29.7	32.9
18/10/2022 23:50	35.5	30.6	46.2	31.1	38.3
18/10/2022 23:55	33.5	31.2	41.2	31.4	35
19/10/2022 00:00	39.7	34.2	46.8	34.9	43
19/10/2022 00:05	38.8	34.6	43.8	35.5	41.2
19/10/2022 00:10	40.2	33.1	49.9	33.9	44.6
19/10/2022 00:15	39.8	34.1	46.2	34.8	42.9
19/10/2022 00:20	41.7	38.2	48.8	38.5	44
19/10/2022 00:25	45.5	39.6	54.3	41.9	47.8
19/10/2022 00:30	41	35.1	48.3	36.8	43
19/10/2022 00:35	44.5	36.6	52.4	38.8	47.9
19/10/2022 00:40	48.3	39.2	54.1	42.8	51.3

19/10/2022 00:45	44.9	36.7	52.5	38.9	48.4
19/10/2022 00:50	40.3	35.5	46.8	36.6	42.7
19/10/2022 00:55	40.7	33.8	53.6	34.4	42.8
19/10/2022 01:00	42.7	33.1	53.6	34.6	45.3
19/10/2022 01:05	37.3	31.3	46.1	32.2	40.4
19/10/2022 01:10	31	28.2	37.5	28.8	32.8
19/10/2022 01:15	42.7	35	53.6	37	45.5
19/10/2022 01:20	39.1	33.1	47.3	34	41.8
19/10/2022 01:25	38.7	33.2	47.5	34.2	40.9
19/10/2022 01:30	41	35.7	47	36.8	43.7
19/10/2022 01:35	45.5	36.7	59.7	37.7	49.1
19/10/2022 01:40	41.9	33.3	50.1	34	46.1
19/10/2022 01:45	37.5	32.5	47.6	32.9	40.1
19/10/2022 01:50	42.2	33.8	50.6	36.4	44.9
19/10/2022 01:55	40.4	34.8	47.4	35.4	43.3
19/10/2022 02:00	38.7	33.3	48.5	34.6	41
19/10/2022 02:05	41.9	30.1	51	32.1	45.7
19/10/2022 02:10	31.5	29.4	39.5	29.6	33
19/10/2022 02:15	34.2	31.1	41.6	31.4	36.6
19/10/2022 02:20	34.6	30.6	44.4	31.3	37.4
19/10/2022 02:25	38.4	32.5	44	33.8	41.8
19/10/2022 02:30	40.2	32.8	47.6	34.6	44
19/10/2022 02:35	36.4	30.4	44.1	31.9	40.1
19/10/2022 02:40	33.3	30.1	40.5	30.5	35.1
19/10/2022 02:45	34.5	29.9	44.2	30.7	37.4
19/10/2022 02:50	37.2	30.3	47.9	30.8	40.2
19/10/2022 02:55	32.8	29.7	40.2	30.5	34.8
19/10/2022 03:00	37	31.1	44.5	31.7	40.2
19/10/2022 03:05	35.9	32.6	42	33	37.7
19/10/2022 03:10	38.8	31	44.9	31.7	42.7
19/10/2022 03:15	46.3	34	57.5	35.1	51.5
19/10/2022 03:20	44.6	35.7	51.1	39	47.9
19/10/2022 03:25	43.6	36.4	50.9	38	47.6
19/10/2022 03:30	46.3	39.9	54.2	40.4	49.9
19/10/2022 03:35	46.5	39.2	56.3	40.3	49.8
19/10/2022 03:40	40.3	35	47.3	36.4	42.9
19/10/2022 03:45	40.7	33.4	49.9	35.4	43.4
19/10/2022 03:50	39.3	31.8	46.7	34.3	43.8
19/10/2022 03:55	43.3	32.1	52.6	32.8	48.7
19/10/2022 04:00	40.1	31.6	51.9	34.2	43.4
19/10/2022 04:05	38.6	33.7	45.8	34.7	41
19/10/2022 04:10	40.8	36.2	49.6	37.3	43.6
19/10/2022 04:15	42.6	35.5	50.5	36.5	46.2
19/10/2022 04:20	42.4	38.3	48.3	39.5	44.9
19/10/2022 04:25	39.7	35.2	45.3	35.9	42.7
19/10/2022 04:30	38.7	35.5	45.4	36.5	40.5

