Linley House
Manchester

Environmental Noise Survey
and Plant Noise Assessment Report

31588/PNA2

5 August 2026

For:

Dickinson Street Manchester Limited
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Document Control

Rev	Date	Comment	Prepared by	Reviewed by	Approved by
3	05/08/2026	Minor wording amendments following comments	[redacted] Will Robertson Consultant BSc(Hons), AMIOA	Jake Howarth Senior Associate BEng(Hons), MIOA	
2	23/12/2025	Updated plant layout	[redacted] Will Robertson Consultant BSc(Hons), AMIOA	Jake Howarth Senior Associate BEng(Hons), MIOA	
1	13/03/2025	Updated Section 4.2	[redacted]	Tom Bonnert Senior Associate BEng(Hons), MIOA	
0	13/12/2024	-	[redacted] Kelvin Carray Consultant BSc, MIOA	Tom Bonnert Senior Associate BEng(Hons), MIOA	

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Contents

		Page
1.0	Introduction	1
2.0	Objectives	1
3.0	Acoustic Terminology	1
4.0	Site Description	2
5.0	Planning Policies, Standards & Guidance	3
6.0	Baseline Noise Survey	4
7.0	Plant Noise Emission Criteria	8
8.0	Plant Noise Impact Assessment	10
9.0	Conclusions	13

Attachments

Appendix A – Acoustic Terminology

Appendix B – Relevant Planning Policies and Guidance

Appendix C – Time History Graphs

1.0 Introduction

Hann Tucker Associates Limited (Hann Tucker) has been commissioned by Dickinson Street Manchester Limited to undertake a noise assessment for replacement plant serving an office building in Manchester.

The site, which is located on Dickinson Street, is proposing to install 3no. external air conditioning units, which are understood to replace existing units.

Hann Tucker Associates has therefore undertaken a detailed environmental noise survey at the site to establish baseline noise conditions as presented herein.

Suitable plant noise emission criteria based on the requirements of the Local Authority and/or the application of BS 4142: 2014+ A1:2019 have been established, and plant noise egress from the replacement condenser units has been assessed against these limits.

2.0 Objectives

To undertake an environmental noise survey to establish the existing L_{Amax}, L_{Aeq} and L_{A90} environmental road, rail and air traffic noise levels at selected accessible positions.

The survey will enable noise emission limits from the development to be identified with reference to the requirements of the Local Authority and/or the application of BS 4142: 2014 + A1:2019 and to minimise the possibility of noise nuisance to neighbours.

To assess the noise emissions from the proposed plant, based upon data with which we are provided, and comment upon the acceptability.

To advise on noise control measures if required.

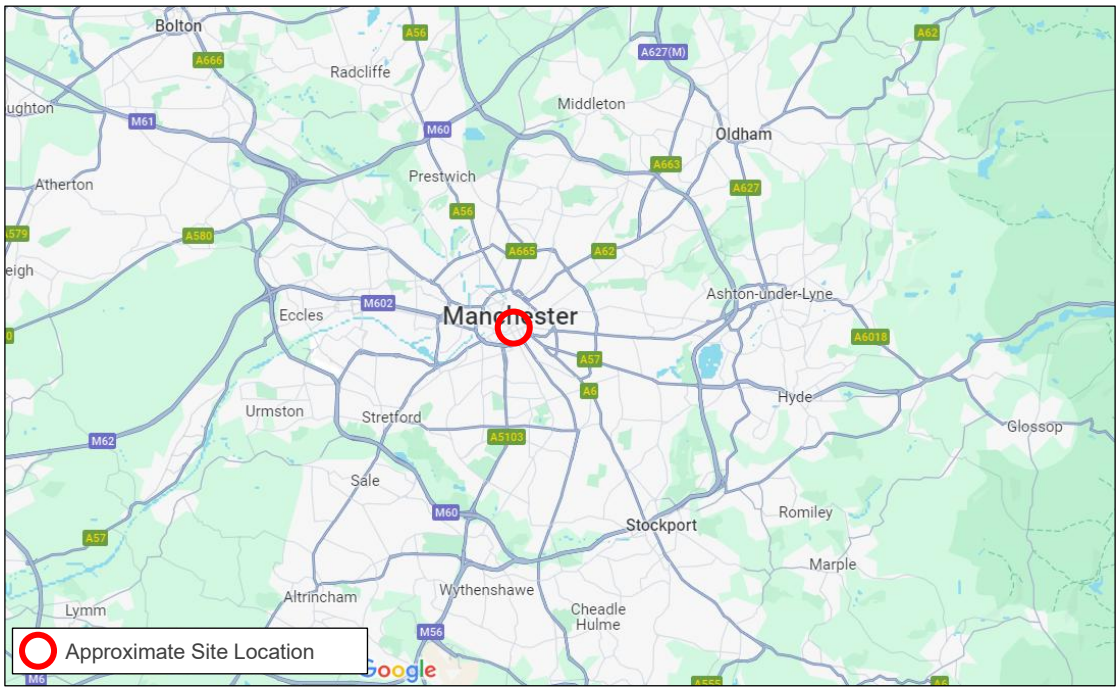
3.0 Acoustic Terminology

For an explanation of the acoustic terminology used in this report please refer to Appendix A enclosed.

