WAVE DYNAMICS

ACOUSTICS MONITORING ENVIRONMENTAL

64 Sheldon Avenue, London

Acoustic Report

09 July 2026

WDA250710RP_B_01

www.wdacoustics.com

Notice

This document is intended only for the use of AS Studio. The information and document are specifically for 64 Sheldon Avenue, London, London, N6 4ND and should not be reproduced, edited or copied in any form without the permission of Wave Dynamics. This document relates to the acoustic design elements of the project which Wave Dynamics were engaged on, it does not consider any of the other engineering services on the project including but not limited to fire, structural, mechanical and electrical design. Wave Dynamics assumes no responsibility to any other party arising in connection with this document and its contents.

Document Information

Project Name:	64 Sheldon Avenue, London
Address:	London, N6 4ND
Project Number	WDA250710
Report Title	Acoustic Report
Client	AS Studio

Document History

Revision	Status	Description	Author	Reviewer	Issue Date
B	Issued	Acoustic Report	Aidan Tolkien MIOA	James Mangan MIOA	09/07/2026

London Office

Wave Dynamics

20 Wenlock Road,

London,

N1 7GU

Belfast Office

Wave Dynamics

3rd Floor,

Arnott House,

12- 16 Bridge Street,

Belfast, BT1 1LU

Dublin Office

Wave Dynamics

Unit 302 Nesta Business Centre,

Old Airport Road,

Santry, Dublin 9

D09 HP96

Phone (UK): +44 020 8157 2967

Phone (Bel): +44 (0)28 9620 5570

Phone (IRL): +353 (0)1 912 507

Email: info@wdacoustics.com

Web: www.wdacoustics.com

Executive Summary

Wave Dynamics were engaged by AS Studio as the acoustic consultants to provide an acoustic assessment for the proposed installation of 6no. new ASHPs to the rear of 64 Sheldon Avenue, a standalone house located in North London.

Noise Impact Assessment

In line with the anticipated requirements of Haringey Council, noise from these units has been assessed in accordance with BS4142 2014 A1+ 2019. A baseline noise survey was undertaken to measure the existing background noise levels. With the inclusion of 1no. proposed acoustic enclosure to ASHP unit C5, the resulting BS4142 assessment predicted that there is **no adverse impact** at NSL1 (worst-case). As resulting noise levels are lower at NSL2, this means there is also no adverse impact at this receptor.

Given that absolute background noise levels at night-time are very low at the site, it is proposed that achievement of a 'no adverse impact' outcome from the BS4142 assessment and very low absolute resulting noise levels (≤23dB $L_{Aeq,15min}$) at the receptors, that proposals should be considered acoustically acceptable on the grounds of noise.

Table of Contents

1 Introduction 4
1.1 Statement of Competence 4
2 Site Description 5
3 Project Criteria 8
3.1 Haringey Council 8
3.2 Noise Assessment Criteria 8
4 Noise Measurements 10
4.1 Baseline Noise Survey 10
4.1.1 Survey Details 10
4.1.2 Noise Measurement Equipment 11
4.1.3 Subjective Noise Environment 11
4.2 Unattended Noise Measurement Results 12
4.2.1 Discussion of Measurement Results 13
5 Noise Impact Assessment 14
5.1 Proposed Plant & Noise Levels 14
5.2 Proposed Acoustic Mitigation 14
5.3 Calculation 15
5.4 Noise Impact (BS 4142 Assessment) 15
5.5 Discussion of Haringey Requirement 16
5.6 External Amenity Areas 16
6 Conclusion 17

1 Introduction

Wave Dynamics were engaged by AS Studio as the acoustic consultants to provide an acoustic assessment for the proposed installation of 6no. new ASHPs to the rear of 64 Sheldon Avenue, a standalone house located in North London.

In line with the anticipated requirements of Haringey Council, noise from these units has been assessed in accordance with BS4142 2014 A1+ 2019. A baseline noise survey was undertaken to measure the existing background noise levels. This report outlines the project criteria, baseline survey results, assessment, and recommendations for:

- Operational noise impact from the proposed ASHPs.

