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**11 WINDERMERE ROAD, HARINGEY
N10 2RD**

**ENVIRONMENTAL SOUND SURVEY REPORT
PLANT NOISE ASSESSMENT – Rev B**

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1.0 Introduction

- 1.1 An environmental sound level survey has been undertaken to determine the prevailing ambient and background sound levels in proximity of the nearest sensitive noise receiver to 11 Windermere Road, Haringey, London, N10 2RD. The background sound levels have been used to establish noise emission criteria for the proposed building services plant in accordance with local authority requirements.
- 1.2 The local authority is the London Borough of Haringey.
- 1.3 See Appendix 4 for glossary of terms.

2.0 Site Description

- 2.1 The installation of two new Air Source Heat Pumps (ASHPs) is proposed to the rear of 11 Windermere Road. The property is bound by Windermere Road to the east.
- 2.2 The nearest noise sensitive receiver has been identified as 13 Windermere Road directly to the north.
- 2.3 See Appendix 1 for a site plan, measurement location.

3.0 Site Sound Survey

- 3.1 Instrumentation: NTi XL2 Class 1 sound level meter (serial no. A2A-23224-E1). The instrument was powered by an external battery and stored in a weatherproof case. The instrument has a current certificate of calibration (certificate can be issued upon request) and was checked for correct calibration at site prior and subsequent to use with a Larson Davis (serial no. 2030) calibrator whereupon no calibration drift was recorded.
- 3.2 Location: The sound level meter was located at ground level to the rear of the property. The microphone was located on a tripod giving a measurement position approximately 1.5m above ground level. Refer to Appendix 1 for the site plan and sound monitoring location.
- 3.3 Period: Sound level monitoring was continuous from approximately 11:15 hrs on Thursday 16th April to 10:45 hrs on Tuesday 21st April 2026. The sound level meter was configured to monitor sound levels continuously in fifteen-minute intervals.
- 3.4 Weather: The prevailing weather conditions over the survey period were dry and mild. Wind speed, although not recorded, was considered to be equal to or less than 5 m/s throughout the survey period, based upon observed conditions at the time of deployment and collection of the equipment.
- 3.5 Site Sound Characteristics: The ambient sound levels at the site were characterised primarily by vehicle movements and pedestrian activity on the surrounding roads. Occasional construction works were also noted in the vicinity during the survey period, contributing intermittently to the acoustic environment. It is considered that no unusual events occurred during the survey period, and the data include a fair representation of the sound levels in the area.

3.6 Surveyor: Olivia Donnelly Tech(IOA)

3.7 Results: The results of the measurements are summarised below in Table 1, showing the recorded values of background (L_{A90} dB). The results are shown in Appendix 2 in graph form. These are considered free field sound levels.

Table 1: Typical Background Sound Measurement Results $L_{A90,T}$ dB

Measurement Location	Daytime L_{A90} (15min) (07:00-23:00)	Night-time L_{A90} (15min) (23:00-07:00)
11 Windermere Road property – rear garden	38 dB	31 dB

4.0 Environmental Noise Level Criteria

4.1 Local Authority Criteria

4.1.1 The site falls into the jurisdiction of the London Borough of Haringey. The relevant planning policies for this project have been set out in Haringey Unitary Development Plan: July 2006. ENV6: Noise Pollution, section 3.21, on page 61 sets the conditions for new plant and is reproduced below:

4.1.2 *“In assessing planning applications, the Council will have regard to PPG24 ‘Planning and Noise’ (Annex 1), and the Mayor of London’s Ambient Noise Strategy and the prevention of a gradual upward creep of background noise levels. Potentially noisy developments should only be located in areas where ambient noise levels are already high. In cases where separation is not possible, the impact of noisy development on ambient noise levels should be assessed for example by an Environmental Assessment, the application of Best Available Techniques and relevant technology and design guidance. Where new noise-sensitive development is proposed in areas already exposed to high ambient noise levels, the Council may require the submission of an acoustic report to comply with PPG 24. Mitigation measure will be secured by planning conditions or planning obligations where appropriate. The issue of measures to control noise from restaurants, cafes, drinking establishments and hot food takeaways is addressed in Policy TCR5.”*

4.1.3 In the absence of explicit noise impact criteria in the Unitary Development Plan, the environmental noise assessment will follow the methodology set out in BS 4142:2014+A1:2019.