4.0 Site Description

4.1 Location

The approximate site location is shown on the map below



Location Map (Map Data © 2024 Google)

The site falls within the jurisdiction of Manchester City Council (MCC).

4.2 Description

The site is in central Manchester and lies on Dickinson Street, with office and commercial buildings in the immediate surrounding area. There are noted to be residential premises at 2 Harter Street and China House, though these are located further than the adjacent office premises and screened to the existing plant deck.

To the north and east of the site is Princess Street, with Oxford Street to the West. To the south of the site is Rochdale Canal that lies adjacent to the main site car park and to the west of the site is St James Building which consists of offices. Across the canal to the south lies the Hilton Smythe building which consists of offices.

The site boundary is shown in the following Site Plan.



Site Plan (Imagery ©2024 Airbus, Maxar Technologies, Map data ©2024)

5.0 Planning Policies, Standards & Guidance

5.1 Policies & Guides

In order to provide a suitable assessment a number of national planning policies have been considered.

All guidance used to form a noise impact assessment is taken from various standards, guidance, and Local Authority requirements as summarised below:

- Local Planning Policy
- British Standard 4142:2014 + A1:2019
- Manchester City Council (MCC)
- Statutory Noise Nuisance

Detailed information for relevant planning policies and guidance can be found within Appendix B.

5.2 Specific Local Authority Criteria

The site lies within the jurisdiction of Manchester City Council (MCC). MCCs Planning and Noise Technical Guidance (June 2022) provides guidance the control of new fixed building services plant.

Many of the complaints Environmental Health receive about noise from plant, equipment and machinery specifically concern the character of the noise emitted. Any noise assessment needs to consider not only the overall level of noise emitted, but also its particular characteristics. The noise assessment should be based on BS 4142, and any application for fixed plant, equipment or machinery must demonstrate that:

> *"Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location".*

By designing the sound pressure level of any plant items to generate a noise impact of at least 5dB below the existing background level, any plant noise impact should be minimised to a level which should not give rise to complaints from users or occupiers of existing noise-sensitive usages.

6.0 Baseline Noise Survey

6.1 Procedure

Fully automated environmental noise monitoring was undertaken by Euan Ellis BA(Hons) from approximately 12:00 hours on Wednesday 26 June 2024 to approximately 12:00 hours on Friday 28 June 2024, to establish existing baseline noise levels.

Measurements were taken continuously of the A-weighted (dBA) L_{90}, L_{eq}, and L_{max} sound pressure levels over discrete 15-minute periods.

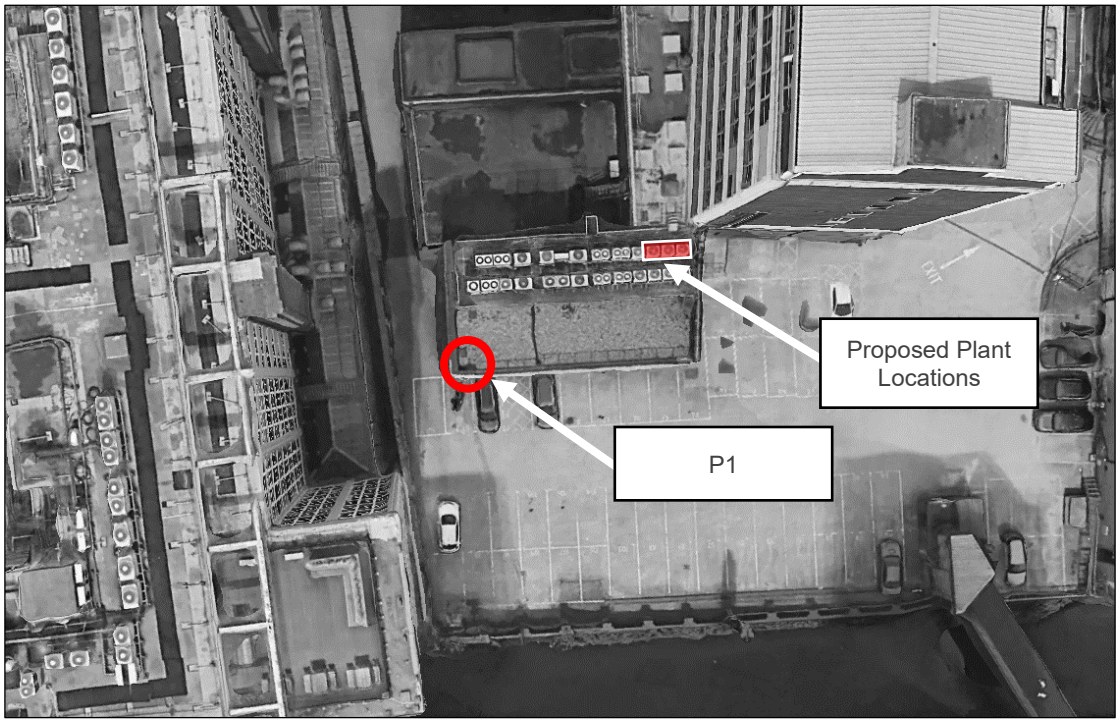
All measurements were collated in general accordance with BS 7445-1:2003 *Description and Measurement of Environmental Noise.*

