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## **Pyrolysis Plant, Darlington**

Environmental Noise Impact Assessment

P2772-REP01-REV C-BDH

11 February 2026

**PROJECT**                      Pyrolysis Plant, Darlington  
 Environmental Noise Impact Assessment

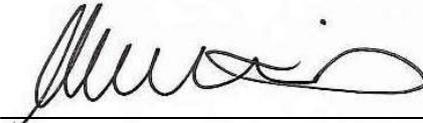
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**DOCUMENT REFERENCE**                      P2772-REP01-REV C-BDH

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**DATE**    11 / 02 / 2026

**REVISIONS**

Reviewer	Date	Description

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**Name of Organisation**    Sol Acoustics Limited  
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## 1 Executive Summary

- 1.1 Sol Acoustics Ltd ("Sol") has been appointed to provide an environmental noise impact assessment to support a Permit Application and Planning Application for a proposed new pyrolysis plant that is to be located at Cleveland House on Yarm Road, Darlington DL1 4DE (the "Facility").
- 1.2 This acoustic assessment report considers the environmental noise impact as arising from the operation of all plant and processes that are associated with the Facility, at the nearest NSRs.
- 1.3 The pre-existing environmental noise climate at the identified NSRs has been measured and assessed by Sol, between Friday 17<sup>th</sup> October and Tuesday 21<sup>st</sup> October 2025.
- 1.4 The environmental noise emissions that are expected to be arising from the operation of the complete plant have been quantified, modelled, and assessed using proprietary "CadnaA" 3D noise modelling software.



- 1.5 ***It is the conclusion of this assessment that the predicted total, aggregate environmental noise impact as arising from the operation of the Facility results in a low/"sub-adverse" noise impact at the worst affected noise sensitive receptors when assessed in accordance with British Standard BS4142: 2014+A1: 2019, following the consideration of the context in which the sound occurs, provided that the maximum permitted individual plant noise limits as specified herein are not exceeded in any instance, in practice.***



- 1.6 ***This assessment is necessarily based upon preliminary noise level data as provided by the Client. It will be necessary to seek further clarifications and assurances regarding the actual anticipated noise level emissions from the plant as details develop. This will involve obtaining accurate noise level data from the various suppliers/manufacturers where appropriate or obtaining representative noise level data from a similar operational Facility. It may also be necessary to undertake further noise level measurements of the as installed plant once constructed to ensure that the predicted noise level emissions do not exceed those as presented within this report.***

- 1.7 Please refer to the main report and appendices for further information.

## 2 Introduction

2.1 Sol Acoustics Ltd ("Sol") has been appointed to provide an environmental noise impact assessment to support a Permit Application and Planning Application for a proposed new pyrolysis plant that is to be located on Cleveland House on Yarm Road, Darlington DL1 4DE (the "Facility").

2.2 This acoustic assessment report considers the environmental noise impact as arising from the operation of all plant as associated with the Facility at the nearest Noise Sensitive Receptors ("NSRs").

2.3 Specifically, the purpose of this acoustic assessment is as follows:

- ◆ Identify the nearest pre-existing noise sensitive receptors ("NSRs") that are most likely to be affected by environmental noise arising from plant and/or process noise that is associated with the Facility.
- ◆ Determine the prevailing, pre-existing baseline Background Sound Levels at the worst affected NSRs, through direct, environmental noise measurement.
- ◆ Identify all significant noise sources associated with the Facility.
- ◆ Calculate the resultant environmental noise level contribution and impact at the nearest NSRs from the Facility, taking factors such as distance to receptors, acoustic screening, and other environmental features into consideration.
- ◆ Carry out an environmental noise assessment of the Facility in accordance with the assessment methodology that is prescribed in relevant Standards (e.g. British Standard 4142: 2014+A1: 2019) and other acoustic guidance, in order to determine the likely significance of the noise impact generated.
- ◆ Where necessary, provide an acoustic specification along with suggested remedial measures in order to reduce the noise impact generated.

2.4 This acoustic report is structured as follows:

- ◆ Section 3 provides a basic description of the Facility and key surrounding NSRs.
- ◆ Section 4 provides summary details of the benchmark environmental noise survey undertaken in order to determine the pre-existing environmental noise climate at the identified NSRs.
- ◆ Section 5 provides the results of the benchmark environmental noise survey.
- ◆ Section 6 provides a summary of the pertinent acoustic Standards which has been used to assess the magnitude of the noise impact likely to be generated.
- ◆ Section 7 provides a summary of the proprietary 3D acoustic models constructed and acoustic calculations undertaken.
- ◆ Section 8 provides a BS4142: 2014+A1: 2019 acoustic assessment.
- ◆ Section 9 provides a conclusion statement.

- ◆ *Appendix A provides a glossary of acoustic terminology.*
- ◆ *Appendix B provides details of the noise surveys undertaken and a summary of the data obtained from these.*
- ◆ *Appendix C provides a detailed site plan showing the approximate location of significant site plant and environmental noise sources.*
- ◆ *Appendix D provides details of the 3D computer noise model as constructed for this project.*
- ◆ *Appendix E provides the Client advised noise data.*
- ◆ *Appendix F provides an outline description of all key noise sources and provides indicative plant noise levels which must not be exceeded.*
- ◆ *Appendix G gives details and qualifications of contributing Sol Acoustics' staff.*

### 3 Description of Site

#### 3.1 General Overview and Noise Sensitive Receptors (NSRs)

3.1.1 The existing Facility is located at Cleveland House on Yarm Road, Darlington DL1 4DE within an industrial/commercial area, with existing commercial premises located to the north, east and west and of the Facility. The A66 is located to the east and south of the Facility. The nearest noise sensitive premises are as follows:

- A. Three-storey Premier Inn hotel on Morton Park Way, located c.150 metres to the north of the Facility.
- B. Two-storey housing off Richmond Way, located c.770 metres to the west of the Facility.

3.1.2 In addition to the above, there is an existing two-storey house located at Maidendale Farm, located c.90 metres to the south of the Facility. However, a Planning Application has been granted for the demolition of this property (Planning Application reference number: 25-00728-DD, decision dated 14<sup>th</sup> October 2025) on the grounds that the dwelling is uninhabitable and in a state of disrepair. All farm and residential buildings are to be removed, and the ground is to be levelled. Sol is not aware of any Planning Application for a new residential property to be built at this location. On this basis, this receptor has not been considered within the scope of this assessment.

3.1.3 In addition to residential housing, the Maidendale Nature Reserve (i.e. an *ecological* receptor) is located c.620 metres distance to the west of the Facility. It is not known whether these areas are deemed to be noise sensitive. Sol has been informed that there is currently no Ecologist appointed on the project. Sol is not qualified to determine appropriate noise limits to be applied at this ecological receptor (if any) without specific guidance from an Ecologist and therefore the noise impact on the woodland areas is scoped out of this Environmental Noise Impact Assessment report. However, the predicted Specific Sound Levels from the operation of the Facility at the locations of the Nature Reserve are shown in Figure D1 and D2 of Appendix D and could be used to assess the noise impact if subsequently needed by others.

3.1.4 Figure 1 indicates the location of the Facility in relation to the identified NSRs, and also the corresponding location of the noise monitoring position used to inform this acoustic assessment.

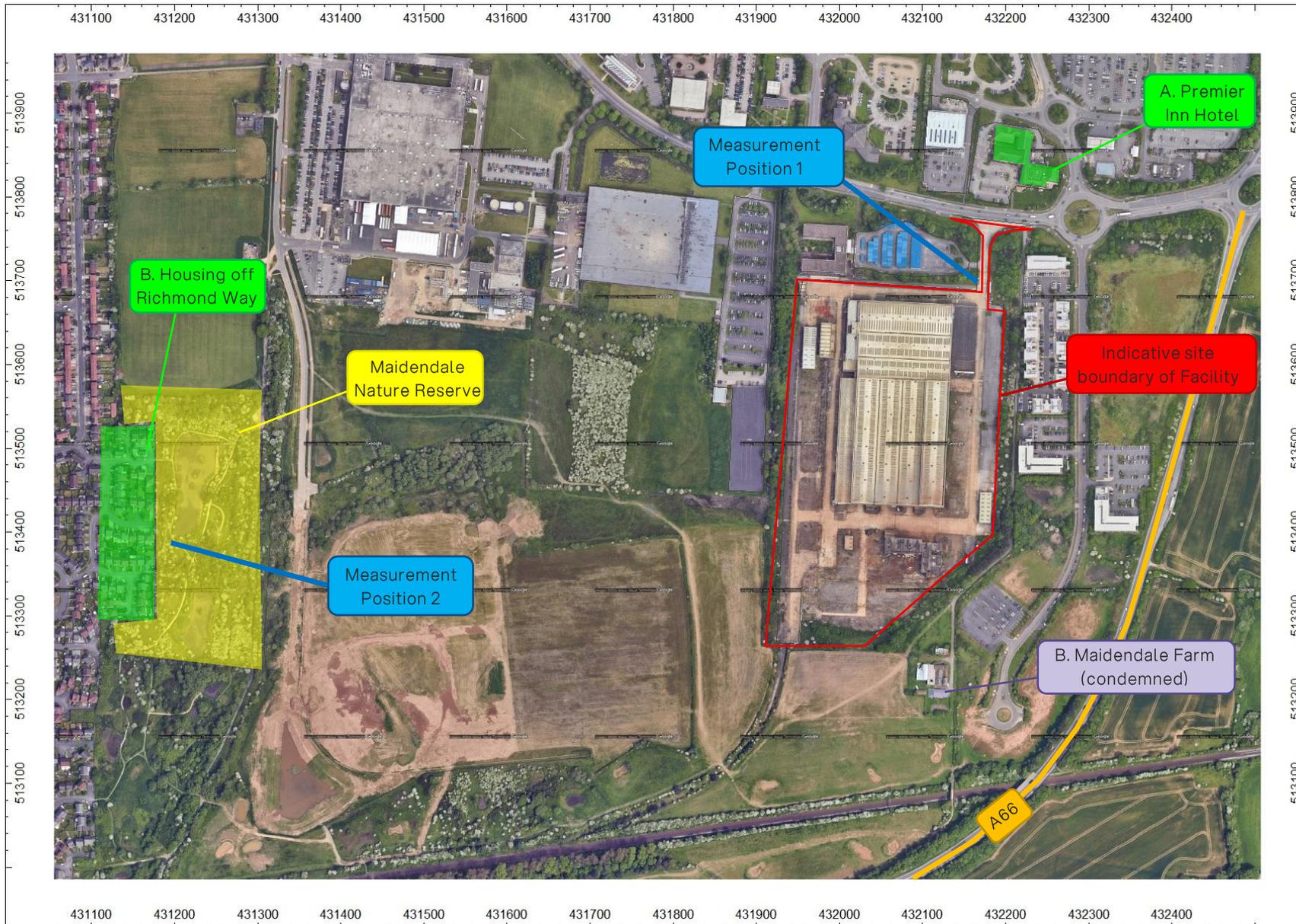


Figure 1: Aerial photo overlaid with noise sensitive receptors and monitoring locations in relation to the Facility (Google 2025)

## 3.2 Characteristics of the Facility

3.2.1 The new pyrolysis plant is proposed to be installed within the confines of the existing site buildings. Figure 2 provides a site plan of the proposed Facility.

### *Facility Operating Times*

3.2.2 The Facility is intended to operate 24 hours a day, seven days a week.

### *Facility Deliveries and Collections*

3.2.3 The Client has informed Sol that the following deliveries are expected:

- ◆ Up to 27 feedstock deliveries per day occur between 07:00 and 17:00 hours Monday to Friday
- ◆ Up to 18 pyrolysis oil collections per day at any time, seven days a week.

### *Mobile Plant*

3.2.4 The following existing mobile plant operates internally within the Facility:

- ◆ Various Fork Lift Trucks

### *Noise Level Emissions*

3.2.5 The Client has provided noise level emission data for the key plant expected to operate at the Facility. Appendix E presents a summary of the noise data as provided by the Client which has been used to inform this assessment.