19/10/2022 04:35	37	34.1	44.4	34.7	39
19/10/2022 04:40	36	32.8	43.2	33.3	38.3
19/10/2022 04:45	36.2	32.5	44.7	32.7	38.2
19/10/2022 04:50	34.9	32.2	43.1	32.9	36
19/10/2022 04:55	35.9	31	45.7	32.2	38.2
19/10/2022 05:00	35.2	31.6	42.4	32	37.4
19/10/2022 05:05	36.7	32.6	43.9	33	40.6
19/10/2022 05:10	37.4	34.5	48	34.6	39.6
19/10/2022 05:15	35.7	33.5	44.7	33.5	37.4
19/10/2022 05:20	36.3	33.2	44	33.5	38.8
19/10/2022 05:25	39.6	33.2	46.9	34.8	42.7
19/10/2022 05:30	39.1	34.4	50	35.1	41.2
19/10/2022 05:35	41.4	34.6	50.8	35.9	44
19/10/2022 05:40	39.8	34.2	51.1	34.2	42.4
19/10/2022 05:45	41.7	33.6	51.6	34.4	45.2
19/10/2022 05:50	41.3	34.6	52.2	35.4	44.3
19/10/2022 05:55	40.9	34	50.8	34.4	44.6
19/10/2022 06:00	40.5	34.4	52	34.4	44.4
19/10/2022 06:05	40.2	33.7	49.3	34.6	44
19/10/2022 06:10	41.4	35.2	50.1	36.6	44.1
19/10/2022 06:15	39.1	35.8	50.6	35.8	41
19/10/2022 06:20	40.8	36.2	48	36.6	44
19/10/2022 06:25	44.1	36	51.2	38.1	47.3
19/10/2022 06:30	45.2	37.3	50.4	40.2	47.7
19/10/2022 06:35	46.8	39.3	53.9	40.8	50.8
19/10/2022 06:40	43.1	36.5	49.2	37.5	46.1
19/10/2022 06:45	43.1	37.6	48.8	38.4	45.5
19/10/2022 06:50	43.6	37.9	54.6	38.1	47.4
19/10/2022 06:55	43.5	37.3	57.6	38	47.2
Overall	41.4	28.2	54.2	34.8	42.6

Table B3: Daytime Measured Noise Levels at ML1 - Properties to the East, in Spaldington					
Period Start	**Measured Noise Levels (dB)**				
	$L_{Aeq,15min}$	$L_{Amin,15min}$	$L_{Amax,15min}$	$L_{A90,15min}$	$L_{A10,15min}$
18/10/2022 12:00	45.7	26.3	72.1	27.4	41.2
18/10/2022 12:15	47.5	27.4	68.1	29.1	51.1
18/10/2022 12:30	49.7	27.7	74.4	28.7	43.5
18/10/2022 12:45	42.9	25.2	62.8	27.1	43.9
18/10/2022 13:00	54.4	27.7	79	29.5	52.9
18/10/2022 13:15	44.8	27.3	63.9	31.1	46.5
18/10/2022 13:30	44.1	27.2	68.2	28.3	42.8
18/10/2022 13:45	49.5	28.1	72.3	29	46
18/10/2022 14:00	48.8	27.7	69.3	30.6	48.3
18/10/2022 14:15	43.4	29.3	69.8	30.5	38.6
18/10/2022 14:30	43.2	27.8	65.6	29.8	42.3
18/10/2022 14:45	51.1	29.7	74.8	32.3	50.8
18/10/2022 15:00	41.1	26.7	64.6	30	39.2
18/10/2022 15:15	51.3	29.1	77.6	31.8	43.6
18/10/2022 15:30	46	29.5	66.2	34.7	47.9
18/10/2022 15:45	52	32.9	76.7	34.3	46.7
18/10/2022 16:00	45.1	31.5	66.9	34	45.8
18/10/2022 16:15	51.8	30.5	75.6	34.2	47
18/10/2022 16:30	44.7	33.9	62.4	36.6	45.7
18/10/2022 16:45	44.6	33.6	67.6	35.3	43.4
18/10/2022 17:00	43.6	33.9	65.1	34.9	45.2
18/10/2022 17:15	48.9	32.7	68.7	33.6	48.5
18/10/2022 17:30	40.3	34.2	62.8	34.8	42.3
18/10/2022 17:45	41.7	33.8	54.5	35.5	44.7
18/10/2022 18:00	38.7	34.3	63.5	34.5	39.3
18/10/2022 18:15	47.2	32.3	69.2	33.2	39.8
18/10/2022 18:30	41.6	33.4	64.6	33.5	37.8
18/10/2022 18:45	35.2	29.6	54.1	30.8	36.8
18/10/2022 19:00	36.3	32.7	43	34.3	37.6
18/10/2022 19:15	33.6	31.4	39.1	31.5	35.1
18/10/2022 19:30	32.6	30.5	42.3	31	33.7
18/10/2022 19:45	32.8	31.1	38.3	31.4	33.9
18/10/2022 20:00	32.9	30.3	38.5	31.3	34.1
18/10/2022 20:15	33.7	30.3	39.9	31.6	35.2
18/10/2022 20:30	41	27.4	63.5	28.8	32.7
18/10/2022 20:45	50.6	27.3	78.2	28.1	35.3
18/10/2022 21:00	40.9	26.2	64.6	26.4	31.6
18/10/2022 21:15	30.2	25.4	41.2	26.2	32.4
18/10/2022 21:30	26.7	25.1	45.1	25.2	27.5
18/10/2022 21:45	32	27.7	38.8	29.2	34
18/10/2022 22:00	30.3	27.6	37.3	28	32.2