Appendix A outlines a glossary of the acoustic terminology used in this report.

1.1 Statement of Competence

This report was completed by Wave Dynamics, an acoustic consultancy that specialises in noise and vibration. Our consultants have completed numerous similar projects in the Ireland the UK and Europe.

This report was completed by Joe Potter | Technical Engineer with Wave Dynamics who has experience in noise measurement surveys and assessments across a wide range of sectors including environmental, residential and commercial projects. Joe has an MA in Music Technology and has competed the Institute of Acoustics PGDip in Acoustics and Noise Control and is a student member of the Institute of Acoustics.

This report was peer reviewed by James Stokes, Director | Principal Acoustic Consultant. James has extensive experience in undertaking Planning-stage operational noise impact assessments. His qualifications include; MPhys (Hons) in Physics with a Study in Europe. James is a member of the Institute of Acoustics (MIOA).

2 Site Description

The site is located at 64 Sheldon Avenue in North London. The area is predominantly residential with a large allotment (Highgate Allotment) located directly to the east of site. The local noise climate is generally quiet and dominated by distant road traffic.

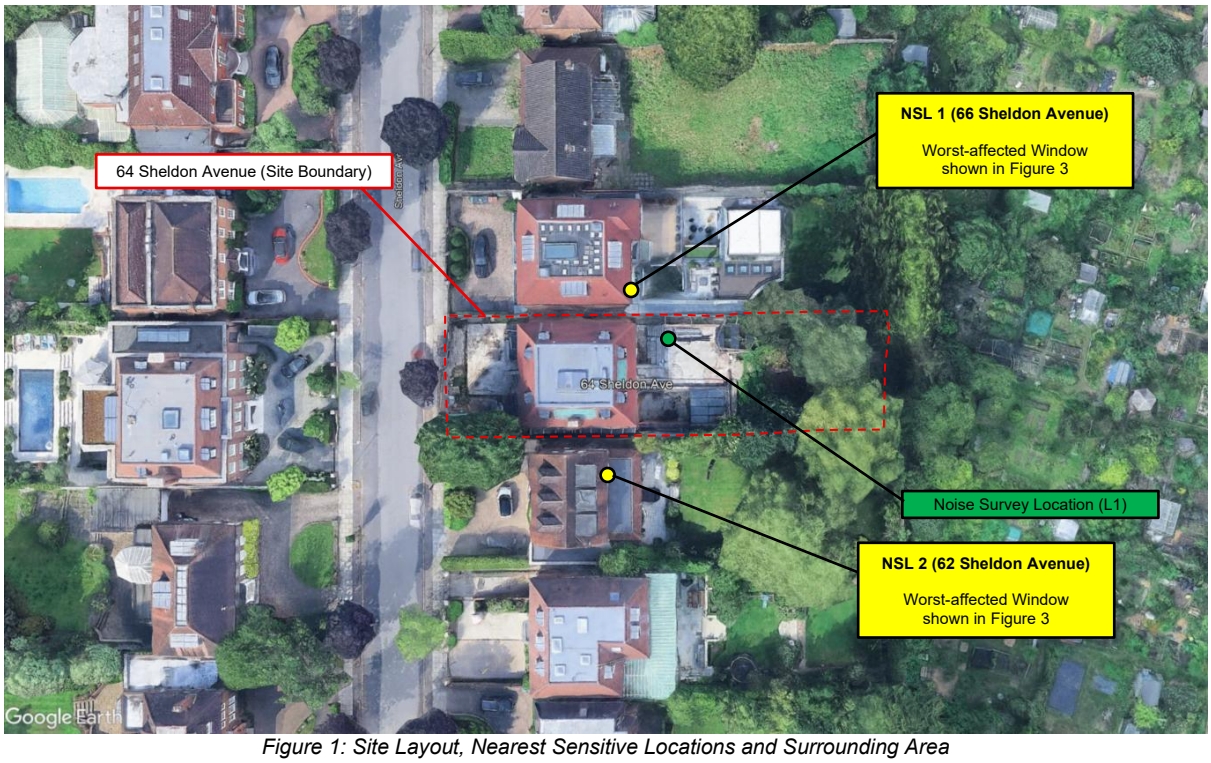

Figure 1: Site Layout, Nearest Sensitive Locations and Surrounding Area

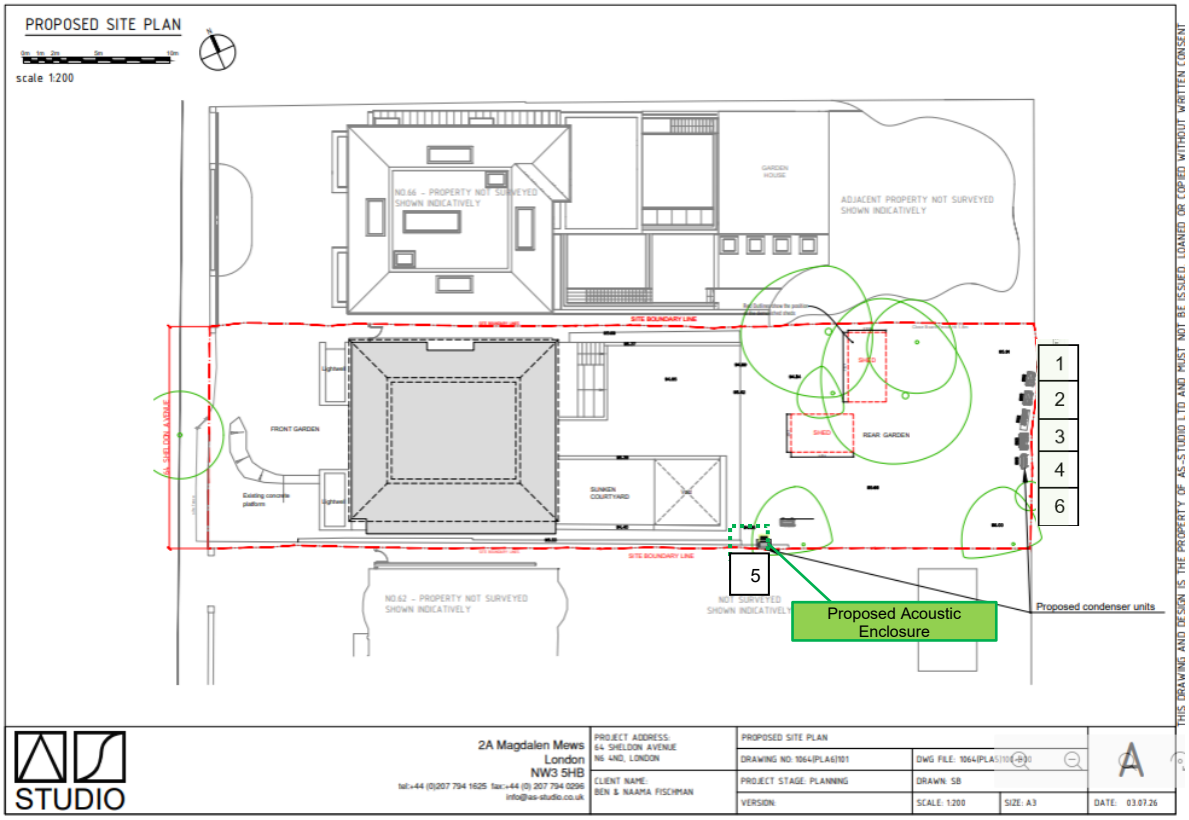

Figure 2: Site location and Proposed Plant Locations

Photos of the nearest receptor windows of the adjacent houses NSL1 and NSL2 are shown in Figure 3:

Figure 3: Photos of Nearest Receptor Windows

Photos of the existing garden fence are shown below in Figure 4, and are relevant to the assessment in terms of acoustic screening. The fences are dense, close-boarded timber fences up to a height of 1.5m. Our assessment has assumed a surface density of approx. 8kg/m^2 for these fences.