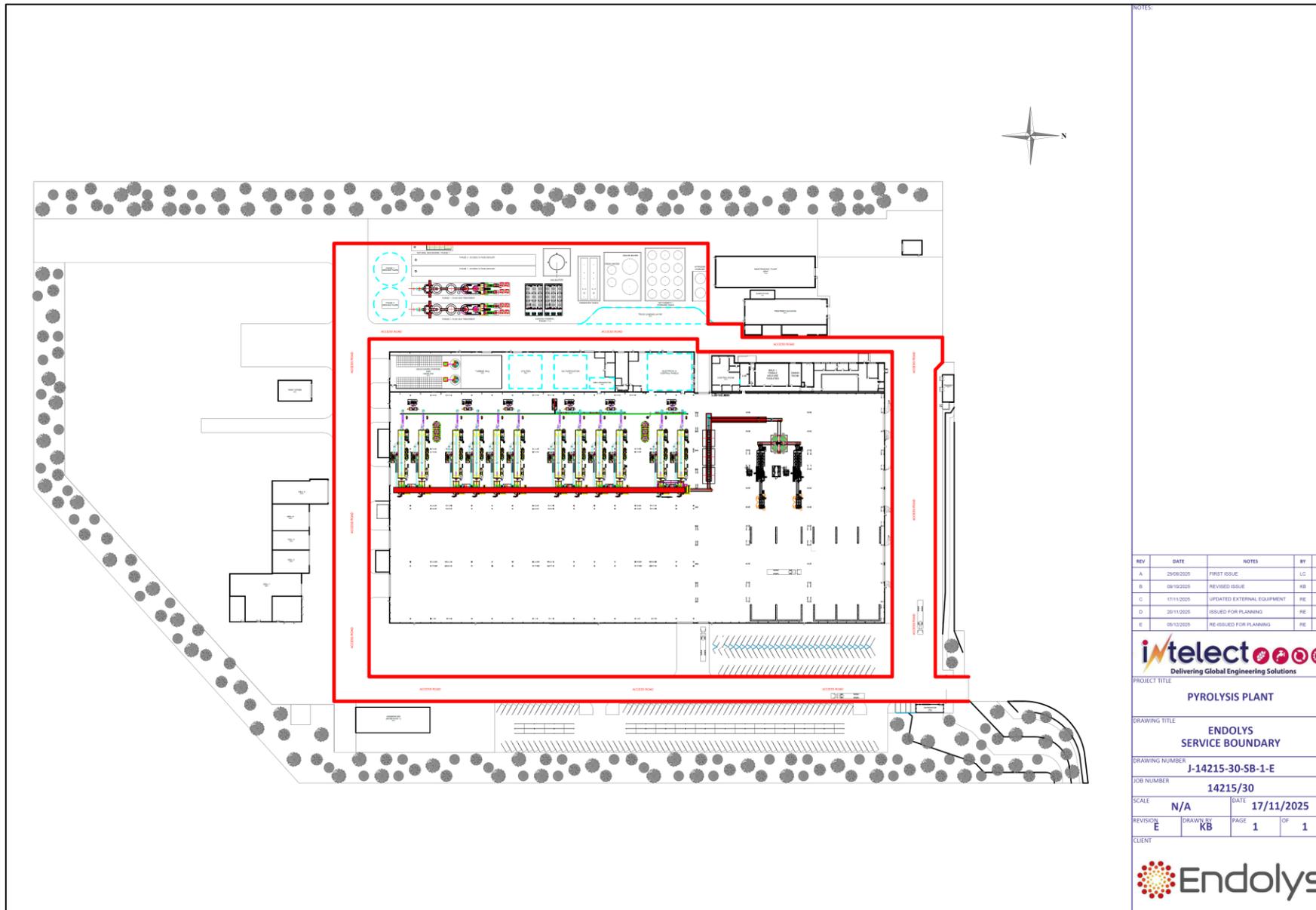


Figure 2: Site plan of the proposed Facility

REV	DATE	NOTES	BY	CHK
A	28/08/2025	FIRST ISSUE	LC	JG
B	09/10/2025	REVISED ISSUE	KB	LC
C	17/11/2025	UPDATED EXTERNAL EQUIPMENT	RE	LC
D	20/11/2025	ISSUED FOR PLANNING	RE	LC
E	05/12/2025	RE-ISSUED FOR PLANNING	RE	LC



PROJECT TITLE  
**PYROLYSIS PLANT**

DRAWING TITLE  
**ENDOLYS SERVICE BOUNDARY**

DRAWING NUMBER  
**J-14215-30-SB-1-E**

JOB NUMBER  
**14215/30**

SCALE **N/A** DATE **17/11/2025**

REVISION **E** DRAWN BY **KB** PAGE **1** OF **1**

CLIENT



## 4 Details of Investigation

### 4.1 Pre-Existing Environmental Noise Climate

4.1.1 In order to inform this environmental noise benchmarking assessment, an environmental noise survey has been conducted by Sol between c.11:00 hours during Friday 17<sup>th</sup> October and c.12:15 hours during Tuesday 21<sup>st</sup> September 2025. The purpose of the survey was to determine the prevailing pre-existing Background Sound Levels at the nearest noise sensitive premises to the Facility, as during typical weekday and weekend, daytime and nighttime periods for environmental noise benchmarking and subsequent acoustic impact assessment purposes.

4.1.2 The environmental noise survey consisted of two environmental noise measurement positions, as follows:

- ◆ **Noise Monitoring Position 1:** Mast-mounted microphone at c.2 metres above local ground level at the northern border of the Facility. The microphone was mounted in "free field" acoustic conditions. Key noise sources included road traffic noise on Yarm Road to the north and the A66 to the east. The Background Sound Levels as recorded at this position are deemed to be representative of those as expected at the Premier Inn hotel.
- ◆ **Noise Monitoring Position 2:** Tripod Mast-mounted microphone at c.1.2 metres above local ground level, c.800 metres to the west of the Facility and c.20 metres to the east of the residential housing on Richmond Way. The microphone was also mounted in "free-field" acoustic conditions. Key noise sources included road traffic on the A66 and residents in the nearby residential housing estates.

4.1.3 The location of the noise monitoring positions in relation to key existing environmental noise sources is shown in Figure 1.

4.1.4 *The full measurement results are as presented in Appendix B.*

4.1.5 The noise survey was conducted using Type 1 Precision Grade noise monitoring equipment. The complete sound measuring systems were field calibrated immediately prior to and following the noise survey period. (Full details of all the instrumentation used are retained on file by Sol, including traceable calibration records; these are available for review if needed).

4.1.6 Meteorological data was recorded at Noise Monitoring Position 1 for the duration of the noise survey, as using a Professional Grade Vaisala "WXT530" weather station. The average wind speed remained favourable (i.e. below 5ms<sup>-1</sup>) for the full survey period. Significant rainfall occurred on the 19<sup>th</sup> and 20<sup>th</sup> October 2025; the affected periods specifically affected have been omitted from the dataset.

4.1.7 Notwithstanding the weather conditions recorded, the microphone system was entirely weatherproofed and fitted with all-weather environmental windshield, with bird spike also.

## 5 Environmental Noise Survey Results

### 5.1 Pre-Existing Environmental Noise Climate

5.1.1 Appendix B provides fully detailed time history information for the environmental noise levels as recorded for the duration of the environmental noise survey.

5.1.2 Table 1 provides a basic summary of the typical overall, A-weighted noise levels measured at the various noise measurement positions, in  $L_{Aeq,T}$  and  $L_{A90,15min}$  terms:

Position	Date	Daytime (07:00 – 23:00 Hours)		Nighttime (23:00 – 07:00 Hours)	
		dB $L_{Aeq,T}$	dB $L_{A90,15min}$ (Typical)	dB $L_{Aeq,T}$	dB $L_{A90,15min}$ (Typical)
1	Friday 17 October 2025	58	48	51	39
	Saturday 18 October 2025	57	49	50	41
	Sunday 19 October 2025	58	50	53	42
	Monday 20 October 2025	59	50	52	40
	Tuesday 21 October 2025	61	55	-	-
2	Friday 17 October 2025	48	35	36	28
	Saturday 18 October 2025	49	40	40	34
	Sunday 19 October 2025	54	40	40	34
	Monday 20 October 2025	49	42	40	32
	Tuesday 21 October 2025	57	46	-	-

**Table 1: Summary of typical, measured broadband environmental noise levels**

## 6 Environmental Noise Performance Specification Requirements

### 6.1 National Planning Policy Framework 2024

6.1.1 The National Planning Policy Framework ("NPPF") sets out the UK Government's requirements for the planning system. Paragraph 187 advises:

*'... 187 Planning policies and decisions should contribute to and enhance the natural and local environment by:*

*... e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans ...'*

6.1.2 With specific regard to noise, paragraph 198 states that:

*'... 198. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts 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 impacts 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 ...'*

## 6.2 Noise Policy Statement for England

6.2.1 The Noise Policy Statement for England ("NPSE") was issued in 2010 and was published by the Department for Environment, Food and Rural Affairs ("DEFRA"). The purpose of the NPSE is to '*... Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development ...*' The aims of the NSPE are as follows:

- ◆ Avoid significant adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise (which includes noise from industrial site) as within the context of Government policy on sustainable development.
- ◆ Mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.
- ◆ Where possible, contribute to the improvement of health and quality of life through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.

6.2.2 The NPSE effect levels that relate to the likelihood of significant adverse effects on health and quality of life are as follows:

- ◆ NOEL – "No Observed Effect Level": The level below which no effect can be detected
- ◆ LOAEL – "Lowest Observed Adverse Effect Level": The level above which adverse effects on health and quality of life can be detected; and
- ◆ SOAEL – "Significant Observed Adverse Effect Level": The level above which significant adverse effects on health and quality of life occur.

6.2.3 The NPSE states that a "single objective" noise (or vibration) based measure applicable to all sources and receptors that defines the onset of LOAEL and SOAEL is not possible. However, the thresholds for the onset of each of the effect levels can be defined based upon relevant policy, available Standards, and technical guidance.

## 6.3 Darlington Borough Council

6.3.1 The Darlington Borough Council ("DBC") Local Plan 2016-2036 was adopted during February 2022. Policies DC3 and DC4 relates to noise and states the following (emphases added in **bold**):

### *Policy DC 3 – Health and Wellbeing*

*'... Development that supports improvements to health and wellbeing in Darlington will be supported. In order to achieve this the council will:*

- a. Work with the NHS to reduce health inequalities in the areas with poorest health;*
- b. Protect existing facilities, where possible, and support the provision of new or improved health facilities in sustainable locations;*
- c. Support the integration of community facilities and services, i.e. health, education, cultural and leisure in multi-purpose buildings;*
- d. Ensuring that new developments:*
  - i. are age friendly, inclusive, safe and attractive, and easily accessible on foot or by bicycle. Where appropriate this should integrate dementia friendly design principles;*
  - ii. have a strong sense of place which encourages social interaction;*
  - iii. are designed to promote active travel and other physical activity through the arrangement of buildings and uses, access to open space and landscaping;*
  - iv. through the arrangement of buildings and uses, promote access to open space and landscaping, and the provision of facilities to support walking.*
- e. Promote improvements and enhance accessibility to the Borough's green spaces and green infrastructure corridors;*
- f. **All new development that may cause** ground water, surface water, air (including odour), **noise** or light pollution, either individually or cumulatively, **will be required to incorporate measures to prevent and reduce their pollution so as not to cause unacceptable impacts on the living conditions of all existing and potential future occupants of land and buildings, the character and appearance of the surrounding area and the landscape;***
- g. Require, in the case of developments of 150 or more homes and other non-residential 'major' developments, a Health Impact Assessment (HIA) will be required. The HIA should explain how health considerations have informed the design of the development and must be proportionate to the scale of the development and in line with current government guidance.*

*Comprehensive planning of land for development at strategic development sites of Skerningham, Greater Faverdale and Coniscliffe Park will be required to include for the possibility of new primary care as appropriate (see Policies H 10 and H 11) ...'*

### *Policy DC 4 – Safeguarding Amenity*

***'... New development should be sited, designed and laid out to protect the amenity of existing users of neighbouring land and buildings and the amenity of the intended users of the new development. New development will be supported where it is suitably located and is acceptable in terms of:***

*Form of built development*

- a. Privacy and overlooking;*
- b. Access to sunlight and daylight*
- c. Visual dominance and overbearing effects of a development;*
- d. The relationship of proposed and existing habitable rooms, windows and outdoor living spaces. Guidance on separation distances between residential developments is provided in the adopted Design of New Development SPD.*

*Use of land and buildings, including traffic movements and hours of operation*

***e. Noise and disturbance:***

- f. Artificial lighting;*
- g. Vibration;*
- h. Emissions from odour, fumes ,smoke, dust, etc; and*
- i. Commercial waste.*
- j. Where an otherwise acceptable development could change its character to a use that would have a greater impact on amenity without needing planning permission, conditions will be applied to control such changes ...'*

6.3.2 The DBC Local Plan does not provide further guidance, nor specify in numerical terms what would be deemed to be unacceptable noise impact. However, the guidance is clear that the development proposals must include measures to prevent or reduce noise pollution so as not to cause unacceptable impacts on the living conditions of all existing and potential future occupants of land and buildings.

## 6.4 Guidance on Noise and Vibration Management: Environmental Permits

6.4.1 Published by the Environment Agency ("EA"), Scottish Environment Protection Agency ("SEPA"), Natural Resources Wales ("NRW") and Northern Ireland Environment Agency (collectively referred to as the "Environment Agencies") during 23<sup>rd</sup> July 2021, and subsequently updated 31<sup>st</sup> January 2022, this guidance sets out the minimum requirements for environmental noise and vibration impact assessments, as required to support a Permit Application. It replaces the Environment Agency's previous Horizontal Guidance for Noise (H3), Parts 1 and 2. The key requirements of the guidance, which are applicable to this assessment, are as presented below:

- ◆ The environmental noise impact assessment must be undertaken in accordance with British Standard BS 4142: 2014+A1: 2019: '*Method for rating and assessing industrial and commercial sound*'. A summary of this Standard is provided in Section 6.5.
- ◆ The acoustic character of the sound generated must be considered. This must consider whether the sound is tonal, impulsive, or intermittent in operation. For industrial noise sources where the sound is neither impulsive nor tonal, but is readily distinguishable against the residual acoustic environment, the Environment Agency will expect a minimum acoustic character correction of +3dB unless otherwise justified.
- ◆ The BS 4142: 2014+A1: 2019 defined Background Sound Levels and Residual Sound Levels as used to inform the assessment must not include noise from the Facility. Where it is pre-existing, the Facility must not be operational during the environmental noise level measurements.
- ◆ Noise arising from the normal operation of the Facility (as during both so-called "NOC" and "OTNOC" conditions) must not result in a BS 4142: 2014+A1: 2019 defined '*significant adverse impact*' (following consideration of the context) at the surrounding NSRs. The "Environment Agencies" will not issue a Permit where the site is, or predicted to be, operating at (or above) this level.
- ◆ As stated above, the guidance recognises that the context of the situation can affect the outcome of the BS 4142: 2014+A1: 2019 assessment but states that there are practical limits. The guidance stipulates that it is unlikely to be acceptable to adjust the magnitude of the impact beyond the next BS4142 assessment magnitude band (e.g., suggesting that a Rating Level of around 10dB above the Background Sound level – defined by the Standard as a "significantly adverse" impact, depending on the context – is actually a "low impact" purely on the grounds of context etc.).