18/10/2022 22:15	29.9	26.4	46.2	27.1	30.8
18/10/2022 22:30	30.1	27.6	36.9	28.4	31.4
18/10/2022 22:45	31.5	27.6	38.3	28.5	33.3
19/10/2022 07:00	38.3	33.8	57.5	33.9	37
19/10/2022 07:15	47.8	34.4	70.2	35.3	45.8
19/10/2022 07:30	52.5	34.5	76.8	35.5	47.8
19/10/2022 07:45	47.8	35.9	75.3	36.6	48.2
19/10/2022 08:00	46.1	35.8	64.2	36.3	47.4
19/10/2022 08:15	51.8	35.7	77	36.4	46.4
19/10/2022 08:30	45.2	36.5	65.3	37	43.9
19/10/2022 08:45	49.6	36.8	73.5	37.8	45.9
19/10/2022 09:00	55.4	36.9	74.9	37.5	56.3
19/10/2022 09:15	46.7	36.7	64.6	37.3	45.4
19/10/2022 09:30	45.9	35.9	67.1	36.5	44
19/10/2022 09:45	58.1	36.7	76.4	37.8	61.9
Overall	46.6	25.1	84.7	31.6	41.0

Table B2: Night-time Measured Noise Levels at ML1 - Properties to the East, in Spaldington

Period start	Measured Noise Levels (dB)				
	$L_{Aeq,5min}$	$L_{Aeq,5min}$	$L_{Aeq,5min}$	$L_{Aeq,5min}$	$L_{Aeq,5min}$
18/10/2022 23:00	30.7	29.2	34.3	29.6	31.4
18/10/2022 23:05	32.3	28.6	38.1	29.9	33.7
18/10/2022 23:10	31.6	29.8	35.6	30.3	32.6
18/10/2022 23:15	31.4	29	36	29.2	33.2
18/10/2022 23:20	30.5	28.2	35.7	28.6	31.8
18/10/2022 23:25	42.5	30.5	61.2	30.4	36.4
18/10/2022 23:30	30.7	28.5	35.3	29	32.3
18/10/2022 23:35	29.6	27.8	33.7	28.2	30.6
18/10/2022 23:40	29.5	27.7	34.8	27.9	30.4
18/10/2022 23:45	31.6	29.6	37.1	29.9	33
18/10/2022 23:50	30.9	28	36.1	28.9	32.1
18/10/2022 23:55	31.8	28.4	38.6	29	34.1
19/10/2022 00:00	32.7	30.7	39.4	30.9	34.3
19/10/2022 00:05	30.6	29.3	35.3	29	32
19/10/2022 00:10	33.4	30.5	47.9	31.1	34.9
19/10/2022 00:15	34.8	31.8	48.6	32.5	36.2
19/10/2022 00:20	35.4	33.6	46.1	33.6	36.5
19/10/2022 00:25	35	33.5	39.6	33.8	36
19/10/2022 00:30	34.7	32.7	39.7	33.3	35.8
19/10/2022 00:35	36.7	34.5	41.5	35	37.8
19/10/2022 00:40	33.4	30.8	38.9	31	35.3
19/10/2022 00:45	31.4	29.4	37	29.6	32.9
19/10/2022 00:50	33	29.9	37	31.6	34
19/10/2022 00:55	31.2	29.9	35.2	30.1	32.1
19/10/2022 01:00	30	28.6	34.3	28.8	30.9