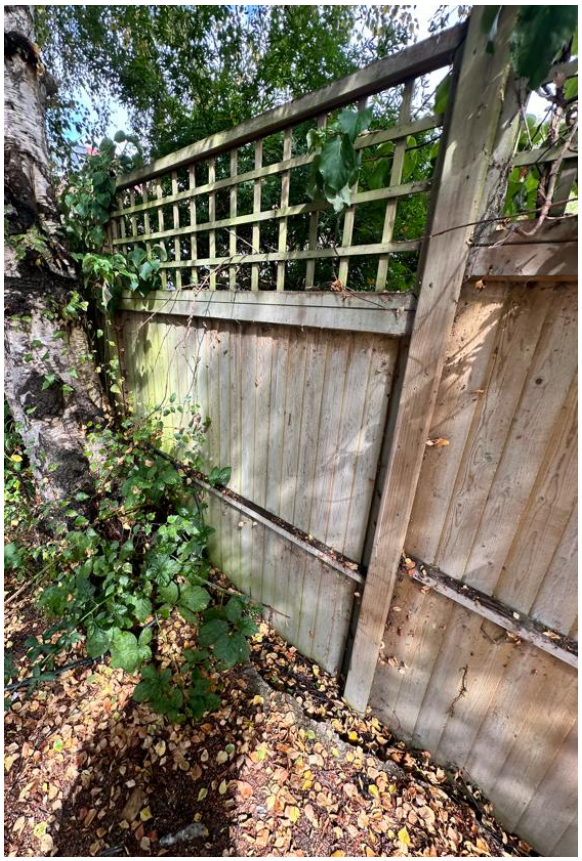

Figure 4: Photo of existing garden fence

3 Project Criteria

Acoustic Standards

The acoustic standards for assessing noise impact for the project have been developed from the following:

- ✓ Haringey Council anticipated plant noise requirements
- ✓ BS4142 2014 A1+ 2019 – Methods for rating and assessing industrial and commercial sound
- ✓ ISO 1996-1:2016 Acoustics — Description, measurement and assessment of environmental noise — Part 1: Basic quantities and assessment procedures
- ✓ Previous experience on similar projects

3.1 Haringey Council

It is anticipated that Haringey Council will require the following (as taken from the Planning Conditions of a previous Haringey scheme) :

> "*The design and installation of new items of fixed plant shall be such that, when in operation, the cumulative noise level LAeq arising from the proposed plant, measured or predicted at 1m from the facade of any residential premises shall be a rating level of at least 5dB(A) below the background noise level LAF90. The measurement and/or prediction of the noise should be carried out in accordance with the methodology contained within BS 4142: 2014."*

3.2 Noise Assessment Criteria

BS 4142:2014+A1:2019

The standard describes a method for the assessment of commercial, industrial and background noise to quantify its impact on persons outside of a residential dwelling. BS 4142 has become the de facto standard for compliance investigation. In addition to the specified broadband noise levels the standards provide objective and subjective methods for the assessment of the impulsivity and tonality of the noise sources. This allows for a penalty/ correction to be applied to the measured noise level of the source (L_{Aeq}) to give the rating level ($L_{Ar,T}$). BS 4142 provides a methodology for conducting an initial assessment of impact, based upon an exceedance of the background sound by the noise source, and comments that:

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

Adverse impacts include, but are not limited to, annoyance and sleep disturbance.

BS4142 also requires the consideration of "context" and comments that:

> *"An effective assessment cannot be conducted without an understanding of the reason(s) for the assessment and the context in which the sound occurs/will occur. When making assessments and arriving at decisions, therefore, it is essential to place the sound in context"*

External Amenity Space Noise Levels

BS4142 states that its scope is for assessing impacts at "*residential dwellings or other noise-sensitive buildings and premises*" and does not specify any noise limits in external amenity areas.