6.4.2 Notwithstanding the above, the assessment must demonstrate that Best Available Techniques (BAT) has been applied to prevent or minimise noise emissions.

## 6.5 BS4142: 2014+A1: 2019 *'Method for rating and assessing industrial and commercial sound'*

6.5.1 BS 4142:2014+A1:2019: *'Method for rating and assessing industrial and commercial sound'* is intended to be used to assess noise of an industrial nature, which includes sound from fixed installations comprising of mechanical and/or electrical plant and equipment. The methods prescribed in this British Standard use outdoor sound levels in order to assess the likely effects of sound on people who might be inside or outside a dwelling or premises that is used for residential purposes upon which sound is incident.

6.5.2 The procedure contained in BS 4142: 2014+A1: 2019 for assessing environmental noise impact is to compare the measured or predicted noise level from the source in question - the "Specific Sound Level" immediately outside the noise sensitive premises - with the corresponding "Background Sound Level". Where the noise contains attention attracting characteristics such as tonal, impulsive, and/or intermittent elements, it may be appropriate to apply a correction to the Specific Sound Level in order to obtain the "Rating Level."

6.5.3 BS 4142:2014+A1:2019 states that the significance of sound arising from an industrial and/or commercial nature depends upon both the margin by which the Rating Level of the specific sound source exceeds the Background Sound Level, and also the context in which the sound occurs:

- a) Typically, the greater this difference, the greater the magnitude of the impact;
- b) A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context;
- c) A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context;
- d) 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.

6.5.4 For the daytime, the assessment is conducted over a one-hour period, and over a 15-minute period at night. The daytime and nighttime periods are defined as occurring between 07:00 hours to 23:00 hours, and 23:00 hours to 07:00 hours, respectively.

6.5.5 For BS 4142:2014+A1:2019 assessment purposes, it is necessary to determine the typical Background Sound Level as occurring during each assessment period. Section 8.1 of BS 4142:2014+A1:2019 states the following:

*'... In using the background sound level in the method for rating and assessing industrial and commercial sound it is important to ensure that values are reliable and suitably represent both the particular circumstances and periods of interest. For this purpose, the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods ...'*

6.5.6 The typical Background Sound Level has been determined based upon statistical analysis of the full, measured dataset (in histogram form, and considering the modes and median of the data sets).

6.5.7 Table 2 specifies the *typical* Background Sound Levels at each of the identified NSR:

Noise Sensitive Receptors	Representative Noise Measurement Position	Typical Background Sound Level at Each Assessed NSR, dB $L_{A90,15min}$	
		Daytime (07:00 – 23:00 hours)	Nighttime (23:00 – 07:00 hours)
A. Premier Inn hotel (c.150 metres to the north)	1	52	40
B. Richmond Way (c.800 metres to the west)	2	41	32

**Table 2:** *Typical Background Sound Level at each assessed NSR*

## 7 Environmental Noise Model

### 7.1 Methodology and Basis of 3D Environmental Noise Models

7.1.1 In order to predict the likely noise levels impinging on the surrounding noise sensitive receptors, proprietary 3D computer noise models were created using the DataKustik "CadnaA" noise mapping software. The following assumptions have been made when generating the noise model:

- ◆ The noise model was set up to apply the noise prediction methodology set out in BS ISO 9613-2:2024: '*Acoustics — Attenuation of sound during propagation outdoors, Part 2: Engineering method for the prediction of sound pressure levels outdoors*'.
- ◆ The model was set to include third order reflected noise from solid structures.
- ◆ Ground absorption, as defined in ISO 9613-2:2024, has been taken into consideration. The base ground absorption for the model has been set to G=1.0 (soft ground). The ground absorption for large areas of hard ground has been set to G=0.0.
- ◆ The existing land topography of the site and surrounding area up to and including the nearest NSR has been taken into consideration in the assessment. Third party topographical information has been obtained from open source data as available from DEFRA.
- ◆ The predicted Specific Sound Level at the surrounding residential receptors has been modelled at the following heights above local ground level:
  - ◇ A. Premier Inn hotel: 4 metres (first floor) and 6.5 metres (second floor)
  - ◇ B. Richmond Way: 4 metres (first floor)
- ◆ The noise model assumes that on average up to five HGVs could arrive at and depart from the Facility as during a typical 1-hour daytime assessment period and up to one HGV could arrive as during a typical worst-case 15-minute nighttime period.
- ◆ All externally sited plant noise sources have been modelled as point, line, or area sources, as appropriate, as based on physical size of the plant.
- ◆ Noise breakout from internal plant has been modelled by determining the level of noise radiated from the external building fabric of the building, all as based upon the assessment methodology provided within British Standard BS 12354-4:2017 '*Building acoustics Estimation of acoustic performance of buildings from the performance of elements Part 4: Transmission of indoor sound to the outside*'. The sound power level per unit area for each external building element has been determined based on the predicted reverberant sound pressure level within each building. The sound power level per unit area for each external building element has then been determined by applying a "diffusivity term," as defined in BS 12354-4:2017 and subtracting the sound insulation performance of each building face. Specifically, a reverberation time of 2.0 seconds has been assumed and a diffusivity term of -6dB has been applied.
- ◆ The external walls of the existing building comprise cladding panels and masonry. The roof comprises of an insulated cladding panel. Table 3 overleaf provides the modelled sound insulation performance for the external building fabric which have been used to inform this assessment.

Building Element	Construction	Sound Reduction Index (SRI, dB) @ Octave Band Centre Frequency (Hz)							dB $R_w$
		63	125	250	500	1k	2k	4k	
Roof and cladding	External lightweight cladding	15	21	24	20	29	40	54	28
Roller shutter	Ascot Doors Roller Shutter	14	14	17	18	15	19	19	18

**Table 3: Modelled acoustic performance of external building fabric**

- ◆ Octave frequency band noise level data for the proposed plant is not available at this stage. In the absence of full octave band plant noise data, the noise impact from these noise sources has been modelled a single A-weighted sound power level, with all acoustic energy attributed to the 250Hz octave frequency band only. This approach is conservative, since it assumes that all of the sound energy generated by the various plant noise sources is created at relatively low frequencies only. This assumption has been adopted for the following reasons:
  - ◇ Noise emitted from mechanical plant, such as from acoustically enclosed and packaged equipment, is typically higher at such frequencies (in A-weighted terms), most especially the 250Hz octave band.
  - ◇ Low frequency noise is more difficult to attenuate when compared to the mid and high frequencies.
  - ◇ Any acoustic screening afforded by any intervening buildings and barriers is reduced at low frequency.
  - ◇ Attenuation due to atmospheric/environmental factors (such as air and ground absorption), is reduced at low frequency.

- 7.1.2 Figure 3 provides a three-dimensional visualisation of the noise model used to inform the noise impact assessment.
- 7.1.3 Appendix D provides further information in respect of the 3D computer environmental noise model.
- 7.1.4 Appendix F provides an inventory of plant and process source noise level data; these form the basis of the 3D noise model underpinning the report. These should not be exceeded.

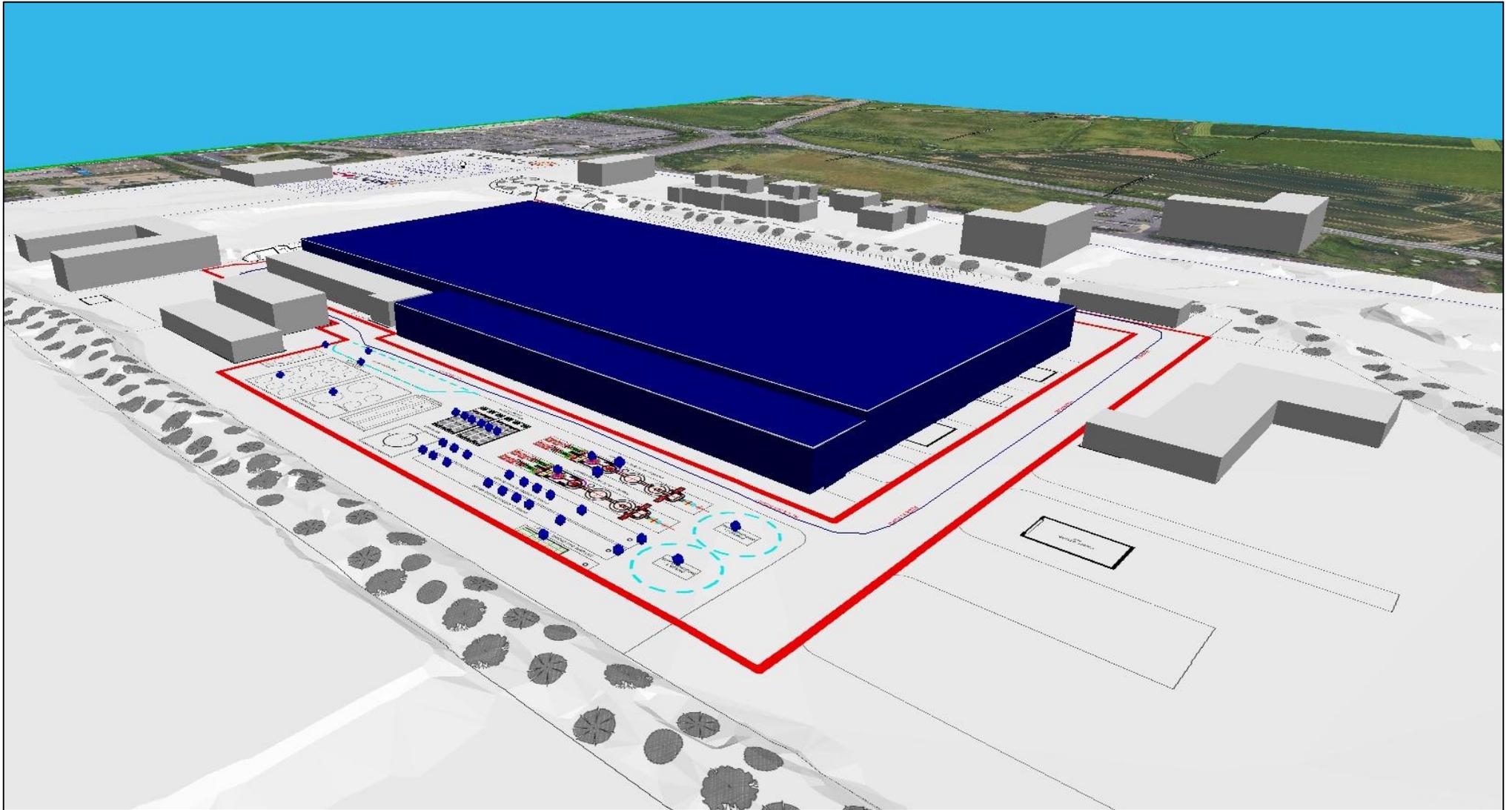


Figure 3: 3D view of the noise model of the Facility (Google 2025)

## 8 Environmental Noise Impact Assessment

### 8.1 Predicted Noise Impact (All Site Plant)

- 8.1.1 Appendix D provides full details of CadnaA noise maps which present the daytime Specific Sound Levels expected.
- 8.1.2 The BS 4142:2014+A1:2019 defined Rating Level has been determined from the predicted Specific Sound Level, as determined from the 3D noise model of the Facility, and by applying a correction for the acoustic character of the sound.
- 8.1.3 Tables D1 to D4 in Appendix D provide a breakdown of the Specific Sound Levels predicted from all individual noise sources operating on the Facility. The majority of the plant is fixed plant which is designed to operate continuously. Whilst some noise sources, such as fans could be expected to generate noise with a tonal component, the individual noise level contribution from these sources are predicted to be below the typical Background Sound Level and therefore the acoustic character is not expected to be discernible at the worst affected NSRs. HGVs traversing the site are expected to generate the highest levels of noise at the Facility. However, given that the pre-existing Ambient Sound Levels at the NSRs are dominated by noise from road traffic on both the A66 and Yarm Road (B6280), the acoustic character as generated by slow moving and distant HGVs operating on the site is not expected to be discernible above other road traffic noise sources.
- 8.1.4 Notwithstanding, and in accordance with BS 4142:2014+A1:2019, a conservative correction of +3dB has been applied to the calculated Specific Sound Level, as arising at the noise sensitive receptors from the Facility, in order to allow for any residual "readily distinctive" acoustic features, in order to determine the BS 4142:2014+A1:2019 defined Rating Level for acoustic assessment purposes.
- 8.1.5 Table 3 provides a preliminary BS 4142:2014+A1:2019 assessment of each of the identified NSRs:

Noise Sensitive Receptor (NSR)	Assessment Period	Predicted Specific Level, dB $L_{Aeq,T}$	Acoustic Character Correction, dB	Predicted Rating Level, dB $L_{Ar,T}$	Typical Background Sound Level, dB $L_{A90}$	Rating Level sub. Background $\pm$ dB
A. Premier Inn hotel (c. 150 metres to the north)	Daytime 07:00 – 23:00hrs T = 1 hour	44	+3	47	52	-5
	Nighttime 23:00 – 07:00 T = 15 mins	43	+3	46	40	+6
B. Richmond Way (c.770 metres to the west)	Daytime 07:00 – 23:00hrs T = 1 hour	33	+3	36	41	-5
	Nighttime 23:00 – 07:00 T = 15 mins	32	+3	35	32	+3
<b>Key</b> Green: low impact (less than or equal to 0dB) Amber: sub-adverse impact to adverse impact (i.e. +1dB to +4dB) Red: adverse to significant adverse impact (+5dB or higher)						