6.2 Measurement Position

The microphone was attached to a pole approximately 10 metres above ground level on a rooftop to the south of the site.

Position	Type	Description
1	Unattended	The microphone was positioned to the south west corner of the site, on a rooftop, approximately 10 metres from ground level and approximately 10 meters from nearest façade, in free field conditions.

The position is shown on the following plan.



Plan Showing Measurement Position (Imagery 2024 Google, Map data 2024)

6.3 Weather Conditions

For the unattended survey between Wednesday 26 June 2024 and Friday 28 June 2024, local weather reports indicated no notable periods of prolonged or heavy rainfall, with temperatures ranging from 12°C (night) to 29°C (day) and wind speeds less than 5 m/s.

During our time on site when setting up equipment on Wednesday 26 June 2024, skies were clear, wind conditions were calm and from a southerly direction and road surfaces were dry.

6.4 Instrumentation

The instrumentation used during the survey is presented in the following table:

Position	Description	Manufacturer	Type	Serial Number	Calibration
1	Sound Level Meter	Larson Davis	LxT	5104	30/05/2024
	Preamp	PCB	PRML x TL1	42842	
	Microphone	PCB	377B02	307684	

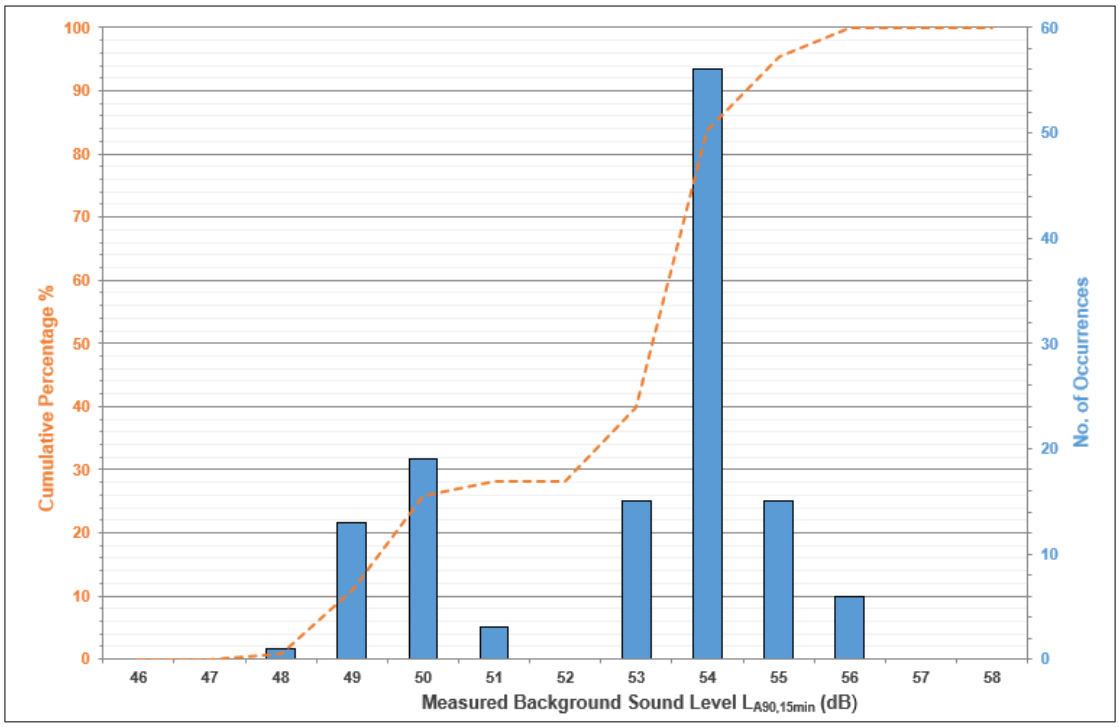
The sound level meter, including the extension cable, was calibrated prior to and on completion of the surveys. No significant changes were found to have occurred (no more than 0.3 dB).