4.1.4 British Standard BS 4142:2014+A1:2019 sets out a method for assessing the likely impact of sound from industrial and commercial sources on existing receptors. The standard describes how to determine the specific sound level of the source and then apply corrections (penalties) for certain acoustic characteristics such as tonality, impulsivity, and intermittency, if these features make the sound more noticeable than the residual background. Where these features are present:

- A correction of +2 dB to +6 dB may be added, depending on how perceptible the feature is at the receptor. For example, if tonality is just perceptible, a correction of +2 dB is applied; if it is clearly perceptible, up to +6 dB may be added
- If no such features are present, the *rating level* is equal to the specific sound level

4.1.5 An initial assessment of the likely impact is made by comparing the rating level with the measured background sound level ($L_{A90,T}$). The impact is interpreted in accordance with section 11 of the standard, as follows:

- A difference of around +10 dB or more is likely to be an indication that complaints may be expected
- A difference of around +5 dB is likely to be of marginal significance
- Where the rating level does not exceed the background sound level, this is an indication that the specific sound source is likely to have a low impact

4.1.6 On this basis, an appropriate criterion would be for the proposed plant to operate such that the rating level at the nearest noise sensitive receiver is no less than 5 dB below the prevailing typical background sound level. It is understood this approach has previously been accepted by the local authority for other developments.

4.2 Plant Noise Limits

4.2.1 To meet the requirements outlined in Section 4.1 above, appropriate criteria are as follows:

Table 2: Plant Noise Limiting Criteria

Location	Maximum Plant Noise Rating Level	
	Daytime (07:00 to 23:00)	Nighttime (23:00 to 07:00)
13 Windermere Road	33 dB L _{Ar,Tr}	26 dB L _{Ar,Tr}

5.0 Proposed Plant Details

5.1 Details of the proposed mechanical services plant including plant sound data and layout were provided by Atmospheres (mechanical services consultant) and Philip Gooby Architecture Ltd., presented in Appendix 3.

5.2 A summary of the plant item and the manufacturer's published sound data is set out in the table below. 2 no. Mitsubishi ASHPs are to be installed at the rear of the property. It has been established for the purpose of this assessment that the unit will be operating at heating mode.

Table 3: Proposed Plant Sound Level Data

Plant Item and Reference	Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
	Sound Pressure Levels at 1m re 2x10 ⁻⁵ Pa per single unit								
Mitsubishi PUZ-WM85VAA Air Source Heat Pump									
Heating Mode	48	48	49	44	36	34	27	20	45

6.0 Plant Noise Assessment

- 6.1. Plant noise calculations have been undertaken to determine sound levels arising from the proposed mechanical plant when calculated to the nearest noise sensitive receiver. The calculations use the sound data provided from the manufacturer with corrections for distance losses, building screening and facade reflections.
- 6.2 It is understood that the proposed plant may operate during the night-time period from 23:00 to 07:00 hrs. Therefore, the plant assessment has been undertaken with regard to the night-time background sound level established in Table 2 as this is considered the worst-case scenario in the context of future plant operation.
- 6.3 The following table sets out the calculated noise level of the proposed mechanical services plant, and the total cumulative noise level calculated at the façade of the nearest noise sensitive receiver identified as 13 Windermere Road.

Table 4: BS 4142 Assessment to 13 Windermere Road, Night-Time

Description	A-weighted Calculation Summary (dBA)
PUZ-WM85VAA Pressure Level at 1m, L_p Heating Mode	45
Correction for 2 no. units	+3
Distance Attenuation, $20 \cdot \log(r_2 / r_1)$ where $r_1 = 1\text{m}$, $r_2 = 5\text{m}$	-14
Local sound reflections (ground + side wall)	+6
Facade Reflection at Receiver	+3
Specific Level at Receiver L_p	43
Acoustic feature correction ¹	+2
Rating Level at Receiver, $L_{r,Tr}$	45
Typical daytime background sound level L_{F90}	38
Excess Rating above daytime background sound level	+7
Typical night-time background sound level L_{F90}	31
Excess Rating above night-time background sound level	+14