**Table 4: BS4142 summary assessment**

-  8.1.6 The predicted total, aggregate environmental noise Rating Level as arising from the operation of the complete Facility does not exceed the typical Background Sound Level during the daytime period and at any NSR. This is an indication of a '*... low impact, depending on the context ...*' in BS4142:2014+A1:2019 terms.
- 8.1.7 During the nighttime period, the predicted total, aggregate environmental noise Rating Level as arising from the operation of the complete Facility exceeds the typical Background Sound Level by +6dB at the Premier Inn Hotel and by +3dB at the housing of Richmond Way. This is an indication of an '*... adverse impact, depending on the context ...*' in BS4142:2014+A1:2019 terms.
- 8.1.8 Tables D1 to D4 in Appendix D provide a breakdown of the Specific Sound Levels predicted from all individual noise sources operating on the Facility. These tables show that the predicted noise impact at both of the assessed NSRs is dominated by noise from the HGVs traversing the Facility. In the absence of noise from HGVs on site, the predicted Rating Level from the Facility would not be expected to exceed the typical Background Sound Level at the Premier Inn Hotel and by just 1dB at the housing of Richmond Way. Noise from HGVs operating on the site are not expected to be readily distinguishable from other road traffic on both the A66 and Yarm Road (B6280) and therefore unlikely to result in adverse comment from residents.
-  8.1.9 Therefore, taking the context in which the sound occurs into consideration, ***the predicted total, aggregate environmental noise impact as arising from the operation of the Facility is expected to result in low/"sub-adverse" at the worst affected NSRs.***

## 8.2 Preliminary Noise Management Plan (NMP)

- 8.2.1 Appendix F provides a preliminary Noise Management Plan; an itemised list of noise source mitigation measures which form the basis of the calculations and acoustic modelling. The finalised, actual noise mitigation strategy to be implemented must be reviewed, further developed, refined, and approved by Sol. The provisional, outline noise mitigation measures that are assumed to be in place (and are specifically required by this acoustic assessment report) are as summarised below.
-  8.2.2 This assessment is necessarily based upon preliminary noise level data as provided by the Client. It will be necessary to seek further assurances regarding the actual anticipated noise level emissions from the plant as details develop. This will involve obtaining accurate noise level data from the various suppliers/manufacturers where appropriate or obtaining representative noise data from a similar operational Facility. It may also be necessary to undertake further noise level measurements of the as installed plant once constructed to ensure that the predicted noise level emissions do not exceed those as presented within this report.
-  8.2.3 Please note that the noise impact from any plant which is not specifically included and listed within Appendix F of this report must be duly assessed. (Sol is to be advised by the Client if this list is not fully exhaustive and inclusive please). The actual/anticipated noise level emissions as expected from the plant must be confirmed and reviewed once available. This assessment must be reviewed and updated by Sol once this information becomes available:

- (a) **External Building Fabric:** The actual acoustic performance provided by the existing building fabric is unknown to Sol and cannot readily be calculated or measured. The construction of the external building fabric to the existing building (including the main hall and the annex) must achieve the minimum sound insulation performance as set out in Table 5 (NB: there are currently no ventilation louvres located within the existing building. Please advise Sol if ventilation louvres are needed). Any rooftop vents must be appropriately designed and acoustically attenuated. The Operator shall make good any holes or defects within the existing building fabric which may affect the performance provided to ensure that the required performance can be achieved:

Building Element	Construction	Sound Reduction Index (SRI, dB) @ Octave Band Centre Frequency (Hz)							dB $R_w$
		63	125	250	500	1k	2k	4k	
Roof and cladding	External lightweight cladding	15	21	24	20	29	40	54	28
Roller shutter	Ascot doors - roller shutter	14	14	17	18	15	19	19	18

**Table 5: Minimum required sound insulation performance to be achieved by external building fabric**

- (b) **Internal reverberant sound pressure levels:** Table 6 sets out the predicted maximum permissible reverberant sound pressure levels to be achieved within the Facility. It must be noted, however, that based upon the initial information as presented by the Client, calculations indicate that these maximum permissible reverberant sound pressure levels may be exceeded and therefore further noise mitigation is likely to be required to noisy plant. For example, further attenuation may be required to the "combustion system and heat recovery" units, "char handling" and "agglomeration" etc. This could be in the form of noise mitigation applied directly at source or with the construction of localised enclosures/plant rooms. Further analysis shall be needed once further details of the actual plant noise level emissions are known. If it is not anticipated to be practicable to achieve the specified maximum reverberant sound pressure levels as presented in Table 6, then it will be necessary to further enhance the sound insulation performance of the external building fabric to exceed the acoustic specification provided previously in Table 5:

Location	Period	Maximum Permissible Reverberant Sound Pressure Level (dB $L_{eq,T}$ ) @ Octave Band Centre Frequency (Hz)								dB $L_{Aeq,T}$
		63	125	250	500	1k	2k	4k	8k	
Main Hall and annex	Anytime	87	84	76	74	74	73	70	66	80

**Table 6: Maximum permissible reverberant sound pressure levels within building**

- (c) **Oil setting tanks (1 no.):** Noise from the oil setting tanks shall not exceed a sound pressure level of 70dB  $L_{Aeq,T}$ , when measured at a distance of one metre from any surface (note: a further 10dB reduction required based upon Client advised noise level).
- (d) **Oil transfer pumps (1 no.):** Noise from the oil transfer pumps shall not exceed a sound pressure level of 70dB  $L_{Aeq,T}$ , when measured at a distance of one metre from any surface (note: a further 15dB reduction required based upon Client advised noise level).
- (e) **Oil loading bay (1 no.):** Noise from the oil loading bay shall not exceed a sound pressure level of 75dB  $L_{Aeq,T}$ , when measured at a distance of one metre from any surface (note: a further 10dB reduction required based upon Client advised noise level).
- (f) **Flue gas treatment (2 no.):** Noise from the flue gas treatment shall not exceed a sound pressure level of 70dB  $L_{Aeq,T}$ , when measured at a distance of one metre from any surface (note: a further 10dB reduction required based upon Client advised noise level).
- (g) **Syngas combustion system (2 no.):** Noise from the syngas combustion system shall not exceed a sound pressure level of 70dB  $L_{Aeq,T}$ , when measured at a distance of one metre from any surface (note: a further 15dB reduction required based upon Client advised noise level).
- (h) **Flue gas recirculation fan (2 no.):** Noise from the flue gas recirculation fans shall not exceed a sound pressure level of 70dB  $L_{Aeq,T}$  when measured at a distance of one metre from any surface (note: a further 15dB reduction required based upon Client advised noise level). Make provisions for an acoustic enclosure to be fitted to the fan. Attenuated forced draught ventilation to the enclosure will be needed for heat dissipation, complete with run and standby fans (resilience).
- (i) **Combustion air fan (2 no.):** Noise from each combustion air fan shall not exceed a sound pressure level of 70dB  $L_{Aeq,T}$  when measured at a distance of one metre from any surface (note: a further 15dB reduction required based upon Client advised noise level). Make provisions for an acoustic enclosure to be fitted to the fan. Attenuated forced draught ventilation to the enclosure will be needed for heat dissipation, complete with run and standby fans (resilience).
- (j) **Boiler feedwater pumps (2 no.):** Noise from the boiler feedwater pumps shall not exceed a sound pressure level of 70dB  $L_{Aeq,T}$  when measured at a distance of one metre from any surface (note: a further 15dB reduction required based upon Client advised noise level). Make provisions for an acoustic enclosure to be fitted to the fan. Attenuated forced draught ventilation to the enclosure will be needed for heat dissipation, complete with run and standby fans (resilience).
- (k) **Steam dump condenser system (2 no.):** Noise from the steam dump condenser system shall not exceed a sound pressure level of 70dB  $L_{Aeq,T}$  when measured at a distance of one metre from any surface (note: a further 15dB reduction required based upon Client advised noise level). Make provisions for an acoustic enclosure to be fitted.
- (l) **Sodium bicarbonate dosing silo (2 no.):** Noise from the Sodium bicarbonate dosing silo shall not exceed a sound pressure level of 70dB  $L_{Aeq,T}$  when measured at a distance of one metre from any surface (note: a further 15dB reduction required based upon Client advised noise level). Make provisions for an acoustic enclosure to be fitted.

- (m) **Activated carbon dosing system (2 no.):** Noise from the Activated carbon dosing System shall not exceed a sound pressure level of 70dB  $L_{Aeq,T}$  when measured at a distance of one metre from any surface (note: a further 15dB reduction required based upon Client advised noise level). Make provisions for an acoustic enclosure to be fitted.
- (n) **ID fan (2 no.):** Noise from the ID fans shall individually not exceed a sound pressure level of 70dB  $L_{Aeq,T}$  when measured at a distance of one metre from any surface (note: a further 15dB reduction required based upon Client advised noise level). Make provisions for an acoustic enclosure to be fitted to the fan. Attenuated forced draught ventilation to the enclosure will be needed for heat dissipation, complete with run and standby fans (resilience).
- (o) **Stack outlet (2 no.):** Noise from each ID fan stack outlet must not exceed a sound pressure level of 75dB  $L_{Aeq,T}$  at one metre from stack outlet edge (and 90° off longitudinal axis of the stack) at any design speed/mode. Make provisions for duct attenuator(s) to be fitted to the discharge side of the ID fan (including an allowance for the ensuing attenuator static pressure loss can be accommodated at maximum required gas flowrates).
- (p) **APC residue collection system (1 no.):** Noise from the APC residue collection system shall not exceed a sound pressure level of 70dB  $L_{Aeq,T}$  when measured at a distance of one metre from any surface (note: a further 5dB reduction required based upon Client advised noise level).
- (q) **Nitrogen PSA Package (1 no.):** Noise from the nitrogen PSA package shall not exceed a sound pressure level of 70dB  $L_{Aeq,T}$  when measured at a distance of one metre from any surface (note: a further 5dB reduction required based upon Client advised noise level).
- (r) **Plant Water Package (1 no.):** Noise from the plant water package shall not exceed a sound pressure level of 75dB  $L_{Aeq,T}$  when measured at a distance of one metre from any surface (note: a further 10dB reduction required based upon Client advised noise level).
- (s) **Cooling system (6 no.):** Noise from each cooling system shall not exceed a sound pressure level of 65dB  $L_{Aeq,T}$  as during the nighttime when measured at a distance of one metre from any surface (note: a further 15dB reduction required based upon Client advised noise level. No reduction from the Client advised noise level is needed during the daytime). Whilst restricting the fan speed during nighttime periods will help to limit noise emissions it is likely that a bespoke acoustic package shall be required to be fitted to the coolers.
- (t) **Natural gas engine (1 no.):** Noise from the gas engine shall not exceed a sound pressure level of 55dB  $L_{Aeq,T}$  when measured at a distance of ten metres from any surface (note: a further 10dB reduction required based upon Client advised noise level. Make provisions for an acoustic enclosure to be fitted to the fan. Attenuated forced draught ventilation to the enclosure will be needed for heat dissipation, complete with run and standby fans (resilience).
- (u) **Flare (2 no.):** Noise from each flare shall not exceed a sound pressure level of 75dB  $L_{Aeq,T}$  when measured at a distance of one metre.

## 8.3 Uncertainty

8.3.1 Section 10 of BS4142:2014+A1:2019 states the following with regards to uncertainty:

*'... Consider the level of uncertainty in the data and associated calculations. Where the level of uncertainty could affect the conclusion, take reasonably practicable steps to reduce the level of uncertainty. Report the level and potential effects of uncertainty...'*

8.3.2 In accordance with the requirements of BS 4142:2014+A1:2019, Sol has undertaken the following steps to limit the level of uncertainty in the acoustic assessment:

1. All noise measurements have been carried out using Type 1 Precision Grade noise mounting equipment. All noise measuring instruments have traceable laboratory calibration certification.
2. All noise measurements were accompanied by continuous meteorological measurements as conducted at, or close to, the measurement position in order to ensure that the measurement data was not adversely affected by unfavourable weather conditions.
3. Calculations have been conducted in line with appropriate and nationally recognised acoustic standards (ISO 9613-2, BS12354: 2000), and using proprietary 3D noise modelling software, CadnaA.
4. The assessment assumes downwind propagation in all cases as this represents the worst case.

## 9 Conclusion

9.1 Sol has been appointed to provide an environmental noise impact assessment to support a Permit Application and Planning Application for the proposed new pyrolysis plant that is to be located at Cleveland House on Yarm Road, Darlington DL1 4DE.

9.2 This acoustic assessment report considers the environmental noise impact as arising from the operation of all plant and processes that are associated with the Facility, at the nearest NSRs.

9.3 The environmental noise climate at the identified NSRs has been measured by Sol between Friday 17<sup>th</sup> October and Tuesday 21<sup>st</sup> October 2025 (inclusive). Using this benchmark environmental noise measurement data, it has been possible to assess the magnitude of the noise impact from the Facility.

9.4 The environmental noise emissions that shall be arising from the operation of the Facility has been quantified, modelled, and assessed using proprietary "CadnaA" 3D noise modelling software.