However, to demonstrate a robust, proactive approach this assessment, noise levels have also been assessed to the amenity spaces of the adjacent gardens. This is further justified by the fact that both adjacent properties have large garden terraces.

The following guidance on noise levels in external amenity spaces is given in BS8233:

> *"the acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed, and noise levels should ideally not be above the range 50 – 55 dB LAeq,16hr".*

The above criteria relate to anonymous noise (e.g.: road traffic), however such levels are commonly considered a suitable benchmark to target when assessing noise in external amenity areas.

4 Noise Measurements

4.1 Baseline Noise Survey

This section outlines the results of the survey, the measurement procedure and the equipment used.

An attended noise survey was conducted to measure the background noise levels at the site, representative of background levels at the worst-affected windows of both of the receptors (NSL1 and NSL2).

4.1.1 Survey Details

Details of the noise survey are provided below in Table 1:

Table 1: Survey Details

Personnel	
Survey Completed by	James Stokes (Principal Acoustic Consultant)
Unattended Survey Period	
Start	Wednesday 27th August 2025 (11:45hrs)
Finish	Friday 29th August 2025 (10:30hrs)
Survey Measurement Position	
Position L1 (Unattended)	The logger was positioned in the rear garden on top of a rear terrace at a height of 1.5m from ground level. Photos of the installed meter are shown in Figure 5 and the location in shown on a site plan in Figure 1.
Weather Conditions	
Survey conditions were generally suitable for acoustic measurement with wind speeds <5m/s. However heavy rain was noted on the morning of Friday 29th August from 05:00 onwards with noise levels notably higher during this period. As such, noise levels from this period have been excluded from our analyses, as marked in Figure 6.	

Photo of the installed logger at location L1 are shown below in Figure 5:

Figure 5: Photo of Installed Logger at L1

4.1.2 Noise Measurement Equipment

A Class 1 sound level meter/noise logger in general accordance with IEC 61672-1:2013 was used for the attended measurements. Table 2 below summarises the measurement equipment used.

Table 2: Noise Measurement Equipment

Description	WD Asset Number	Model	Serial No.	Calibration Certificate No.	Calibration Due Date
Sound Level Meter	SLM7	Nor 140	1405924	U48184/ U47386	25/07/2026
Calibrator	CAL5	Nor 1251	33491	UCRT25/1993	03/07/2026
Weather Enclosure (Mic in enclosure)	WE1	Nor1211	14155	48186	25/06/2026

The noise logger was calibrated before and after the survey and no significant drift was noted.

4.1.3 Subjective Noise Environment

While on site deploying/collecting the equipment, the noise climate was noted to be generally quiet and was dominated by distant road traffic.

4.2 Unattended Noise Measurement Results

Results of the unattended noise survey measurements at location L1 are shown below in Figure 6 and Table *3*.