The sound level meter was located in an environmental case with the microphone connected to the sound level meter via an extension cable. The microphone was fitted with a windshield.

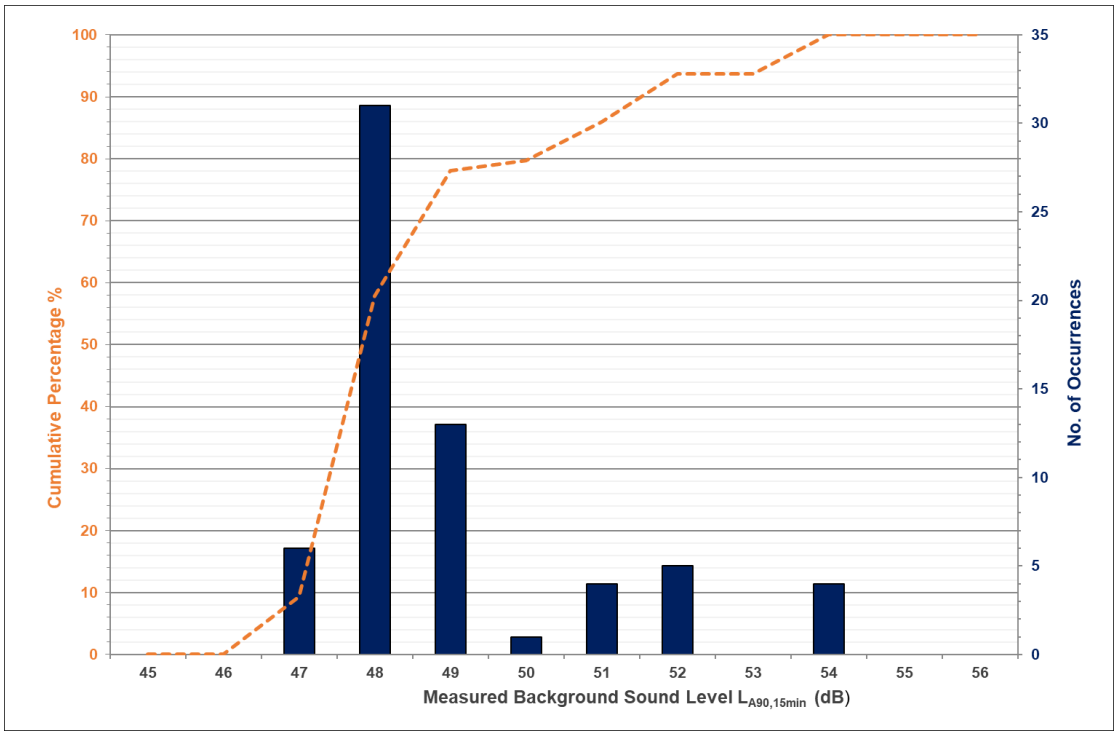
6.5 Results

The results have been plotted on Time History Graph 31588/TH1 enclosed presenting the 15-minute A-weighted (dBA) L_{90}, L_{eq} and L_{max} levels at each measurement position throughout the duration of the survey.

BS 4142 states that “the background sound level must be reliable and suitably represent 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”. Based on this, the following graphs illustrate the daytime and night-time background noise levels as histograms.



Measured daytime background sound levels



Measured night-time background sound levels

Based on the above the typical lowest $L_{A90\ (15\ min)}$ measurements recorded during the survey are presented in the following table:

Position	Representative Measured $L_{A90(15min)}$ Background Sound Level (dB re 2 x 10^{-5} Pa)	
	Daytime (07:00 – 23:00) Hours	Night-time (23:00 – 07:00) Hours
1	50	48

Based on the expected use of the equipment (supplying offices), it is not expected that the units will be in operation during the night-time period.

6.6 Discussion Of Noise Climate

Due to the nature of the survey, i.e. unattended, it is not possible to accurately describe the dominant noise sources, or specific noise events throughout the entire survey period. However, at the beginning and end of the survey period, the noise climate was noted to be dominated by road traffic noise from the surrounding road network.

Analysis of the L_{A90} periods, as well as further observations whilst attending site, suggest that some plant was operating during the unattended survey. However considering the position of the measuring equipment, and that the plant is already present and in operation, it can be considered part of the prevailing noise climate. As such, the noise levels measured are considered representative for the purposes of establishing plant noise limits.

As the existing worst affected receptors have been identified as commercial offices, assessment of the night-time is therefore not required.