- 6.4 Calculations indicate that noise arising from the operation of the proposed plant 1m from the nearest sensitive receiver is approximately 45 dB $L_{Ar,Tr}$, which is 7 dBA above the typical daytime background sound level and 14 dBA above the typical night-time background sound level. Attenuation measures will therefore be necessary.
- 6.5 Mitigation measures must be applied to the proposed plant by way of an acoustic enclosure. To satisfy the worst-case adopted criterion of a rating level of 5 dBA below the prevailing background sound level during the night-time period, the acoustic enclosure will require an attenuation package that can reduce noise levels by at least 19 dBA. Such levels of attenuation should be achievable with a proprietary product supplied by a specialist manufacturer.

¹ +2dB acoustic feature correction to account for a tone that is just perceptible at the nearest noise sensitive receptor as per Section 9 of BS 4142

- 6.6 The below table sets out the assessment summary following the acoustic enclosure insertion loss performance set out in Sections 6.5.

Table 5: BS 4142 Assessment to 13 Windermere Road (with enclosure), Night-Time

Description	A-weighted Calculation Summary (dBA)
PUZ-WM85VAA Pressure Level at 1m, L_p Heating Mode	45
Correction for 2 no. units	+3
Distance Attenuation, $20 \cdot \log(r_2 / r_1)$ where $r_1 = 1\text{m}$, $r_2 = 5\text{m}$	-14
Enclosure attenuation	-19
Local sound reflections	+6
Facade Reflection at Receiver	+3
Specific Level at 13 Windermere Road L_p	24
Acoustic feature correction ²	+2
Rating Level at Receiver, $L_{r,Tr}$	26
Typical night-time background sound level L_{F90}	31
Excess Rating above night-time background sound level	-5

- 6.7 It can be seen that the calculated plant rating level with the inclusion of a proprietary acoustic enclosure is 26 dB $L_{Ar,Tr}$. This complies with the adopted night-time criterion as set out in Table 2.

7.0 Conclusion

- 7.1 An environmental sound survey has been undertaken at the rear of 11 Windermere Road, N10 2RD, to establish the prevailing levels of background sound with respect of the nearest noise sensitive receiver. Measured sound levels have been used to determine appropriate plant noise level limits in accordance with the Local Authority's planning policy.
- 7.2 Calculations have been performed to determine sound levels likely to arise at the nearest noise sensitive property from the operation of the proposed plant.
- 7.3 Calculations show that with the implementation of an appropriately specified proprietary acoustic enclosure, sound arising from the proposed plant - when assessed in accordance with BS 4142:2014+A1:2019 - is expected to satisfy local authority planning policy.
- 7.4 It is anticipated that any planning permission would be subject to standard conditions requiring the detailed design and specification of building services plant and associated mitigation measures to be demonstrated as compliant with the London Borough of Haringey's noise criteria. On this basis, the scheme is considered capable of achieving the relevant acoustic requirements, subject to detailed design development.