9.5 ***It is the conclusion of this assessment that the predicted total, aggregate environmental noise impact as arising from the operation of the Facility results in a low/"sub-adverse" noise impact at the worst affected noise sensitive receptors when assessed in accordance with British Standard BS4142: 2014+A1: 2019, following the consideration of the context in which the sound occurs, provided that the maximum permitted individual plant noise limits as specified herein are not exceeded in any instance, in practice.***



9.6 ***This assessment is necessarily based upon preliminary noise level data as provided by the Client. It will be necessary to seek further assurances regarding the actual anticipated noise level emissions from the plant as details develop. This will involve obtaining accurate noise level data from the various suppliers/manufacturers where appropriate or obtaining representative noise level data from a similar operational Facility. It may also be necessary to undertake further noise level measurements of the as installed plant once constructed to ensure that the predicted noise level emissions do not exceed those as presented within this report.***

## APPENDIX A

### Glossary of Acoustic Terms

Term	Abbreviation	Description
Decibel	dB	A scale for comparing the ratios of two quantities, including sound pressure and sound power.
A-weighting	dB(A)	The unit of sound level, weighted according to the A-scale, which takes into account the change in sensitivity of the human ear at varying frequencies.
Sound Pressure Level	$L_{pA}$	A measure of the sound pressure at a particular location. Typically expressed in dB(A) referenced to $2 \times 10^{-5}$ Pascals.
Equivalent Continuous Sound Level	$L_{Aeq,T}$	The steady level of sound over a prescribed period of time which would contain the same total sound energy as the actual fluctuating noise under consideration in the same period of time.
Statistical Sound Levels	$L_{A10}$ and $L_{A90}$	The level of noise exceeded for a percentage of the time period being sampled, namely 10% or 90%, respectively.
Background Sound Level	$L_{A90,T}$	The A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90% of the time period being sampled.
Maximum Sound Level	$L_{Amax}$	The maximum sound or noise level determined with instrumentation set to either a fast time weighting, $L_{AFmax}$ , or a slow time weighting, $L_{Asmax}$ , as occurring during the time period being sampled.
Sound Power Level	$L_{WA}$	A measure of the total sound energy radiated from a source. Like sound pressure levels, this is also expressed in dB(A) terms, but it is referenced to $1 \times 10^{-12}$ W.
Broadband		Sound sampled over a wide range of frequencies.
Narrow band		Sound sampled over a specific, restricted frequency range. Used to ascertain the amplitude and significant of individual, audible tones, and to assist in identifying particular sources of noise within a complex, multi-source soundscape environment.
Ambient Sound	$L_{eq,T}$	Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources, both near and far.
Specific Sound Level	$L_{eq,T}$	The Equivalent Continuous A-Weighted Sound Level at an assessment position produced by a specific sound over a given reference time interval, $T_r$
Rating Level	$L_{Ar,Tr}$	The Specific Sound Level plus any adjustment for the acoustic characteristic features of the noise (e.g. intermittency, tones etc.).
Residual Noise	$L_{Aeq,T}$	The ambient sound remaining at given position in a given situation, when the specific sound source is suppressed to such an extent that it no longer contributes to the ambient sound.
Sound Reduction Index	<i>SRI</i>	The reduction in sound energy when transmitted through a panel or similar planar element, typically used in relation to single octave or one-third octave frequency band values.
Weighted Sound Reduction Index	$R_w$	The Sound Reduction Index expressed as a single figure, as expressed against a reference curve.
Dynamic Insertion Loss	<i>DIL</i>	Reduction in acoustic energy resulting from the insertion of a noise control element (e.g. an attenuator, acoustic enclosure etc.).
Free Field		Noise measuring location that is free from the presence of sound reflecting objects (except the ground), usually taken to mean being at least 3.5 metres distance from reflective surface(s) or greater.

## APPENDIX B

### Noise Survey Details and Summary Results

#### Location

Darlington DL1 4WD.

#### Dates, Times, and Weather Conditions

Date	Daytime (07:00 hours – 23:00 Hours)				Nighttime (23:00 hours – 07:00 hours)			
	Temp, °C	Rain, mm/h	Wind Direction	Mean Wind Speed, ms <sup>-1</sup>	Temp, °C	Rain, mm/h	Wind Direction	Mean Wind Speed, ms <sup>-1</sup>
17/10/25	10	0.0	E	0.3	9	0.0	S	0.4
18/10/25	10	0.0	SE	0.6	11	0.0	SE	0.9
19/10/25	13	0.2	SE	0.9	12	1.0	SE	1.1
20/10/25	11	0.0	N	0.6	10	0.0	SE	0.3
21/10/25	10	0.0	SE	0.8	-	-	-	-

#### Personnel

Michael Hartley – Sol

Max Davison BSc Hons – Sol

#### Instrumentation

##### *Measurement Position 1*

01dB Cube Sound level meter (serial no. 12070)

01dB Pre22 Microphone preamplifier (serial no. 1915040)

GRAS 40CD Microphone capsule (serial no. 288057)

01dB Cal21 acoustic calibrator (serial no. 34675320)

Vaisala WXT520 Weather Station

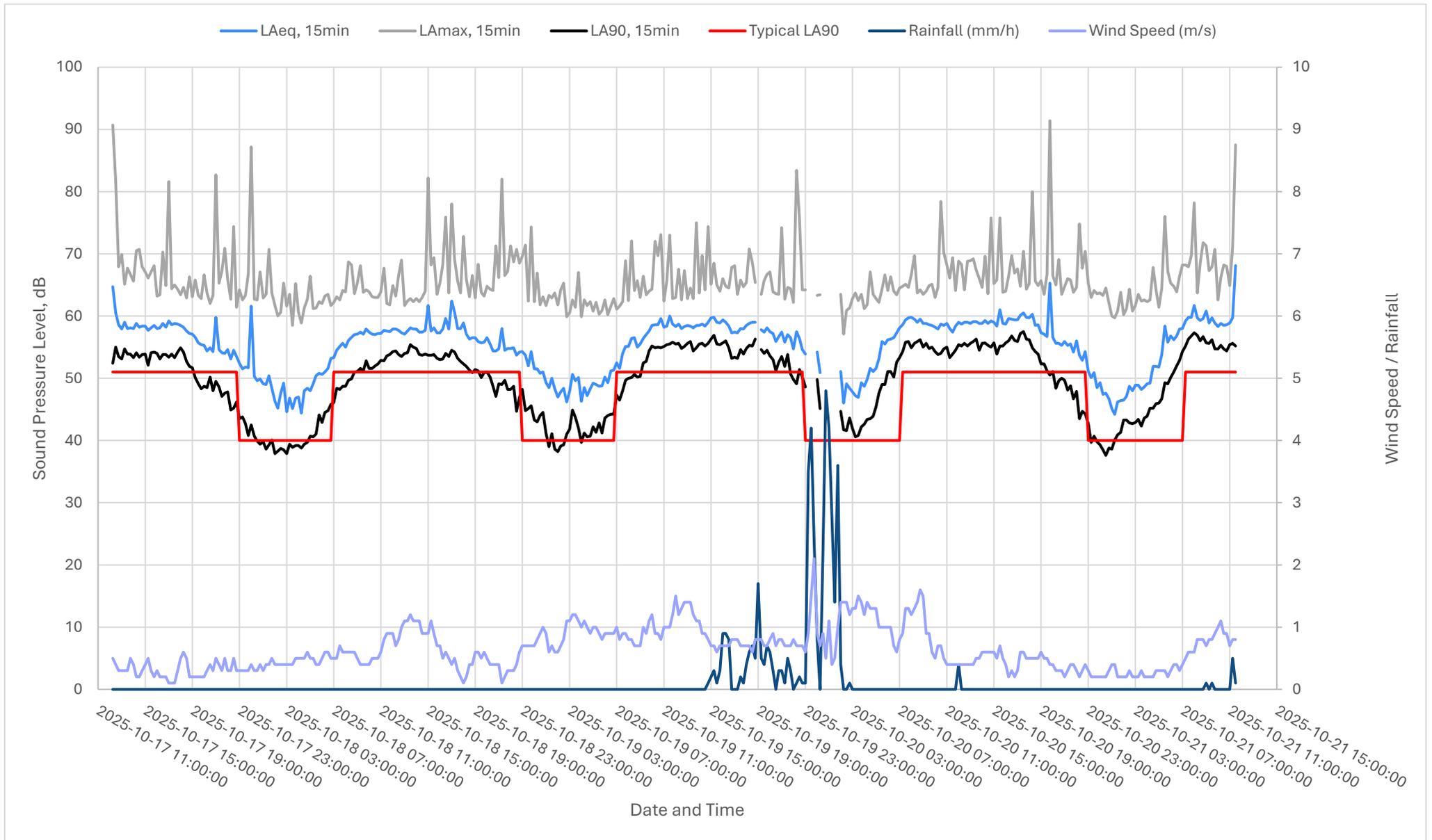
##### *Measurement Position 2*

01dB Cube Sound level meter (serial no. 11348)

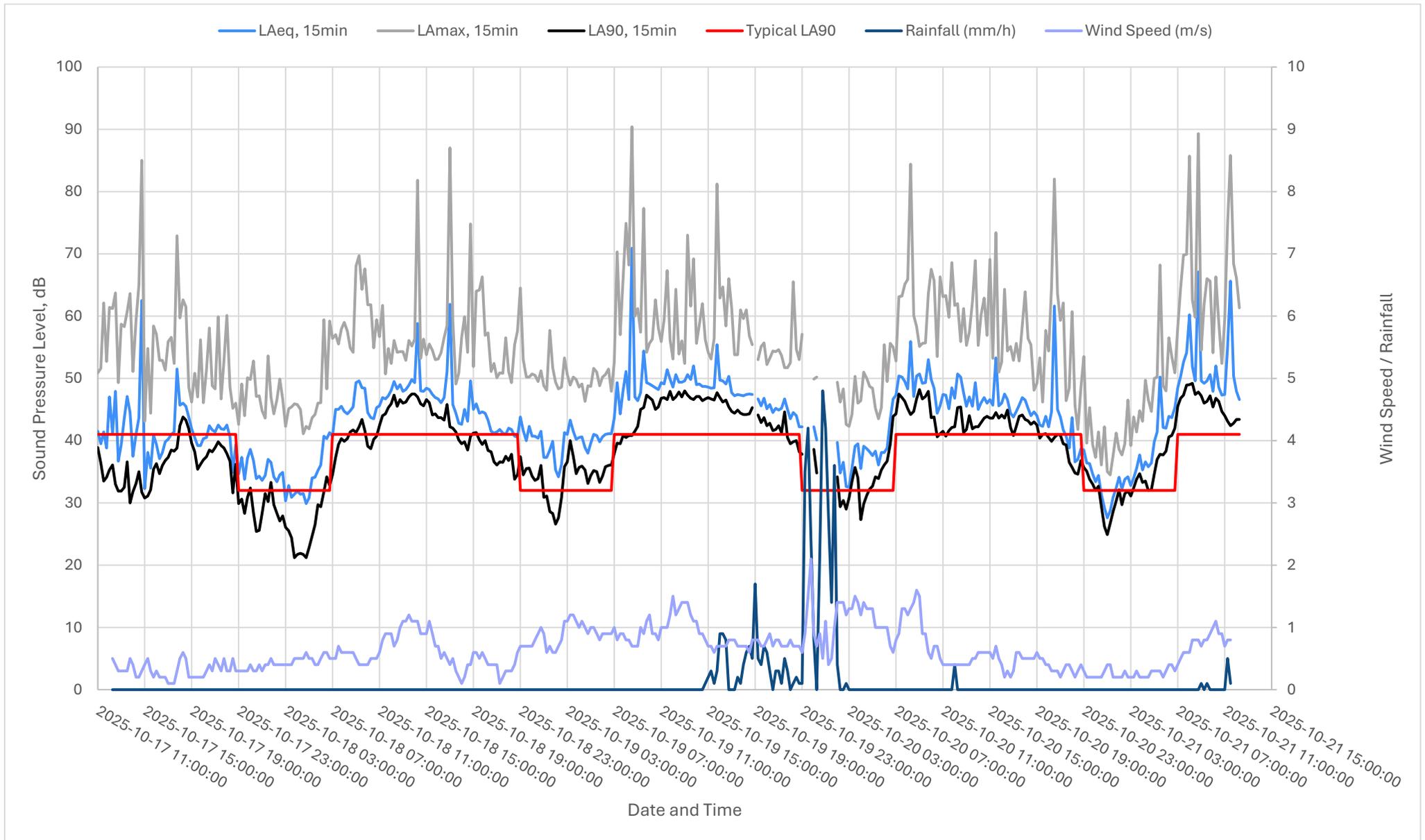
01dB Pre22 Microphone preamplifier (serial no. 1805362)

GRAS 40CD Microphone capsule (serial no. 260642)

01dB Cal21 acoustic calibrator (serial no. 34675320)