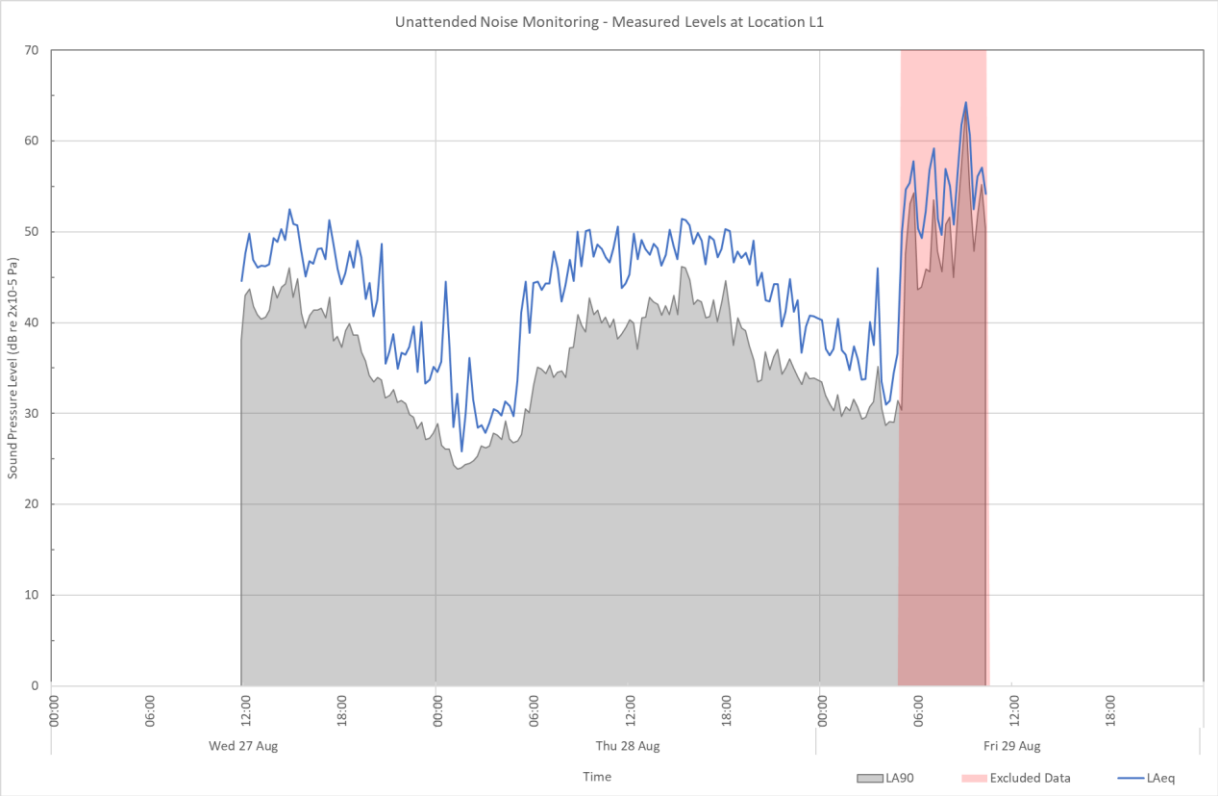

Figure 6: Unattended Survey Noise Levels

Table 3: Noise levels measured at Logger Position L1

Start Date	Equivalent Continuous Noise Level $L_{Aeq,T}$ (dB)		Background Noise Level [3] $L_{A90,T}$ (dB)	
	Day (T=16hr) 07:00-23:00	**Night (T=8hr)** 23:00-07:00	**Day (T=60min)** 07:00-23:00	**Night (T=15min)** 23:00-07:00
Wed 27/08/2025	47 [1]	39	30	24
Thu 28/08/2025	48	39	35	29
Fri 29/08/2025	Excluded due to Heavy Rain			

1) Shortened measurement duration.
2) Where night-time period is referred to the date is the date the measurement commenced at 23:00hrs and finished at 07:00hrs on the following calendar day.
3) The lowest measured $L_{A90,T}$ for period, where daytime (07:00-23:00) has a reference period T=60min and night-time (23:00-07:00) has a reference period T=15min L_{AF90}

4.2.1 Discussion of Measurement Results

For the purpose of our BS4142 assessment, background noise measurements will be used. To demonstrate a robust approach to controlling noise emissions, the lowest background noise levels measured will be used. Background levels were quieter for both the daytime and nighttime on Wednesday 27th August 2025.

5 Noise Impact Assessment

5.1 Proposed Plant & Noise Levels

The following 6no. ASHPs are proposed in the rear garden of 64 Sheldon Avenue, with locations shown in Figure 2. 5no. units are proposed to be installed behind the guesthouse at the boundary to the rear of the garden adjoining the allotments to the east of the garden; the guesthouse will provide significant acoustic screening from these units to the nearest receptors. Additionally, 1no. unit is proposed close to the separating garden fence mid-way down the garden.