19/10/2022 01:05	30.4	29	36.2	29	31.5
19/10/2022 01:10	30.5	29	37.1	29.2	31.5
19/10/2022 01:15	32.7	30	48.5	30.3	34.4
19/10/2022 01:20	44.6	32.5	62.7	32.3	35.7
19/10/2022 01:25	33.6	32.3	39.5	32.2	34.7
19/10/2022 01:30	36.1	34.3	41.7	34.6	37.1
19/10/2022 01:35	32.8	29.5	41.9	29.6	34.8
19/10/2022 01:40	32.1	29.2	37.6	29.6	33.9
19/10/2022 01:45	32.8	31.3	38.7	31.5	34
19/10/2022 01:50	31.4	29.4	40.3	29.3	32.8
19/10/2022 01:55	32.3	29.2	39.5	30.2	34.1
19/10/2022 02:00	31.2	29.6	36.3	29.8	32.2
19/10/2022 02:05	31.7	28.5	40.8	30	33.1
19/10/2022 02:10	30.5	28.1	36.6	28.9	31.7
19/10/2022 02:15	29.2	27.4	34	27.6	30.6
19/10/2022 02:20	30.9	28.9	36.3	29.4	32.1
19/10/2022 02:25	32.8	28.9	42.5	30.6	34.2
19/10/2022 02:30	31.3	29.8	36.1	29.9	32.5
19/10/2022 02:35	30	27.8	34.6	28	31.3
19/10/2022 02:40	29.4	26.9	34.2	27.8	30.7
19/10/2022 02:45	29.4	26.5	34.8	27.8	30.4
19/10/2022 02:50	29.6	27	34.1	28.1	30.7
19/10/2022 02:55	31.7	29	37.1	29.7	33.1
19/10/2022 03:00	32.2	29.9	40.4	30.3	33.9
19/10/2022 03:05	32.2	30	43.5	30.5	33.4
19/10/2022 03:10	34.6	31.6	41.6	32.2	36.3
19/10/2022 03:15	35.5	33.2	41.5	33.6	37
19/10/2022 03:20	35.2	32.4	41.6	33.3	36.4
19/10/2022 03:25	35.8	32.9	43.2	33.8	37.2
19/10/2022 03:30	36.4	34.2	44.5	34.6	37.9
19/10/2022 03:35	35.7	32.4	41.8	33.2	37
19/10/2022 03:40	34.5	32.1	41.8	32.6	36.2
19/10/2022 03:45	34.9	32.8	40.2	33.5	35.8
19/10/2022 03:50	33.9	32.5	39	32.4	34.9
19/10/2022 03:55	31.6	29.2	44.1	30.1	32.5
19/10/2022 04:00	31.3	29.5	36.9	29.7	32.5
19/10/2022 04:05	33.2	31.4	39.7	31.4	34.4
19/10/2022 04:10	34.6	31.9	40.9	33	35.7
19/10/2022 04:15	35	31.5	42.7	32.5	36.7
19/10/2022 04:20	35.5	32.9	42.4	33.6	37.2
19/10/2022 04:25	34.9	33.5	40	33.3	36.2
19/10/2022 04:30	34.2	33	38.7	32.9	35.1
19/10/2022 04:35	34	32.8	38.9	32.8	34.8
19/10/2022 04:40	32.8	31.2	36.6	31.1	33.9
19/10/2022 04:45	31.7	30.6	35.6	30.6	32.5
19/10/2022 04:50	32.1	30.1	40.3	30.5	33.2

19/10/2022 04:55	31.6	30	39.8	30.5	32.3
19/10/2022 05:00	31.3	29.4	42.3	29.7	31.9
19/10/2022 05:05	31.3	29.6	47.9	29.7	31.7
19/10/2022 05:10	30.6	29.6	38.2	29.5	31.3
19/10/2022 05:15	30.7	29.8	36.9	29.7	31.3
19/10/2022 05:20	30.3	29	35	29.2	31
19/10/2022 05:25	29.9	28.9	34	29	30.5
19/10/2022 05:30	31.1	29.5	35.9	29.9	32
19/10/2022 05:35	31.8	30.7	40.1	30.8	32.4
19/10/2022 05:40	32.4	30.9	39.9	31	33.3
19/10/2022 05:45	42.1	30.9	57.9	31.4	39.9
19/10/2022 05:50	32.3	31.1	39.7	31.2	33.1
19/10/2022 05:55	32.7	31.5	37.5	31.5	33.6
19/10/2022 06:00	32.7	31.7	38.5	31.5	33.6
19/10/2022 06:05	33	31.6	44.3	31.6	33.6
19/10/2022 06:10	47.3	31.5	66.1	31.7	40.3
19/10/2022 06:15	46.2	32.4	65.6	32.7	38.6
19/10/2022 06:20	32.9	31.9	36.6	32	33.6
19/10/2022 06:25	33.5	32.4	37.6	32.6	34.1
19/10/2022 06:30	33.3	32.5	37.7	32.3	34.2
19/10/2022 06:35	32.9	32.1	44.8	32.1	33.6
19/10/2022 06:40	34.6	32.7	42	33.4	35.7
19/10/2022 06:45	34.4	33.2	47.1	33.2	35.1
19/10/2022 06:50	45.5	33.9	62.9	33.7	42.2
19/10/2022 06:55	46.3	33.1	65.3	33.5	46.4
Overall	36.3	26.5	47.9	31.0	34.1