**Graph B1:** A-weighted environmental noise levels at Noise Monitoring Position 1, 17 to 21 October 2025



**Graph B1:** A-weighted environmental noise levels at Noise Monitoring Position 2, 17 to 21 October 2025

**APPENDIX C**  
**Site Plan Indicating the Location of the Noise Sources**

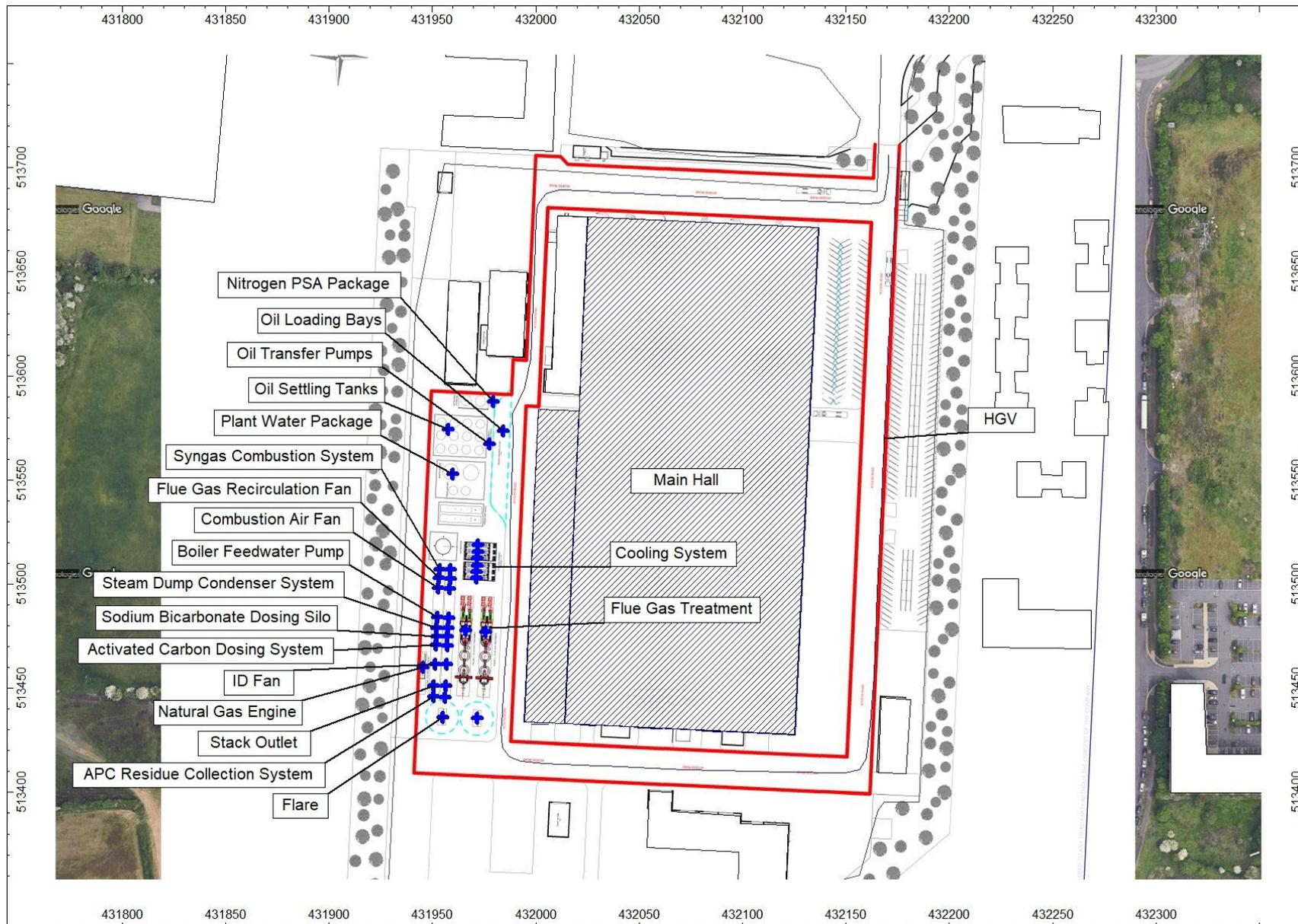


Figure C1: Site plan indicating grid coordinate references x, y coordinates for all external modelled noise sources

## APPENDIX D

# Environmental Noise Modelling Results

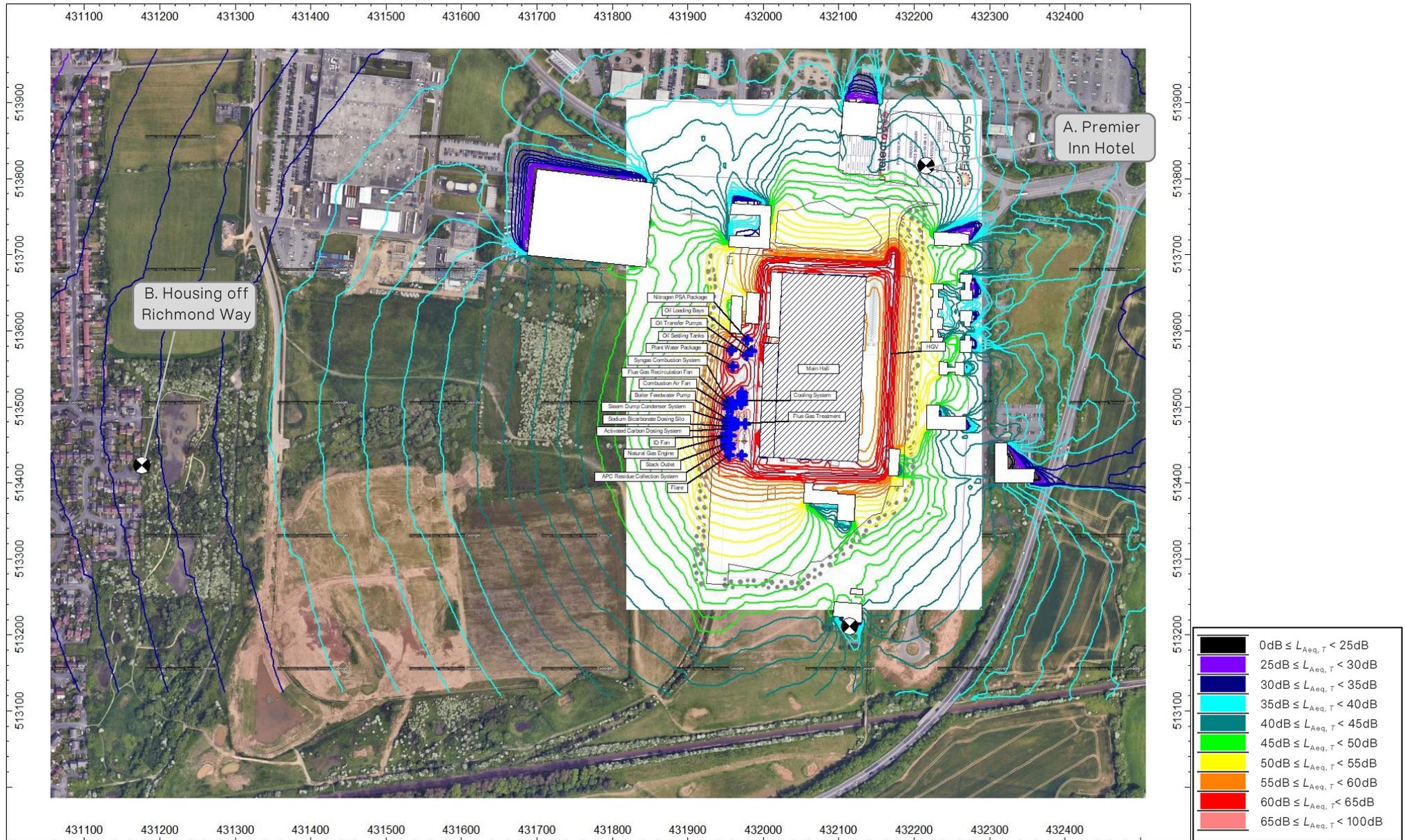


Figure D1: Predicted daytime Specific Sound Level,  $L_{Aeq,1hour}$  from the installation, at 4 metres grid height (Google 2025)

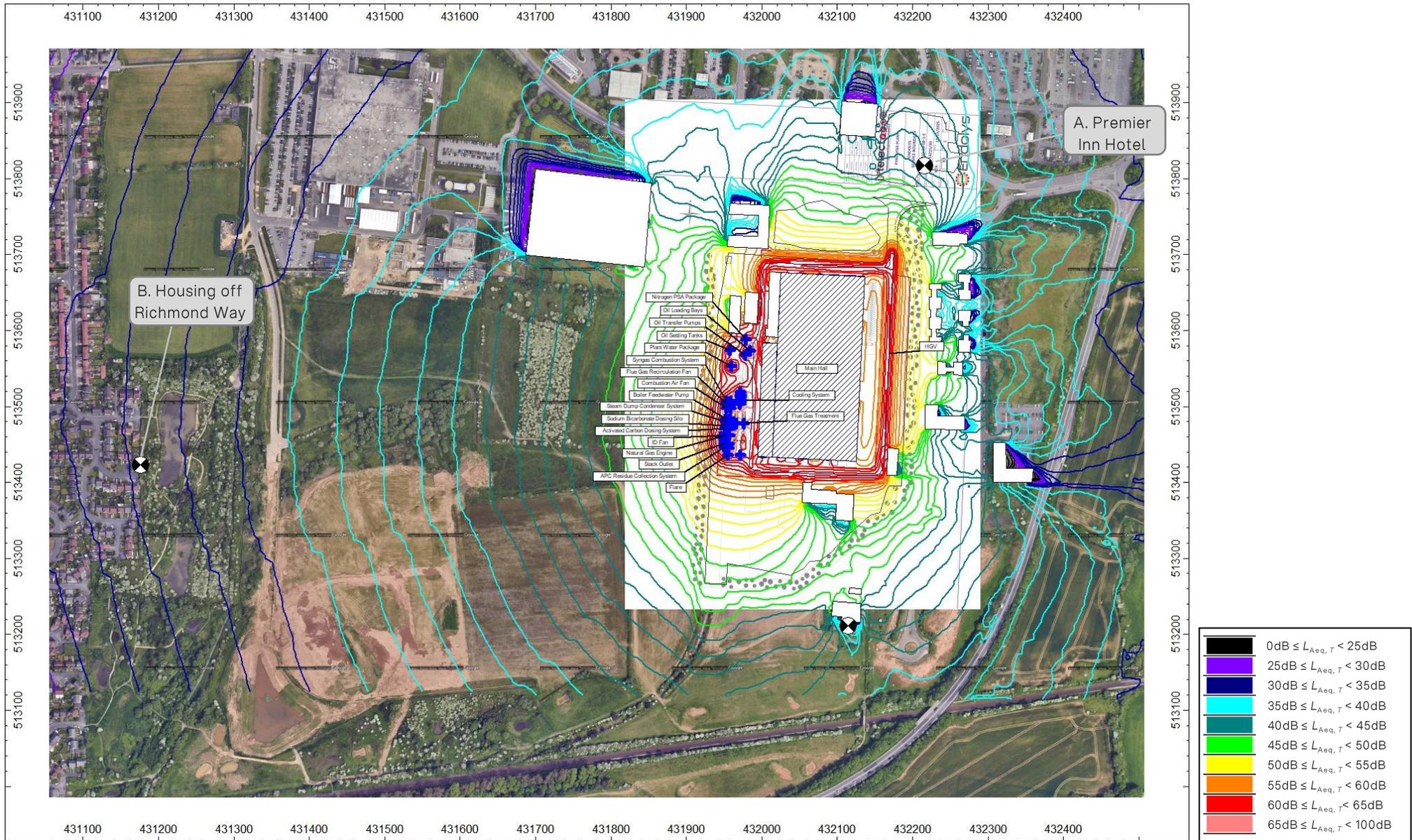


Figure D2: Predicted nighttime Specific Sound Level,  $L_{Aeq,1hour}$ , from the installation, at 4 metres grid height (Google 2025)

A. Premier Inn Hotel Daytime (07:00 – 23:00 hours)	
Source Description	Specific Sound Level, dB $L_{Aeq,T}$
HGV	42.5
Main Hall - Facade	32.8
Main Hall - Roof	31.3
Stack Outlet	23.2
Stack Outlet	23.1
APC Residue Collection System	21.6
APC Residue Collection System	20.7
Plant Water Package	20.3
ID Fan	18.5
Annex - Roof	17.8
ID Fan	17.6
Natural Gas Engine	17.1
Flare	15.9
Oil Loading Bays	15.8
Sodium Bicarbonate Dosing Silo	15.7
Activated Carbon Dosing System	15.7
Steam Dump Condenser System	15.6
Boiler Feedwater Pump	15.5
Flue Gas Recirculation Fan	15.3
Combustion Air Fan	15.3
Syngas Combustion System	15.2
Activated Carbon Dosing System	14.9
Sodium Bicarbonate Dosing Silo	14.8
Boiler Feedwater Pump	14.7
Steam Dump Condenser System	14.7
Combustion Air Fan	14.5
Syngas Combustion System	14.4
...	...
<b>Total</b>	<b>43.6</b>

**Table D1:** A. Premier Inn Hotel  
Specific Sound Levels, daytime

A. Premier Inn Hotel Nighttime (23:00 – 07:00 hours)	
Source Description	Specific Sound Level, dB $L_{Aeq,T}$
HGV	41.6
Main Hall - Facade	32.8
Main Hall - Roof	31.3
Stack Outlet	23.2
Stack Outlet	23.1
APC Residue Collection System	21.6
APC Residue Collection System	20.7
Plant Water Package	20.3
ID Fan	18.5
Annex - Roof	17.8
ID Fan	17.6
Natural Gas Engine	17.1
Flare	15.9
Oil Loading Bays	15.8
Sodium Bicarbonate Dosing Silo	15.7
Activated Carbon Dosing System	15.7
Steam Dump Condenser System	15.6
Boiler Feedwater Pump	15.5
Flue Gas Recirculation Fan	15.3
Combustion Air Fan	15.3
Syngas Combustion System	15.2
Activated Carbon Dosing System	14.9
Sodium Bicarbonate Dosing Silo	14.8
Boiler Feedwater Pump	14.7
Steam Dump Condenser System	14.7
Combustion Air Fan	14.5
Syngas Combustion System	14.4
...	...
<b>Total</b>	<b>42.9</b>