Noise levels for the proposed units have been taken from the manufacturer's literature as detailed below in Table 4: Octave-band sound power levels were provided for units C3 and C4, while single-figure sound pressure levels (L_p) or sound power levels (L_w) levels were given for C1, C2, C5 and C6. Octave band noise levels for units C1, C2 and C6 were assumed by translating the octave band levels given for unit C4 whilst the octave band noise levels for C6 were translated from C1 to be in line with the sound power (L_w)/sound pressure (L_p) levels.

Table 4: Proposed Plant Noise Levels

Plant Unit Ref.	Model	Parameter	Sound Level (dB) at Octave Band Centre Frequency (Hz)								dBA
			63	125	250	500	1k	2k	4k	8k	
C1	Daikin EDLA 16D3W1	Sound Power (L_w)	59	64	60	62	57	52	49	40	62
C2	Daikin RZAG100NV1	Sound Power (L_w)	63	68	64	66	61	56	53	44	66
C3	Daikin RXYSQ12TY1	Sound Power (L_w)	73	78	71	74	69	64	60	52	74
C4	Daikin RXYSQ10TY1	Sound Power (L_w)	71	76	72	74	69	64	61	52	74
C5	Friax GCH 48	Sound Power (L_w)	62	67	63	65	60	55	52	43	65
C6	Daikin 5MXM90A2V1B9	Sound Power (L_w)	48	53	49	51	46	41	38	29	52

5.2 Proposed Acoustic Mitigation

An acoustic enclosure is proposed around the ASHP unit, C5. The acoustic performance of the proposed enclosure should be capable of achieving the following insertion losses, as given below in :

Table 5: Proposed Enclosure Insertion Losses

Acoustic Mitigation	Insertion Loss Specification (dB)								Typically achieved by [1]
	63	125	250	500	1k	2k	4k	8k	
Acoustic Enclosure for Unit C5	3	4	6	10	12	13	13	14	Caice SS150 (Single-bank, Standard performance)

Note:
1 The above specifications are typically achieved by the acoustic louvre products shown. Where such acoustic louvres are used to provide ventilation to the enclosures, the surrounding enclosure should be solid, imperforate and have a surface density ≥12kg/m^2.

The inner walls of the 1no. enclosure should be treated with a weatherproof absorber such as Siderise WMP or similar.

5.3 Calculation

Calculation of noise transfer to the nearest receptors has been undertaken in accordance with ISO 9613-1 and considers:

- Distance attenuation.
- Source and receptor locations.
- Barrier effects (buildings, walls, garden fence etc).
- Topographical elevations.
- Source sound power levels.
- Directivity and orientation of the source.

Our calculation assumes all units are running simultaneously and at full duty, therefore representing a worst-case scenario.

5.4 Noise Impact (BS 4142 Assessment)

The noise impact at the nearest noise sensitive locations (NSL1 and NSL2) has been assessed in accordance with BS 4142. Table 6 below outlines the results of the assessment at the worst-case sensitive receptor NSL1. This is the worst-case sensitive receptor due to marginally higher specific noise level predictions. This prediction is predicted to the first-floor window at a height of 5m. As the plant could operate at any time, the nighttime assessment represents the worst-case for noise.

Table 6: BS4142 Assessment for nighttime period

Results		Relevant BS 4142 Clause	Commentary
Residual sound level (nighttime)	$L_{Aeq(8hr)}$ = 39dB	7.3.2	The residual sound level was dominated by local road traffic noise. This level was taken from the night-time $L_{Aeq,8hr}$ measured at L1 associated with the same day as the quietest background level.
Assessment made during the nighttime, so the reference time interval is 15min		7.2	
Predicted specific sound level (nighttime)	$L_{Aeq(15min)}$ = 23dB	7.3.6	Noise levels have been calculated as detailed above. The worst-case specific sound from ASHPs operation at NSL1.
Acoustic feature correction	-	9.2 9.3.2	Predicted specific level is below the ambient noise level, therefore is not expected to be noticeable or contain any acoustic character corrections.
Rating level	(23 + 0) dB = 23dB	9.2	
Background sound level (nighttime)	$L_{A90(15min)}$ = 24dB	8.1.2 8.4	The lowest daytime $L_{A90,15min}$ at L1
Excess of rating over background sound level	(23 - 24) dB = -1dB	11	Assessment suggests operational noise will have not have an adverse impact on nearest receptor NSL1.