Appendix 1: Noise Sensitive Receiver and Proposed Plant Location

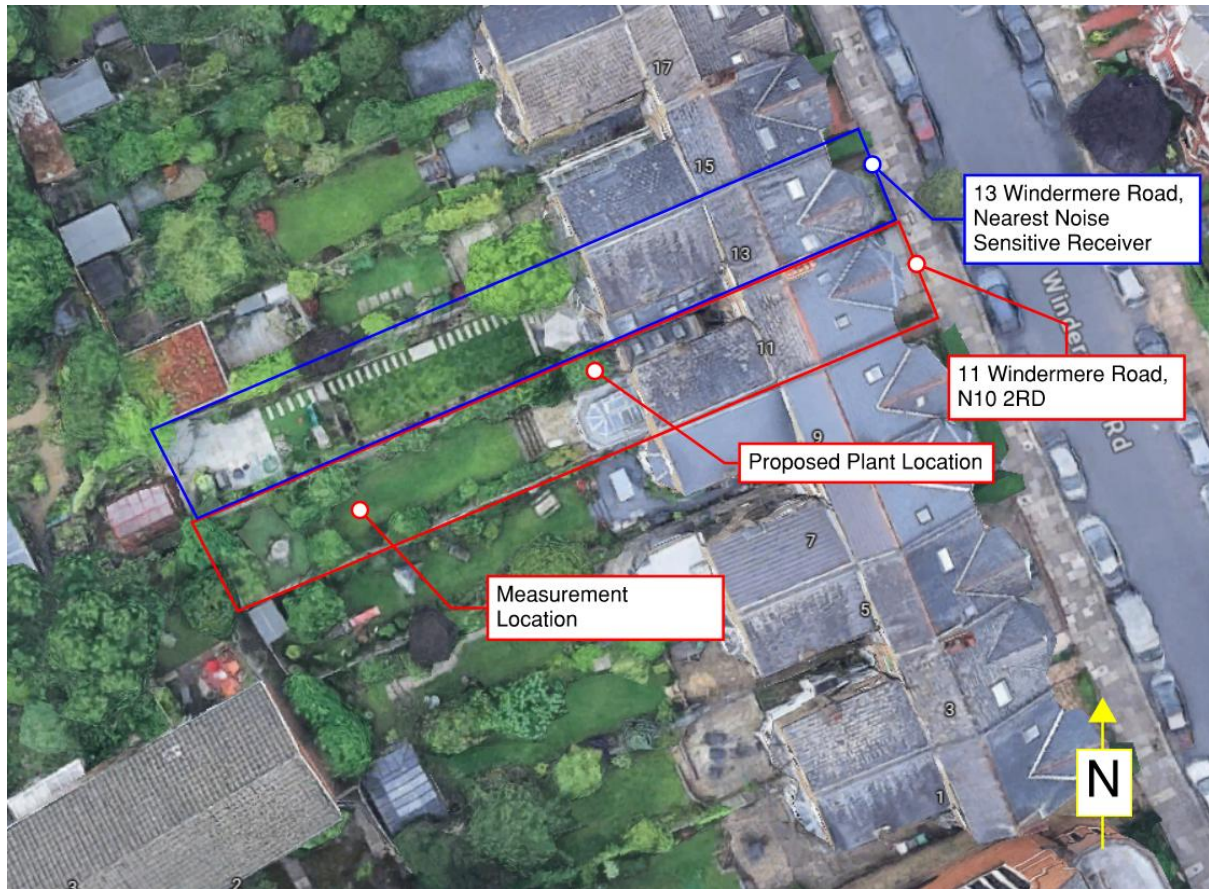