7.0 Plant Noise Emission Criteria

Building services plant external noise emission levels will need to comply with local planning/environmental authority requirements and statutory noise nuisance legislation.

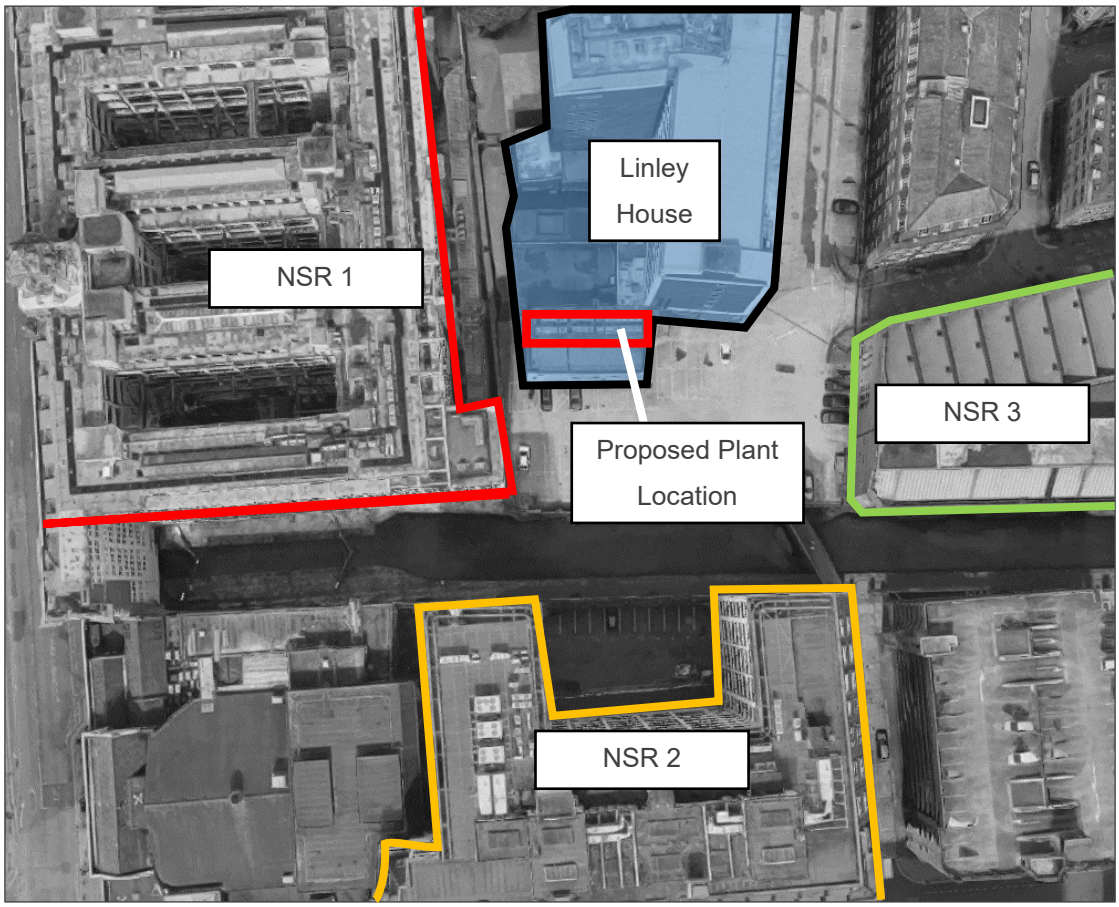
Based on the results of the noise survey and the requirements of the Local Authority (as outlined in Section 5.2), we propose that the following plant noise emission criteria be achieved incident at the nearest noise sensitive office windows, in free-field conditions, with all plant operating simultaneously. Noise shall be assessed in accordance with BS 4142:2014 with corrections applied for any plant emitting noise of a tonal or irregular quality.

NSR Location	Plant Noise Emission Criteria ($L_{Ar,Tr}$, dB)
	Daytime (07:00 – 23:00 hours)
All Nearby Noise Sensitive Receptors	45

The above criteria are to be achieved with all of the proposed plant operating simultaneously.

It should be noted that the above are subject to the final approval of the Local Authority.

Noise sensitive receptor 1 (NSR1) defines the building located to the west of the site, NSR2 defines the building located to south of site, and NSR3 defines the building to the east of site. These receptors have been identified as office buildings which are subject to noise impact as a result of the proposed plant equipment and are shown on the following plan. Given the locality of these receptors to the existing plant deck, and the plant covered under this condition discharge serving offices (ie daytime hours only), NSR1 to NSR3 are considered to be the worst affected.



Plan showing locations of nearby sensitive receptors (Imagery 2024 Google, Map data 2024)

8.0 Plant Noise Impact Assessment

8.1 Proposed Plant

We understand that the proposed development is to install 3No. units in total, as shown below.