Results		Relevant BS 4142 Clause	Commentary
Uncertainty of the assessment	Not significant	10	The assessed specific sound for this BS 4142 assessment is the worst-case prediction to NSL1 and contains a number of assumptions listed above.

Based on the review of the noise sources and the BS 4142 assessment it is predicted that the operational noise from the proposed ASHPs will not have any adverse impact on the surrounding NSLs, with the inclusion of the proposed acoustic enclosure.

5.5 Discussion of Haringey Requirement

Given that absolute background noise levels at night-time are very low at the site, it should be recognised that resulting plant noise levels of <23dB will be barely perceptible at receptors, as this is in line with measured ambient noise levels. As such, it is proposed that with the achievement of a BS4142 result suggesting 'no adverse impact' and very low absolute resulting noise levels at the receptors, that this should be considered acoustically acceptable.

5.6 External Amenity Areas

Due to the very low background levels and therefore highly onerous criteria at the receptor windows, resulting noise levels are expected to comfortably comply with external amenity noise level criteria of 50-55dB, $L_{Aeq,16hr}$ at the residential terraces of NSLs 1 and 2.

6 Conclusion

Wave Dynamics were engaged by AS Studio as the acoustic consultants to provide an acoustic assessment for the proposed installation of 6no. new ASHPs to the rear of 64 Sheldon Avenue, a standalone house located in North London.

Noise Impact Assessment

In line with the anticipated requirements of Haringey Council, noise from these units has been assessed in accordance with BS4142 2014 A1+ 2019. A baseline noise survey was undertaken to measure the existing background noise levels. With the inclusion of 1no. proposed acoustic enclosure to ASHP unit C5, the resulting BS4142 assessment predicted that there is **no adverse impact** at NSL1 (worst-case). As resulting noise levels are lower at NSL2, this means there is also no adverse impact at this receptor.

Given that absolute background noise levels at night-time are very low at the site, it is proposed that achievement of a 'no adverse impact' outcome from the BS4142 assessment and very low absolute resulting noise levels (≤23dB $L_{Aeq,15min}$) at the receptors, that proposals should be considered acoustically acceptable on the grounds of noise.

Appendix A- Glossary of Terms

Ambient Noise	The totally encompassing sound in a given situation at a given time, usually composed of sound from all the noise sources in the area.
Background Noise	The steady existing noise level present without contribution from any intermittent sources. The A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90 per cent of a given time interval, T ($L_{AF90,T}$).
dB	Decibel - The scale in which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the RMS pressure of the sound field and the reference pressure of 20 micro-pascals (20 µPa).
dB(A)	An 'A-weighted decibel' - a measure of the overall noise level of sound across the audible frequency range (20 Hz – 20 kHz) with A-frequency weighting (i.e. 'A'–weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
Hertz	The unit of sound frequency in cycles per second.
L_{A90}	A-weighted, sound level just exceeded for 90% of the measurement period and calculated by statistical analysis. See also the background noise level.
L_{Aeq}	A-weighted, equivalent continuous sound level.
L_{AFmax}	A-weighted, maximum, sound level measured with a fast time-constant - maximum is not peak
L_{den}	day-evening-night noise level, the A-weighted, Leq (equivalent noise level) over a whole day, but with a penalty of 10 dB(A) for night-time noise (23:00-07:00) and 5 dB(A) for evening noise (19:00-23:00), also known as the day evening night noise indicator
R_W	Weighted sound reduction index - a single number quantity which characterises the airborne sound insulation of a material or building element over a range of frequencies, based on laboratory measurements
SEL	The constant sound level that, if it persisted for 1 second, would provide the same sound energy as the original noise event.