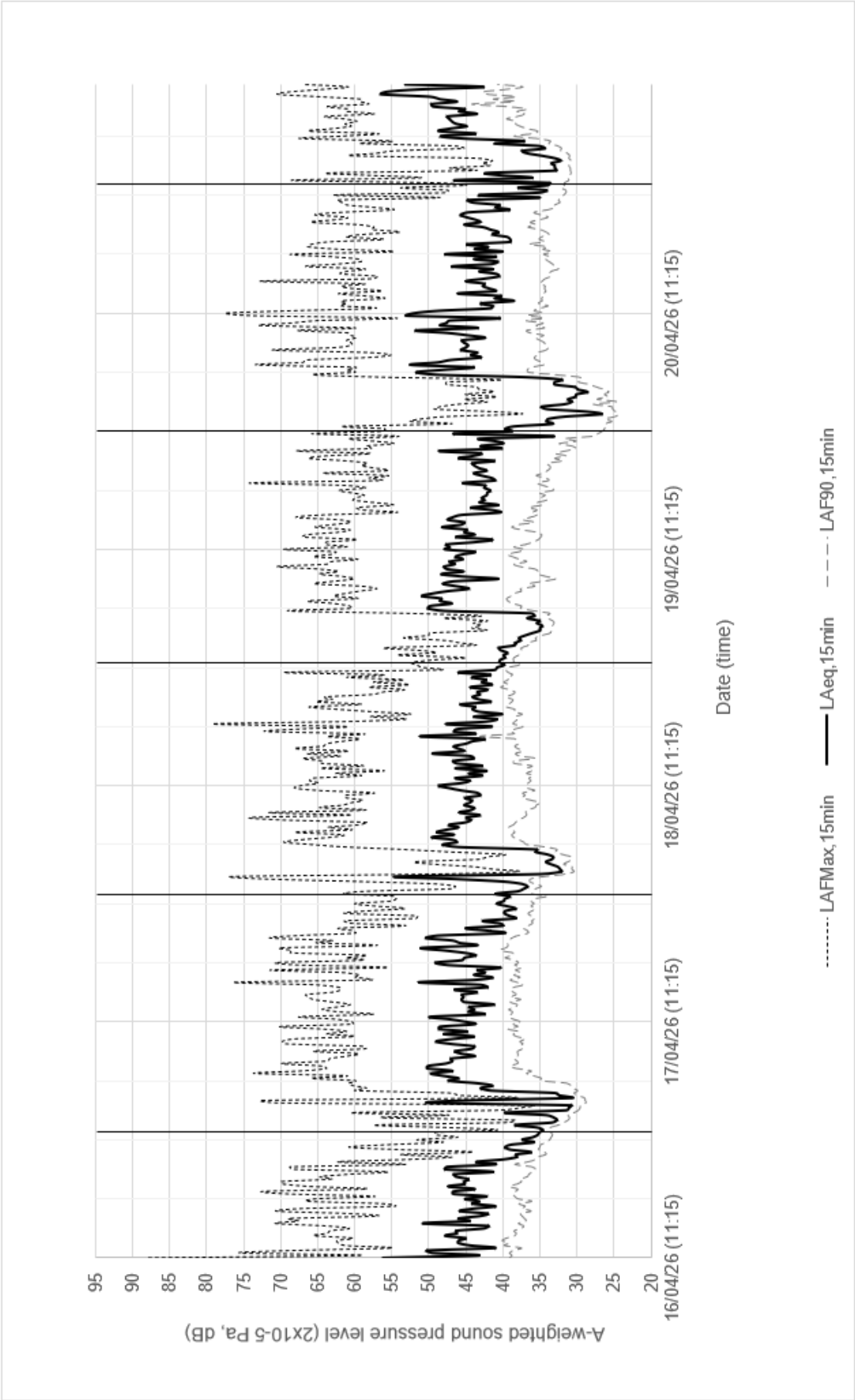
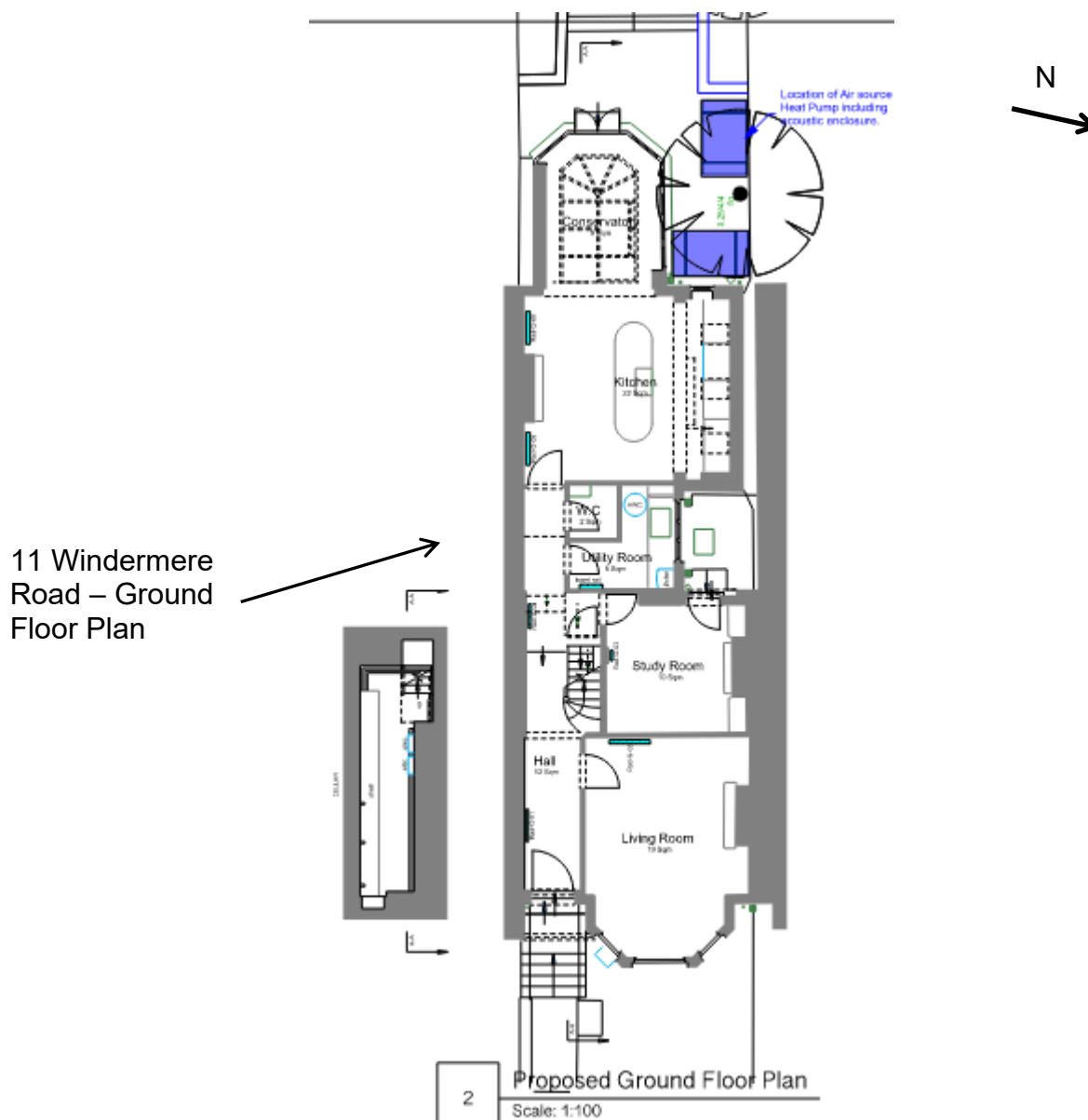