Plant Type	Make	Floor Supplied	Model	No. of Units
Condensers	Mitsubishi	5	PURY-350YNW-A2/TR2/RU2(-BS)	2
			PURY-400YNW-A2/TR2/RU2(-BS)	1

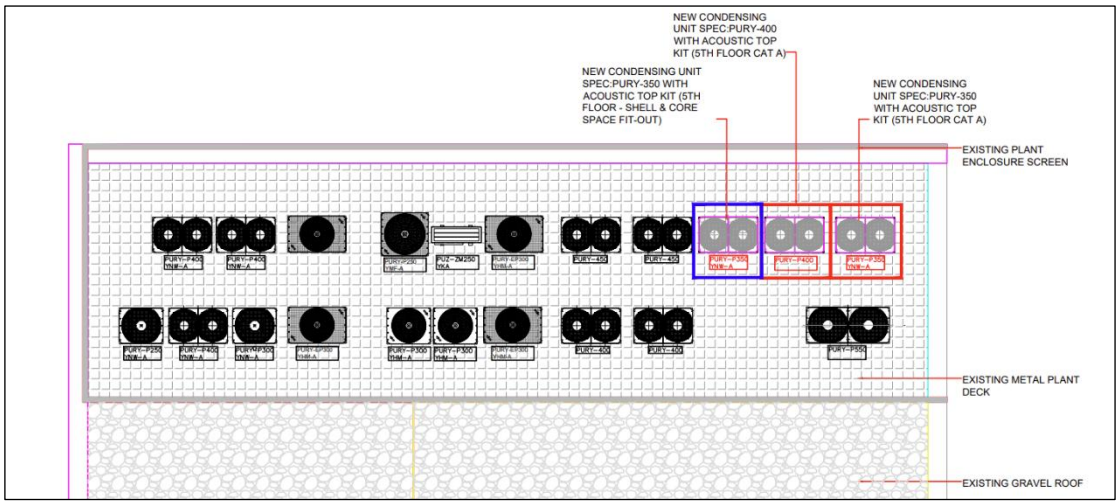
We understand the manufacturer's noise data for the equipment to be as is set out in the following table. The data is described in sound pressure levels at 1 metre.

Unit	Sound Pressure Level (dB re $2x10^{-5}$ Pa) at Octave Band Centre Frequency (Hz) at 1-metre								dBA
	63	125	250	500	1000	2000	4000	8000	
PURY-350YNW- A2/TR2/RU2 (-BS)	72	71	64	62	57	54	52	48	64
PURY-400YNW-A2/TR2/RU2(-BS)	74	64	66	64	59	55	49	45	65

It is further understood that there is allowance for an attenuation package to the 3No proposed condensers in the form of a “top kit”. This is an acoustic louvre that is mounted to the top of the proposed condenser units. The insertion loss data provided by the manufacturer (Ambient Acoustics) is summarised in the table below.

Description	Insertion Loss at Octave Band Centre Frequency (Hz) at 1-metre							
	63	125	250	500	1000	2000	4000	8000
Top Only Attenuation Kit	1	3	4	4	5	5	4	4

The approximate height of the plant from the ground is 10 metres on a second-floor flat roof.



Proposed Plant Arrangement Roof Level

8.2 Plant Noise Assessment

The following tables summarise our predictions of atmospheric noise emissions from the proposed plant to the nearest noise sensitive residential windows.

The plant is likely intermittent in nature at source, however, due to existing plant noise levels impacting the receptors it is considered unlikely that this intermittency would be perceptible at the receptors. As such, no acoustic feature correction has been applied to the calculations of plant noise egress.

Assessment to NSR 1 (East Façade)	**Sound Pressure Level (dBA)**
	Daytime (07:00 – 23:00 hours)
SPL at 1 Metre (PURY-350 YNW-A)	64
No. of units (2)	+3
Top Kit Attenuation package	-4
Radiation Correction (to 18m)	-20
BS4142 Acoustic Feature Correction	0
Calculated Noise Level at Receptor	**43**
SPL at 1 Metre (PURY-400YNW-A2)	65
Top Kit Attenuation package	-4
Radiation Correction (to 23m)	-22
BS4142 Acoustic Feature Correction	0
Calculated Noise Level at Receptor	**39**
Calculated Cumulative Noise Level at Receptor	**44**

Assessment to NSR 1 (East Façade)	Sound Pressure Level (dBA)
	Daytime (07:00 – 23:00 hours)
Cumulative Plant Noise Emission Criteria (at 1m from NSR1)	**44**
Difference	**-1**