Figure B1: Histogram for the Selection of Daytime Background Sound at ML1

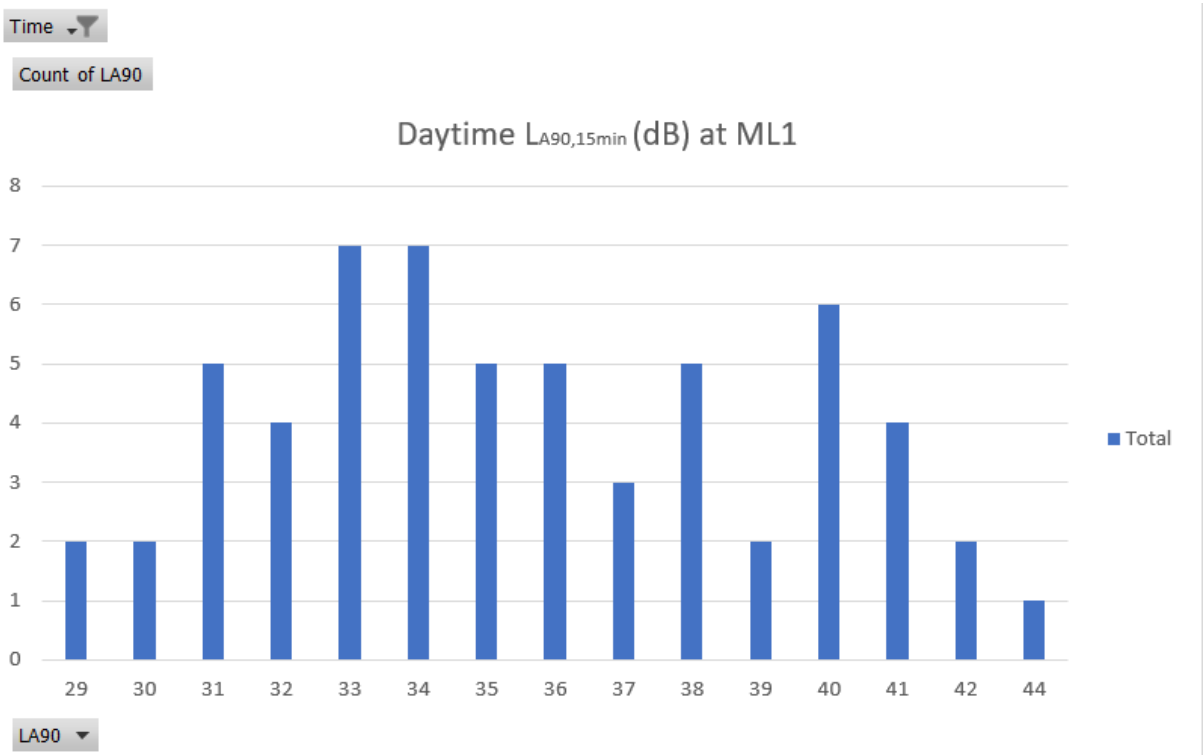


Figure B2: Selection of Night-time Background Sound at ML1

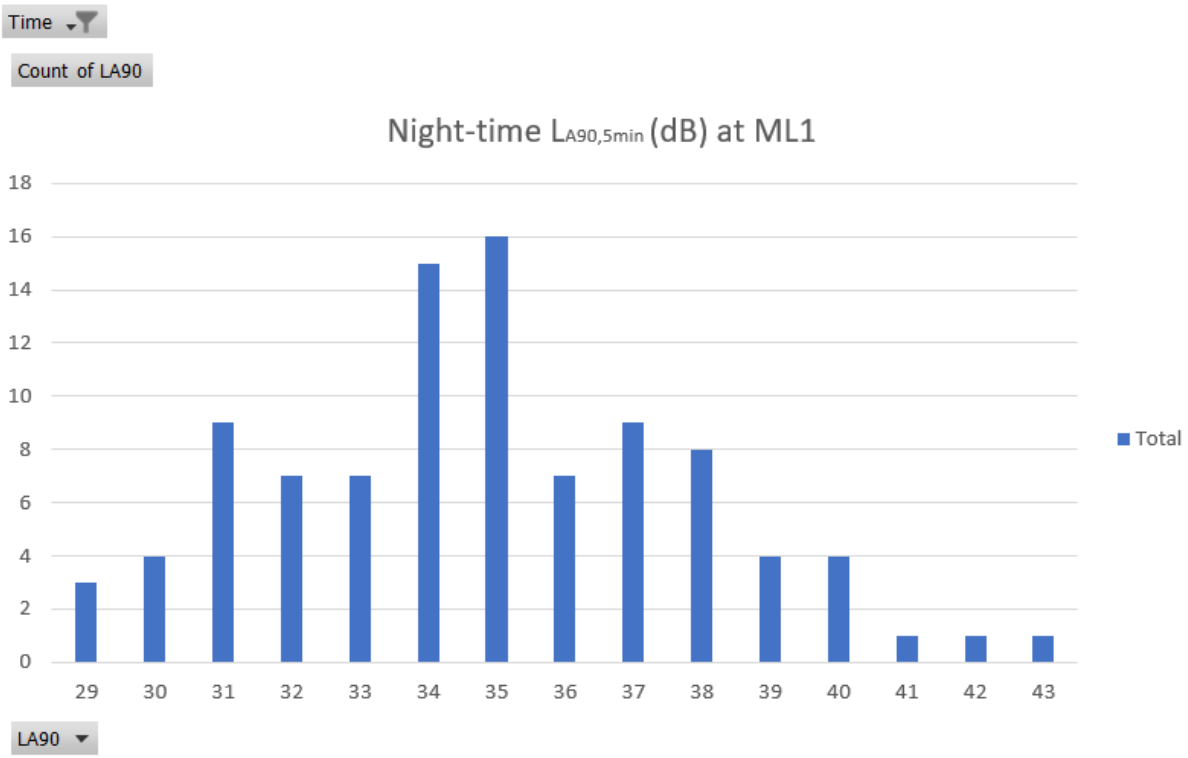