Image from Google Earth

Appendix 2: Survey Results



Appendix 3: Architectural Drawing of Plant Location



Appendix 4: Glossary of Acoustic Terms

Term	Description	Explanation
	Noise	Unwanted sound. In the explanation given below the words 'sound' and 'noise' can often be used interchangeably, depending on context.
dB	The decibel scale	The decibel (or dB) scale is the scale on which sound pressure levels are commonly measured. It is a logarithmic scale and is used for convenience to compress the audible range of sound pressures into a manageable range, from 0 dB to 140 dB. The zero of the scale, 0 dB, corresponds to the threshold of hearing, 0.00002 Pa, and the upper limit, 140 dB, corresponds to 20 Pa, the threshold of pain.
	Sound pressure	Sound is a disturbance or fluctuation in air pressure, and sound pressure, measured in pascals (Pa), is used as a measure of the magnitude of the sound. The human ear can detect sound pressures in the range from 0.00002 Pa to 20 Pa. This is an enormously wide range and so for convenience sound pressures are commonly measured on a decibel (dB) scale.
L _p	Sound pressure level	Instantaneous value of Sound Pressure Level (L _p).
	Sound power	The sound energy radiated per unit time by a sound source, measured in watts (W)
L _w	Sound power level	Sound power measured on a decibel scale: $L_w = 10\log(W/W_0)$, where W_0 is the reference value of sound power, 10^{-12} W.
f	Frequency	The frequency of a musical note is what gives it its pitch. It is the number of cycles of the fluctuating sound pressure which occur each second, and is measured in cycles per second, or Hertz (Hz). The human ear can detect frequencies in the range 20 to 20 000 Hz. Most sounds and noises are a mixture of all frequencies, called broad-band noise.
	Octave bands Octave band spectra	In order to investigate the frequency content of broad band sounds, called its frequency spectrum, measurements of sound pressure are carried out over a range of frequency bands. The most common method is to split the audio frequency range into 8 or 9 octave bands. An octave is a frequency range from one particular frequency to double that frequency.
	Free field	A free field sound level measurement is one which is unaffected by the presence of any sound reflecting surfaces. In an outdoor situation this is usually taken to mean with no sound reflecting surfaces within 3 m. of the source.
	Facade correction Factor	The difference between the façade level and the free field level (in the absence of the façade) is called the façade correction factor.
A	A-weighting	One of the three frequency weightings (A, C and Z) used in sound level meters, and defined in BS EN ISO 61672-1; a very widely used method of producing a single figure measure of a broad band noise which takes into account, in an approximate way at least, the frequency response of the human hearing system. The idea is that sound levels measured in this way should give an indication of the loudness of the sound.
Z	Z-weighting	One of the frequency weightings defined in BS EN ISO 61672-1; 'Z' stands for zero and the Z weighting corresponds to a 0 dB weighting at all frequencies. Previously known as 'linear'.
f	Time weighting, fast	An averaging time used in sound level meters, and defined in BS EN ISO 61672-1.
s	Time weighting, slow	An averaging time used in sound level meters, and defined in BS EN ISO 61672-1.
L _A (dBA)	A- weighted sound pressure level	The value of the sound pressure level, in decibels, measured using an A-weighting electronic circuit built into the sound level meter. The vast majority of noise measurements are carried out in this way.