Assessment to NSR 2 (North Façade)	Sound Pressure Level (dBA)
	Daytime (07:00 – 23:00 hours)
SPL at 1 Metre (PURY-350 YNW-A)	64
No. of units (2)	+3
Top Kit Attenuation package	-4
Radiation Correction (to 42m)	-32
BS4142 Acoustic Feature Correction	0
Calculated Noise Level at Receptor	**31**
SPL at 1 Metre (PURY-400YNW-A2)	65
Top Kit Attenuation package	-4
Radiation Correction (to 43m)	-33
BS4142 Acoustic Feature Correction	0
Calculated Noise Level at Receptor	**28**
Calculated Cumulative Noise Level at Receptor	**33**
Cumulative Plant Noise Emission Criteria (at 1m from NSR2)	**49**
Difference	**-16**

Assessment to NSR 3 (West Façade)	Sound Pressure Level (dBA)
	Daytime (07:00 – 23:00 hours)
SPL at 1 Metre (PURY-350 YNW-A)	64
No. of units (2)	+3
Top Kit Attenuation package	-4
Radiation Correction (to 48m)	-34
BS4142 Acoustic Feature Correction	0
Calculated Noise Level at Receptor	**29**
SPL at 1 Metre (PURY-400YNW-A2)	65
Top Kit Attenuation package	-4
Radiation Correction (to 41m)	-32

Assessment to NSR 3 (West Façade)	Sound Pressure Level (dBA)
	Daytime (07:00 – 23:00 hours)
BS4142 Acoustic Feature Correction	0
Calculated Noise Level at Receptor	**29**
Calculated Cumulative Noise Level at Receptor	**32**
Cumulative Plant Noise Emission Criteria (at 1m from NSR3)	**49**
Difference	**-17**

Our calculations indicate that the proposed plant should be capable of achieving the requirements of the Local Authority outlined in Section 5.2 when viewed in conjunction with the proposed attenuation package.

9.0 Conclusions

An environmental noise survey has been undertaken in order to establish the currently prevailing noise, and based on these levels an assessment has been carried out to determine the plant noise emissions at the nearest noise sensitive window.

Plant noise emission criteria have been recommended based on the results of the noise survey and with reference to the Local Authority's typical requirements.

The assessment indicates that the proposed plant should be capable of achieving the proposed environmental noise criteria at the nearest noise sensitive windows.

Appendix A

The acoustic terms used in this report are defined as follows:

dB — Decibel - Used as a measurement of sound level. Decibels are not an absolute unit of measurement but an expression of ratio between two quantities expressed in logarithmic form. The relationships between Decibel levels do not work in the same way that non-logarithmic (linear) numbers work (e.g. 30dB + 30dB = 33dB, not 60dB).

dBA — The human ear is more susceptible to mid-frequency noise than the high and low frequencies. The 'A'-weighting scale approximates this response and allows sound levels to be expressed as an overall single figure value in dBA. The $_A$ subscript is applied to an acoustical parameter to indicate the stated noise level is A-weighted

It should be noted that levels in dBA do not have a linear relationship to each other; for similar noises, a change in noise level of 10dBA represents a doubling or halving of subjective loudness. A change of 3dBA is just perceptible.

$L_{90,T}$ — L_{90} is the noise level exceeded for 90% of the period *T* (i.e. the quietest 10% of the measurement) and is often used to describe the background noise level.

$L_{eq,T}$ — $L_{eq,T}$ is the equivalent continuous sound pressure level. It is an average of the total sound energy measured over a specified time period, *T*.

L_{max} — L_{max} is the maximum sound pressure level recorded over the period stated. L_{max} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the L_{eq} noise level.

Sound Pressure Level (L_p) is the sound pressure relative to a standard reference pressure of 2×10^{-5} Pa. This level varies for a given source according to a number of factors (including but not limited to: distance from the source; positioning; screening and meteorological effects).

Sound Power Level (SWL or L_w) is the total amount of sound energy inherent in a particular sound source, independent of its environment. It is a logarithmic measure of the sound power in comparison to a specified reference level (usually 10^{-12} W).

Appendix B

Planning Policies, Standards & Guidance

B.1 BS 4142:2014 + A1:2019

When setting plant noise emission criteria reference is commonly made to BS 4142:2014 "*Methods for rating and assessing industrial and commercial sound".*

The procedure contained in BS 4142:2014 provides an assessment of the likely effects of sound on people when comparing the specific noise levels from the source with representative background noise levels. Where the noise contains "a tone, impulse or other characteristic" then various corrections can be added to the specific (source) noise level to obtain the "rating level".