**Table D2:** A. Premier Inn Hotel  
Specific Sound Levels, nighttime

B. Housing off Richmond Way Daytime (07:00 – 23:00 hours)	
Source Description	Specific Sound Level, dB $L_{Aeq,T}$
HGV	29.1
Main Hall - Roof	20.5
Oil Loading Bays	19.6
APC Residue Collection System	18.4
Main Hall - Facade	16.6
ID Fan	15.5
Annex - Roof	15.5
Cooling System	14.9
Annex - Facade	14.8
Flue Gas Treatment	14.4
Stack Outlet	14.2
Stack Outlet	14.2
Oil Transfer Pumps	14.1
Nitrogen PSA Package	14.1
Flue Gas Treatment	13.7
Boiler Feedwater Pump	12.9
Steam Dump Condenser System	12.9
Sodium Bicarbonate Dosing Silo	12.9
Activated Carbon Dosing System	12.9
Syngas Combustion System	12.8
Flue Gas Recirculation Fan	12.8
Combustion Air Fan	12.8
...	...
<b>Total</b>	<b>32.6</b>

**Table D3:** B. Housing off Richmond Way Specific Sound Levels, daytime

B. Housing off Richmond Way Nighttime (23:00 – 07:00 hours)	
Source Description	Specific Sound Level, dB $L_{Aeq,T}$
HGV	28.2
Main Hall - Roof	20.5
Oil Loading Bays	19.6
APC Residue Collection System	18.4
Main Hall - Facade	16.6
ID Fan	15.5
Annex - Roof	15.5
Cooling System	14.9
Annex - Facade	14.8
Flue Gas Treatment	14.4
Stack Outlet	14.2
Stack Outlet	14.2
Oil Transfer Pumps	14.1
Nitrogen PSA Package	14.1
Flue Gas Treatment	13.7
Boiler Feedwater Pump	12.9
Steam Dump Condenser System	12.9
Sodium Bicarbonate Dosing Silo	12.9
Activated Carbon Dosing System	12.9
Syngas Combustion System	12.8
Flue Gas Recirculation Fan	12.8
Combustion Air Fan	12.8
...	...
<b>Total</b>	<b>32.3</b>

**Table D4:** B. Housing off Richmond Way Specific Sound Levels, nighttime

## APPENDIX E

### Client Advised Noise Data

Plant Area	Item Number Corresponding to Drg J- 14215-30-N-1	Main Items	Quantity		Operating Hours	Indicative Size TBC by Supplier Data	Sound Power Level Point Source LwA (dB(A))	Operating Cycle	Location	Attenuation	Data Source
			Phase 1	Phase 2							
Feedstock Processing	31	Mobile Plant (FLT)			7am-5pm Mon-Sat			Intermittent	Internal	Building fabric	SOL data base
	1	Shredder	2	2	7am-5pm Mon-Sat	From 3D model		Continuous	Internal	Building fabric	Awaiting Lindner response
	2	Windsifter	2	2	7am-5pm Mon-Sat	From 3D model		Continuous	Internal	Building fabric	Awaiting Lindner response
	3	NIR sorter	2	2	7am-5pm Mon-Sat	From 3D model		Continuous	Internal	Building fabric	Awaiting Lindner response
	4	Conveyors			7am-5pm Mon-Sat	From 3D model	80@1m	Continuous	Internal	Building fabric	Awaiting Lindner response
Agglomeration	4	Conveyors			24/7	From 3D model	80@1m	Continuous	Internal	Building fabric	Pyrol Estimate
	5	Agglomerators	4	4	24/7	From 3D model	80@1m	Continuous	Internal	Building fabric	Awaiting TQ response
Pyrolysis	6	Pyrolysis System	6	12	24/7	From 3D model	80@1m	Continuous	Internal	Building fabric	Niutech
	7	Combustion System & Heat Recovery	6	12	24/7	From 3D model	88@1m	Continuous	External	Building fabric	Niutech
	7a	Flue Gas Treatment	1	2	24-Jul	From 3D model	80@1m	Continuous	External	None as base design	Niutech
Char Storage Area	8	Char Handling & Storage	1	2	24/7	From 3D Model	85@1m	Continuous	Internal	Building fabric	Pyrol Estimate
Oil Tank Bay	9	Oil Settling Tanks	1	2	24/6	~4m dia x 8m tall	80@1m	Continuous	External	None as base design	Pyrol Estimate
	10	Oil Transfer Pumps	1	2	24/7	1m x 1m x1m	85@1m	Continuous	External	None as base design	Pyrol Estimate
	11	Oil Loading Bays	1	1	24/7	Layout x 3m tall	85@1m	Continuous	External	None as base design	Pyrol Estimate
Excess Syngas Combustion	12	Syngas Combustion System	1	2	24/7	5m x 3m x 5m tall	85@1m	Continuous	Internal	None as base design	Pyrol Estimate
	13	Flue Gas Recirculation Fan	1	2	24/7	1m x 1m x1m	85@1m	Continuous	Internal	None as base design	Pyrol Estimate
	14	Combustion Air Fan	1	2	24/7	1m x 1m x1m	85@1m	Continuous	Internal	None as base design	Pyrol Estimate
	15	Boiler	1	2	24/7	5m x 3m x 5m tall	N/A	Continuous	Internal	None as base design	Pyrol Estimate
	16	Economiser	1	2	24/7	3m x 3m x 5m tall	N/A	Continuous	Internal	None as base design	Pyrol Estimate
	17	Boiler Feedwater Pump	1	2	24/7	1m x 1m x1m	85@1m	Continuous	Internal	None as base design	Pyrol Estimate
	18	Steam Dump Condenser System	1	2	24/7	3m x 3m x 5m tall	85@1m	Continuous	Internal	None as base design	Pyrol Estimate
	19	Sodium Bicarbonate Dosing Silo	1	1	24/7	2m dia x 6m tall	85@1m	Continuous	Internal	None as base design	Pyrol Estimate
	20	Activated Carbon Dosing System	1	1	24/7	2m dia x 3m tall	85@1m	Continuous	Internal	None as base design	Pyrol Estimate
	21	Bag Filter	1	2	24/7	5m x 3m x 8m tall	N/A	Continuous	Internal	None as base design	Pyrol Estimate
	22	ID Fan	1	2	24/7	1m x 1m x1m	85@1m	Continuous	External	None as base design	Pyrol Estimate
	23	CEMS	1	2	24/7	Layout x 2.4m room	N/A	Continuous	Internal	None as base design	Pyrol Estimate
24	Stack	1	2	24/7	TBC	N/A	Continuous	External	None as base design	Pyrol Estimate	
25	APC Residue Collection System	1	1	24/7	3m dia x 6m tall	85@1m	Continuous	Internal	None as base design	Pyrol Estimate	
Balance of Plant	26	Air Compressor and Reciever Package	1	1	24/7	3m x 4m x 3m tall	75@1m	Continuous	Internal	Building fabric	Pyrol Estimate
	27	Nitrogen Tanks Package	1	1	24/7	4m x 4m x 6m tall	75@1m	Continuous	External	None as base design	Pyrol Estimate
	28	Plant Water Package	1	1	24/7	Layout x 4m tall	85@1m	Continuous	External	None as base design	Pyrol Estimate
	29	Emergency Generator Package	1	1	On request	4m x 2m x 2.5m	75@1m	Emergency Only	External	Containerised	Pyrol Estimate
	30	Cooling System	1	2	24/7	From 3D Model	80@1m	Continuous	External	None as base design	Pyrol Estimate
	32	Natural Gas Engine	1	1	24/7	12m x 3m x 2.9m tall	65dB(A) at 10m	Continuous	External	Containerised	Jenbacher Website
	33	Flare	1	2	On request	8m x 4m x 11m stack		Emergency Only	External	None as base design	
	34	Turbine Package	1	1	24/7	3m x 4m x 3m tall	TBC	Continuous	Internal	Building fabric	Pyrol Estimate

**Table E1: Client advised noise data**

## APPENDIX F

### Noise Source Schedule

Equipment Name	Data Source / Specification	Data Type	Number of Sources	Average Sound Pressure Level, dB, at Octave Band Centre Frequency Hz								Average Sound Pressure Level on Measurement Surface, $L_{pA}$	Measurement Distance, m	Measurement Surface area at Measurement Position, $m^2$	Overall Sound Power Level, dB $L_{WA}$	Utilisation		Source: Area (A) Line (L) Point (P) or internal (I)	Outline Noise Mitigation Design	
				32	63	125	250	500	1k	2k	4k					8k	Daytime (07:00 - 23:00)			Nighttime (23:00 - 07:00)
<b>Internal</b>																				
<b>Internal. Main Hall</b>																				
Main Hall	Maximum permissible reverberant sound pressure level	Spatial average reverberant sound pressure level		87	87	84	76	74	74	73	70	66	80	N/A	N/A	N/A	100%	100%	I	It must be noted that based upon the initial information as presented by the Client, calculations indicate that these maximum permissible reverberant sound pressure levels may be exceeded and therefore further noise mitigation is likely to be required. For example, further attenuation may be required to the "combustion system and heat recovery" units and "agglomeration" etc. Further analysis shall be needed once further details of the actual plant noise level emissions are known.
<b>Feedstock processing</b>																				
Mobile Plant (FLT)	Noise spectrum taken from BS5228 Part 1 2009, Table C.9, ref. no.5	Sound Pressure Level at 10m distance	1		72	67	61	62	60	57	52	47	65	10	628	92.8	100%	100%	I	
Shredder	Maximum permissible SPL	Sound Pressure Level at 1m distance	2				93.6						85	1	48	101.8	100%	100%	I	
Windsifter	Maximum permissible SPL	Sound Pressure Level at 1m distance	2				93.6						85	1	48	101.8	100%	100%	I	
NIR sorter	Maximum permissible SPL	Sound Pressure Level at 1m distance	2				93.6						85	1	48	101.8	100%	100%	I	
Conveyors	Client advised sound pressure level of 80 $L_{Aeq,T}$ at 1m	Sound Pressure Level at 1m distance	4				88.6						80.0	1	51	97.1	100%	100%	I	
<b>Agglomeration</b>																				
Agglomerators	Client advised sound pressure level of 80 $L_{Aeq,T}$ at 1m	Sound Pressure Level at 1m distance	4				88.6						80.0	1	33	95.2	100%	100%	I	
<b>Pyrolysis</b>																				
Pyrolysis System	Client advised sound pressure level of 80 $L_{Aeq,T}$ at 1m	Sound Pressure Level at 1m distance	12				88.6						80.0	1	94	99.7	100%	100%	I	
Combustion System & Heat Recovery	Client advised sound pressure level of 88 $L_{Aeq,T}$ at 1m	Sound Pressure Level at 1m distance	12				96.6						88.0	1	94	107.7	100%	100%	I	

Equipment Name	Data Source / Specification	Data Type	Number of Sources	Average Sound Pressure Level, dB, at Octave Band Centre Frequency Hz								Average Sound Pressure Level on Measurement Surface, $L_{pA}$	Measurement Distance, m	Measurement Surface area at Measurement Position, $m^2$	Overall Sound Power Level, $dB L_{WA}$	Utilisation		Source: Area (A) Line (L) Point (P) or internal (I)	Outline Noise Mitigation Design	
				32	63	125	250	500	1k	2k	4k					8k	Daytime (07:00 - 23:00)			Nighttime (23:00 - 07:00)
<b>Internal. Annex</b>																				
Annex	Maximum permissible reverberant sound pressure level	Spatial average reverberant sound pressure level		87	87	84	76	74	74	73	70	66	80	N/A	N/A	N/A	100%	100%	I	It must be noted that based upon the initial information as presented by the Client, calculations indicate that these maximum permissible reverberant sound pressure levels may be exceeded and therefore further noise mitigation is likely to be required. For example, further attenuation may be required to the "char handling" etc. Further analysis shall be needed once further details of the actual plant noise level emissions are known.
<b>Char Storage Area</b>																				
Char Handling & Storage	Client advised sound pressure level of 85 $L_{Aeq,T}$ at 1m	Sound Pressure Level at 1m distance	2				93.6						85.0	1	33	100.2	100%	100%	I	
<b>Balance of Plant</b>																				
Air Compressor and Receiver Package	Client advised sound pressure level of 75 $L_{Aeq,T}$ at 1m	Sound Pressure Level at 1m distance	1				83.6						75.0	1	118	95.7	100%	100%	I	
Emergency Generator Package	Client advised sound pressure level of 75 $L_{Aeq,T}$ at 1m	Sound Pressure Level at 1m distance	1				83.6						75.0	1	94	94.7	100%	100%	I	
<b>External</b>																				
<b>Oil Tank Bay</b>																				
Oil Settling Tanks	Client advised sound pressure level of 80 $L_{Aeq,T}$ at 1m	Sound Pressure Level at 1m distance	2				88.6						80.0	1	18	92.6	100%	100%	P	Noise from the oil setting tanks shall not exceed a sound pressure level of 70dB $L_{Aeq,T}$ , when measured at a distance of one metre from any surface (note: a further 10dB reduction required based upon Client advised noise level).
	Maximum permissible SPL	Sound Pressure Level at 1m distance						78.6						70.0	1	18				
Oil Transfer Pumps	Client advised sound pressure level of 85 $L_{Aeq,T}$ at 1m	Sound Pressure Level at 1m distance	2				93.6						85.0	1	18	97.6	100%	100%	P	Noise from the oil transfer pumps shall not exceed a sound pressure level of 70dB $L_{Aeq,T}$ , when measured at a distance of one metre from any surface (note: a further 15dB reduction required based upon Client advised noise level).
	Maximum permissible SPL	Sound Pressure Level at 1m distance						78.6						70.0	1	18				
Oil Loading Bays	Client advised sound pressure level of 85 $L_{Aeq,T}$ at 1m	Sound Pressure Level at 1m distance	1				93.6						85.0	1	18	97.6	100%	100%	P	Noise from the oil loading bay shall not exceed a sound pressure level of 75dB $L_{Aeq,T}$ , when measured at a distance of one metre from any surface (note: further 10dB reduction based upon Client advised noise level).
	Maximum permissible SPL	Sound Pressure Level at 1m distance						83.6						75.0	1	18				