Term	Description	Explanation
$L_{Aeq,T}$	Equivalent continuous sound level	It represents a measure of the 'average' sound level over the measurement period. It corresponds to the steady level of sound which, over the same period of time, T, would contain the same amount of (A-weighted) sound energy as the time varying noise. Also known as the Average sound level. This is the most common method of measuring time varying noise, and within certain limits gives the best correlation with human response to noise, for example with annoyance.
$L_{AN,T}$	Statistical percentile noise levels	$L_{AN,T}$ is the noise level, usually A-weighted, which is exceeded for N% of the measurement period, T. The most commonly used values are $L_{A10,T}$ used for the measurement and assessment of traffic noise, and $L_{A90,T}$, commonly used as a measure of background noise. $L_{A1,T}$ and $L_{A99,T}$ are also occasionally used to give an indication of the highest and lowest noise levels occurring during the measurement time interval.
	Background noise	Ambient noise which remains at a given site when occasional and transient bursts of higher level ambient noise levels have subsided to typically low levels; it is the noise normally present for most of the time at a given site. It is usually described by the L_{A90} value.
$L_{A90,T}$	Background noise level	Defined in BS 4142 as the value of the A-weighted residual noise at the assessment position that is exceeded for 90 % of a given time interval, T, (i.e. $L_{A90,T}$) measured using time weighting, F, and quoted to the nearest whole number of decibels. (Also see under residual noise). Background noise itself often varies with time and so the $L_{A90,T}$ is almost universally used as the best measure of the 'more or less always present' noise level which underlies short term variations from other sources of noise.
	Specific Noise Source	The noise source under consideration when assessing the likelihood of adverse impact using BS4142:2014.
	Specific Noise Level	The value of $L_{Aeq,T}$ at the assessment position produced by the specific noise source, ref. BS4142:2014.
$L_{ar,Tr}$	Rating Level	The specific noise level, corrected to account for any characteristic features of the noise, by adding a rating penalty for any tonal, impulsive or irregular qualities, ref. BS4142:2014.
T_r	Reference time interval	Specified interval over which the specific sound level is determined, ref. BS4142:2014.
	Residual Sound	Ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound, ref. BS4142:2014.
$L_r = L_{Aeq,T}$	Residual Sound Level	Equivalent continuous A-weighted sound pressure level of the residual sound at the assessment location over a given time interval, T, ref. BS4142:2014.

DOCUMENT CONTROL SHEET

Issue	Date	Reason	Issued By	Approved By
-	08/05/2026	First Issue	DD	PW
A	11/05/2026	Update of plant location plan	DD	PW
B	13/05/26	Further update of plant location, now including ASHP enclosures	DD	PW