Figure B3: Histogram for the Selection of Daytime Background Sound at ML2

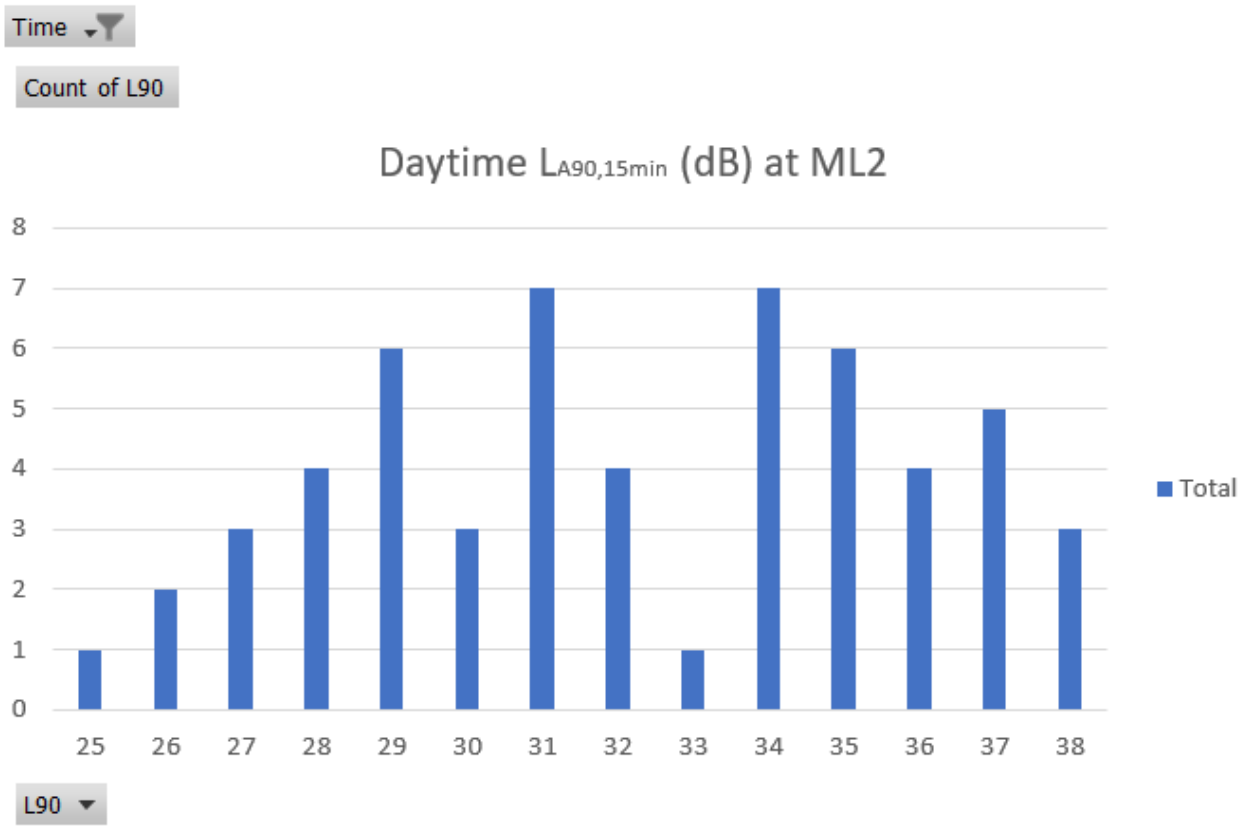
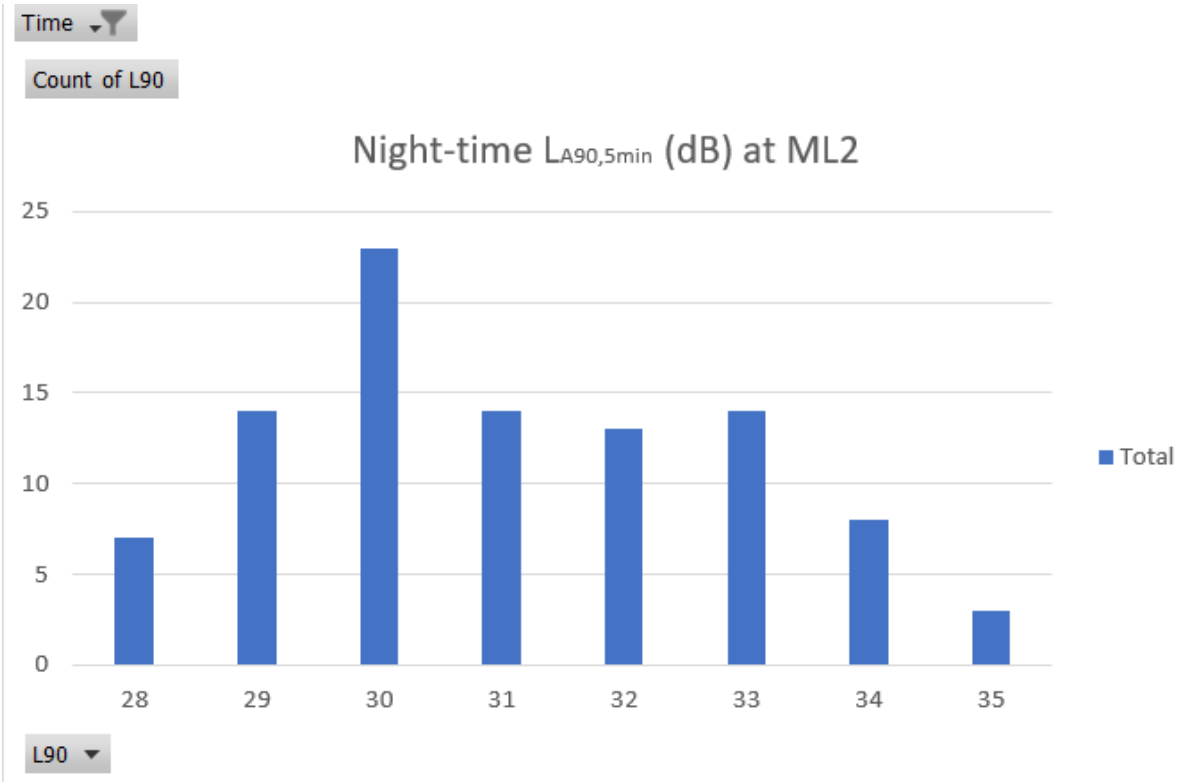
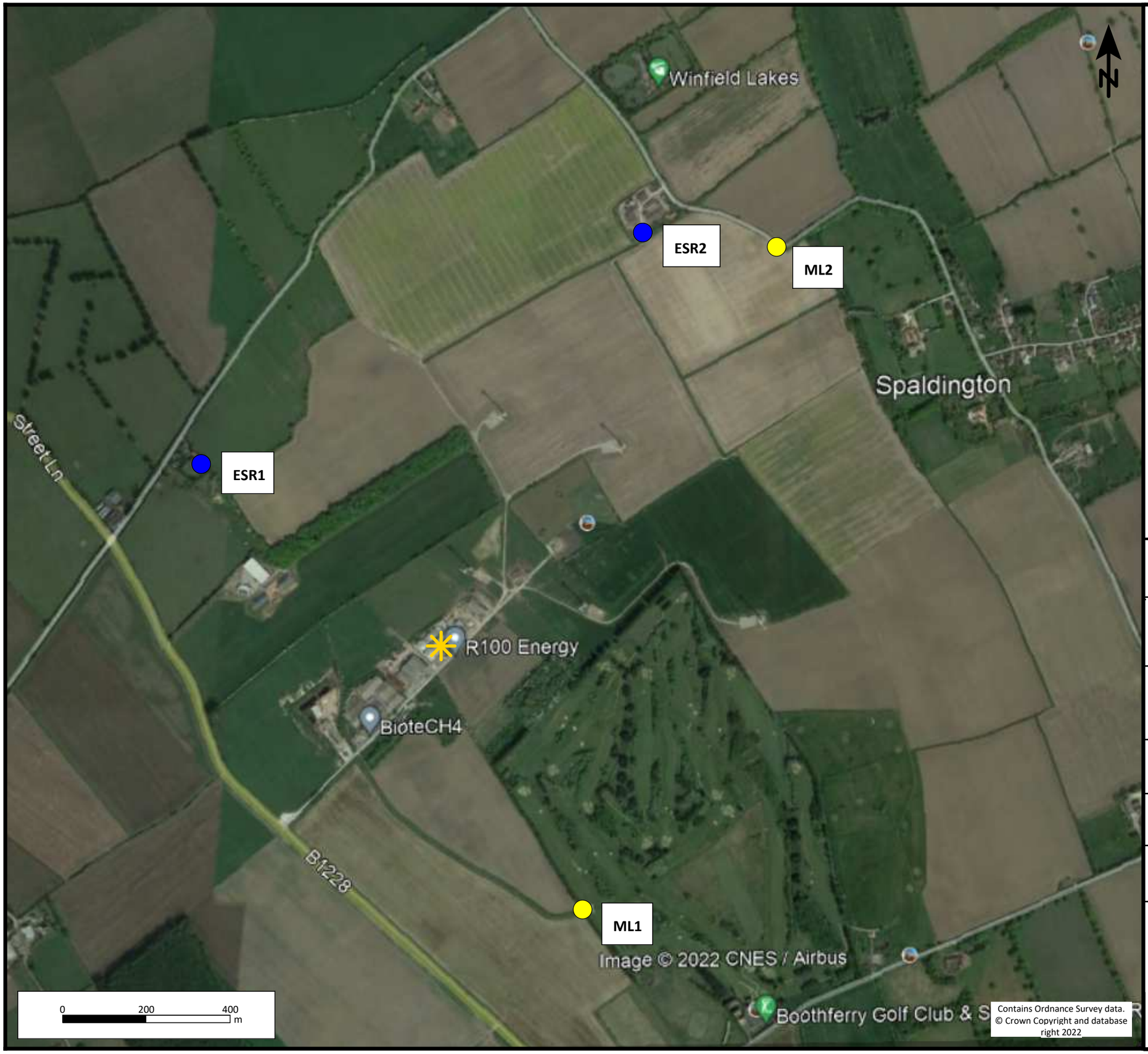


Figure B4: Selection of Night-time Background Sound at ML2





Key

- Proposed Oil Separator Location
- Existing Senstive Receptor (ESR)
- Monitoring Location (ML)

CLIENT: BioTeCH4 Ltd		
PROJECT: R100 Spaldington		
TITLE: Figure 1 - Site Location Plan, Existing Sensitive Receptors and Noise Monitoring Locations		
DRG NO: ST19734/001		REV: A
DRG SIZE: A3	SCALE: 1:9000	DATE: 03/11/2022
DRAWN BY: BG	CHECKED BY: MD	APPROVED BY: MD

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