Equipment Name	Data Source / Specification	Data Type	Number of Sources	Average Sound Pressure Level, dB, at Octave Band Centre Frequency Hz								Average Sound Pressure Level on Measurement Surface, $L_{pA}$	Measurement Distance, m	Measurement Surface area at Measurement Position, $m^2$	Overall Sound Power Level, dB $L_{WA}$	Utilisation		Source: Area (A) Line (L) Point (P) or internal (I)	Outline Noise Mitigation Design	
				32	63	125	250	500	1k	2k	4k					8k	Daytime (07:00 - 23:00)			Nighttime (23:00 - 07:00)
<b>Excess Syngas Combustion</b>																				
Flue Gas Treatment	Client advised sound pressure level of 80 $L_{Aeq,T}$ at 1m	Sound Pressure Level at 1m distance	2				88.6						80.0	1	18	92.6	100%	100%	P	Noise from the flue gas treatment shall not exceed a sound pressure level of 70dB $L_{Aeq,T}$ , when measured at a distance of one metre from any surface (note: a further 10dB reduction required based upon Client advised noise level).
	Maximum permissible SPL	Sound Pressure Level at 1m distance					78.6						70.0	1	18	82.6				
Syngas Combustion System	Client advised sound pressure level of 85 $L_{Aeq,T}$ at 1m	Sound Pressure Level at 1m distance	2				93.6						85.0	1	18	97.6	100%	100%	P	Noise from the syngas combustion system shall not exceed a sound pressure level of 70dB $L_{Aeq,T}$ , when measured at a distance of one metre from any surface (note: a further 15dB reduction required based upon Client advised noise level).
	Maximum permissible SPL	Sound Pressure Level at 1m distance					78.6						70.0	1	18	82.6				
Flue Gas Recirculation Fan	Client advised sound pressure level of 85 $L_{Aeq,T}$ at 1m	Sound Pressure Level at 1m distance	2				93.6						85.0	1	18	97.6	100%	100%	P	Noise from the flue gas recirculation fans shall not exceed a sound pressure level of 70dB $L_{Aeq,T}$ , when measured at a distance of one metre from any surface (note: further 10dB reduction based upon Client advised noise level). Make provisions for an acoustic enclosure to be fitted to the fan. Attenuated forced draught ventilation to the enclosure will be needed for heat dissipation, complete with run and standby fans (resilience).
	Maximum permissible SPL	Sound Pressure Level at 1m distance					78.6						70.0	1	18	82.6				
Combustion Air Fan	Client advised sound pressure level of 85 $L_{Aeq,T}$ at 1m	Sound Pressure Level at 1m distance	2				93.6						85.0	1	18	97.6	100%	100%	P	Noise from each combustion air fan shall not exceed a sound pressure level of 70dB $L_{Aeq,T}$ , when measured at a distance of one metre from any surface (note: further 10dB reduction based upon Client advised noise level). Make provisions for an acoustic enclosure to be fitted to the fan. Attenuated forced draught ventilation to the enclosure will be needed for heat dissipation, complete with run and standby fans (resilience).
	Maximum permissible SPL	Sound Pressure Level at 1m distance					78.6						70.0	1	18	82.6				
Boiler	N/A	N/A	2													100%	100%	N/A		
Economiser	N/A	N/A	2													100%	100%	N/A		
Boiler Feedwater Pump	Client advised sound pressure level of 85 $L_{Aeq,T}$ at 1m	Sound Pressure Level at 1m distance	2				93.6						85.0	1	18	97.6	100%	100%	P	Noise from the boiler feedwater pumps shall not exceed a sound pressure level of 70dB $L_{Aeq,T}$ when measured at a distance of one metre from any surface (note: a further 15dB reduction required based upon Client advised noise level). Make provisions for an acoustic enclosure to be fitted to the fan. Attenuated forced draught ventilation to the enclosure will be needed for heat dissipation, complete with run and standby fans (resilience).
	Maximum permissible SPL	Sound Pressure Level at 1m distance					78.6						70.0	1	18	82.6				
Steam Dump Condenser System	Client advised sound pressure level of 85 $L_{Aeq,T}$ at 1m	Sound Pressure Level at 1m distance	2				93.6						85.0	1	18	97.6	100%	100%	P	Noise from the steam dump condenser system shall not exceed a sound pressure level of 70dB $L_{Aeq,T}$ when measured at a distance of one metre from any surface (note: a further 15dB reduction required based upon Client advised noise level). Make provisions for an acoustic enclosure to be fitted.
	Maximum permissible SPL	Sound Pressure Level at 1m distance					78.6						70.0	1	18	82.6				

Equipment Name	Data Source / Specification	Data Type	Number of Sources	Average Sound Pressure Level, dB, at Octave Band Centre Frequency Hz								Average Sound Pressure Level on Measurement Surface, $L_{pA}$	Measurement Distance, m	Measurement Surface area at Measurement Position, $m^2$	Overall Sound Power Level, dB $L_{WA}$	Utilisation		Source: Area (A) Line (L) Point (P) or internal (I)	Outline Noise Mitigation Design	
				32	63	125	250	500	1k	2k	4k					8k	Daytime (07:00 - 23:00)			Nighttime (23:00 - 07:00)
Sodium Bicarbonate Dosing Silo	Client advised sound pressure level of 85 $L_{Aeq,T}$ at 1m	Sound Pressure Level at 1m distance	1				93.6						85.0	1	18	97.6	100%	100%	P	Noise from the Sodium bicarbonate dosing silo shall not exceed a sound pressure level of 70dB $L_{Aeq,T}$ when measured at a distance of one metre from any surface (note: a further 15dB reduction required based upon Client advised noise level). Make provisions for an acoustic enclosure to be fitted.
	Maximum permissible SPL	Sound Pressure Level at 1m distance					78.6							70.0	1	18				
Activated Carbon Dosing System	Client advised sound pressure level of 85 $L_{Aeq,T}$ at 1m	Sound Pressure Level at 1m distance	1				93.6						85.0	1	18	97.6	100%	100%	P	Noise from the Activated carbon dosing System shall not exceed a sound pressure level of 70dB $L_{Aeq,T}$ when measured at a distance of one metre from any surface (note: a further 15dB reduction required based upon Client advised noise level). Make provisions for an acoustic enclosure to be fitted.
	Maximum permissible SPL	Sound Pressure Level at 1m distance					78.6							70.0	1	18				
Bag Filter	N/A		2										N/A				100%	100%	P	
ID Fan	Client advised sound pressure level of 85 $L_{Aeq,T}$ at 1m	Sound Pressure Level at 1m distance	2				93.6						85.0	1	33	100.2	100%	100%	P	Noise from the ID fans shall individually not exceed a sound pressure level of 70dB $L_{Aeq,T}$ when measured at a distance of one metre from any surface (note: further 10dB reduction based upon Client advised noise level). Make provisions for an acoustic enclosure to be fitted to the fan. Attenuated forced draught ventilation to the enclosure will be needed for heat dissipation, complete with run and standby fans (resilience).
	Maximum permissible SPL	Sound Pressure Level at 1m distance					78.6							70.0	1	33				
CEMS	N/A		2										N/A				100%	100%	P	
Stack Outlet	Maximum permissible SPL	Sound Pressure Level at 1m distance	2				83.6						75.0	1	12	85.8	100%	100%	P	Noise from each ID fan stack outlet must not exceed a sound pressure level of 75dB $L_{Aeq,T}$ at one metre from stack outlet edge (and 90° off longitudinal axis of the stack) at any design speed/mode. Make provisions for duct attenuator(s) to be fitted to the discharge side of the ID fan (including an allowance for the ensuing attenuator static pressure loss can be accommodated at maximum required gas flowrates).
APC Residue Collection System	Client advised sound pressure level of 85 $L_{Aeq,T}$ at 1m	Sound Pressure Level at 1m distance	1				93.6						85.0	1	64	103.1	100%	100%	P	Noise from the APC residue collection system shall not exceed a sound pressure level of 70dB $L_{Aeq,T}$ when measured at a distance of one metre from any surface (note: a further 5dB reduction required based upon Client advised noise level).
	Maximum permissible SPL	Sound Pressure Level at 1m distance					78.6							70.0	1	64				
<b>Balance of Plant</b>																				
Nitrogen PSA Package	Client advised sound pressure level of 75 $L_{Aeq,T}$ at 1m	Sound Pressure Level at 1m distance	1				83.6						75.0	1	18	87.6	100%	100%	P	Noise from the nitrogen PSA package shall not exceed a sound pressure level of 70dB $L_{Aeq,T}$ when measured at a distance of one metre from any surface (note: further 5dB reduction based upon Client advised noise level).
	Maximum permissible SPL	Sound Pressure Level at 1m distance					78.6							70.0	1	18				

Equipment Name	Data Source / Specification	Data Type	Number of Sources	Average Sound Pressure Level, dB, at Octave Band Centre Frequency Hz								Average Sound Pressure Level on Measurement Surface, $L_{pA}$	Measurement Distance, m	Measurement Surface area at Measurement Position, $m^2$	Overall Sound Power Level, dB $L_{WA}$	Utilisation		Source: Area (A) Line (L) Point (P) or internal (I)	Outline Noise Mitigation Design	
				32	63	125	250	500	1k	2k	4k					8k	Daytime (07:00 - 23:00)			Nighttime (23:00 - 07:00)
Plant Water Package	Client advised sound pressure level of 85 $L_{Aeq,T}$ at 1m	Sound Pressure Level at 1m distance	1				93.6					85.0	1	18	97.6	100%	100%	P	Noise from the plant water package shall not exceed a sound pressure level of 75dB $L_{Aeq,T}$ , when measured at a distance of one metre from any surface (note: 10dB reduction based upon Client advised noise level).	
	Maximum permissible SPL	Sound Pressure Level at 1m distance					83.6					75.0	1	18	87.6					
Cooling System	Client advised sound pressure level of 80 $L_{Aeq,T}$ at 1m	Sound Pressure Level at 1m distance	6				88.6					80.0	1	72	98.6	100%	100%	P	Noise from each cooling system shall not exceed a sound pressure level of 65dB $L_{Aeq,T}$ , when measured at a distance of one metre from any surface (note: further 15dB reduction based upon Client advised noise level). Note that this reduction is only required during night time operation. Whilst it may be possible to factor in a reduced fan speed during the night time period. It is likely that a bespoke acoustic package shall be required to be fitted to the coolers.	
	Maximum permissible SPL	Sound Pressure Level at 1m distance					73.6					65.0	1	72	83.6					
Natural Gas Engine	Client advised sound pressure level of 65 $L_{Aeq,T}$ at 10m	Sound Pressure Level at 10m distance	1				73.6					65.0	10	628	93.0	100%	100%	P	Noise from the natural gas engine shall not exceed a sound pressure level of 55dB $L_{Aeq,T}$ , when measured at a distance of ten metres from any surface (note: further 10dB reduction based upon Client advised noise level).	
	Maximum permissible SPL	Sound Pressure Level at 10m distance					63.6					55.0	10	628	83.0					
Flare	Maximum permissible SPL	Sound Pressure Level at 1m distance	2				83.6					75	1	6	83	100%	100%	P	Noise from the Flare shall not exceed a sound pressure level of 65dB $L_{Aeq,T}$ , when measured at a distance of one metre	
Mobile Plant																				
HGV	Sound pressure Level at 10m	Noise spectrum taken from BS5228 Table C.2 reference 34 ("Lorry": 4-axle wagon).	1		73	78	78	78	74	73	68	66	80	10	628	108	5/hr	4/hr	P	

**Table F1:** Noise source schedule indicating maximum permissible noise levels (per plant item)

## APPENDIX G

### Details and Professional Qualifications of Contributing Sol Staff

#### Company Details

Name of Organisation: Sol Acoustics Limited

Status: Private Limited Company

Address: Unit 11, Brunel Court,  
Gadbrook Park  
CW9 7LP

Telephone Number: 01565 632535

E-Mail: [info@solacoustics.co.uk](mailto:info@solacoustics.co.uk)

Nature of Business: Acoustic Consultancy

Directors: Simon Ferenczi

Company Registration Number: 4218702

#### Key Technical Personnel & Qualifications

Simon Ferenczi	Institute of Acoustics Diploma (with additional modules), MIOA
Brian Horner	BSc (Hons), MIOA

#### Company Accreditations

Sol Acoustics is a member of The Association of Noise Consultants (ANC) and is qualified to perform sound insulation testing under the ANC's accredited testing scheme to demonstrate compliance with the requirements of Approved Document E of the Building Regulations.