BS 4142 states that: *"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 source exceeds the background sound level and the context in which the sound occurs". An estimation of the impact of the specific noise can be obtained by the difference of the rating noise level and the background noise level and considering the following:*

• *"Typically, the greater this difference, the greater the magnitude of the impact."*

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

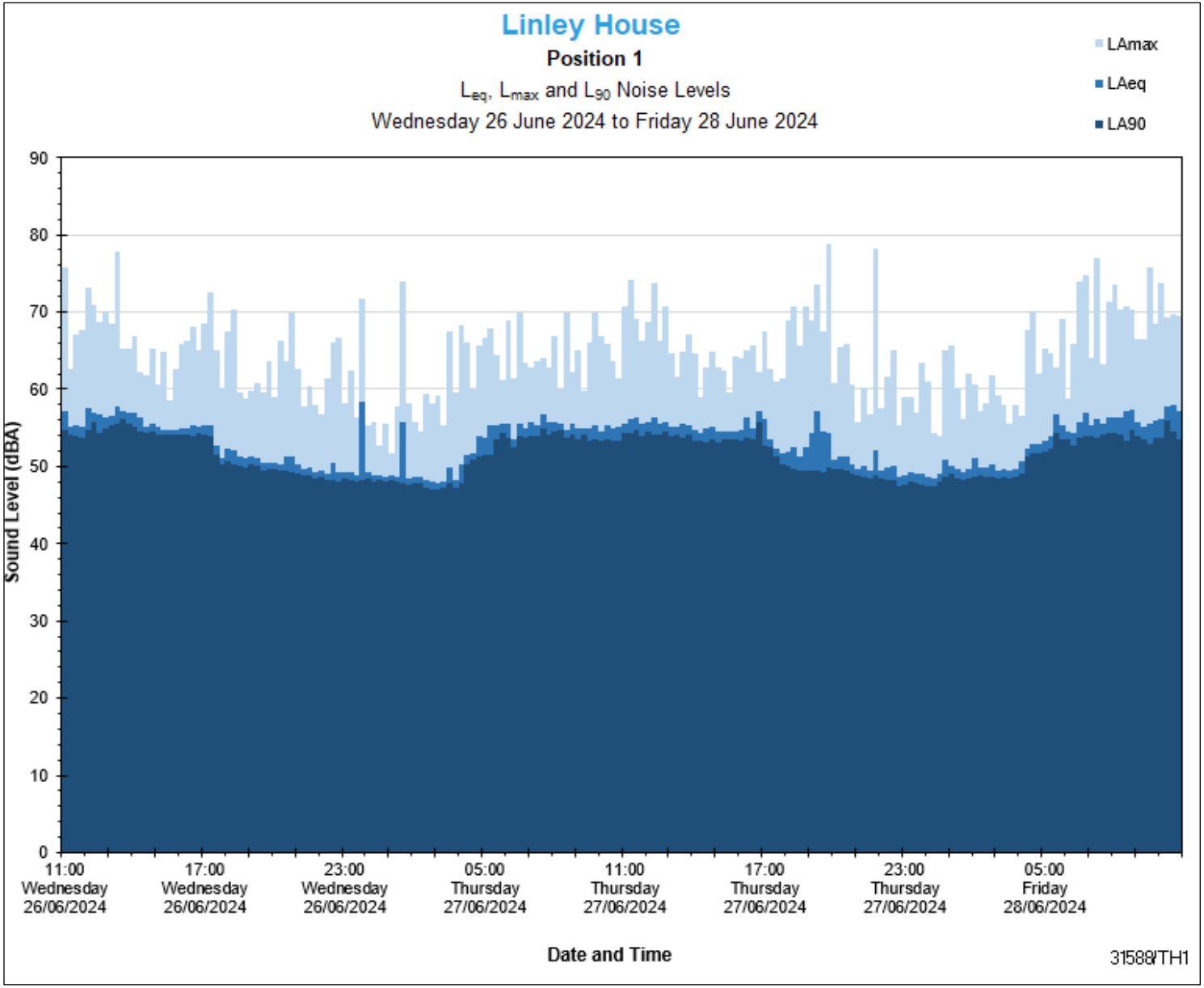
• *"A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context."*

• *"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."*

The determination of the "rating level" and the "background level" are both open to interpretation, depending on the context.

Appendix C

Time History Graph


Linley House
Position 1
L_{eq}, L_{max} and L_{90} Noise Levels
Wednesday 26 June 2024 to Friday 28 June 2024
LAmax
LAeq
LA90
Sound Level (dBA)
90
80
70
60
50
40
30
20
10
0
11:00 Wednesday 26/06/2024
17:00 Wednesday 26/06/2024
23:00 Wednesday 26/06/2024
05:00 Thursday 27/06/2024
11:00 Thursday 27/06/2024
17:00 Thursday 27/06/2024
23:00 Thursday 27/06/2024
05:00 Friday 28/06/2024
Date and Time
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