



EG Group

Dudden Hill Lane, London

Noise Impact Assessment

DC3968-R1



Report Version Issue Log

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Limitations to this Report

This report entails a physical investigation of the site with a sufficient number of sample measurements to provide quantitative information concerning the type and degree of noise affecting the site. The objectives of the investigation have been limited to establishing sources of noise material to carrying out an appropriate assessment.

The number and duration of noise measurements have been chosen to give reasonably representative information on the environment within the agreed time, and the locations of measurements have been restricted to the areas unoccupied by building(s) that are easily accessible without undue risk to our staff.

As with any sampling, the number of sampling points and the methods of sampling and testing cannot preclude the existence of “hotspots” where noise levels may be significantly higher than those actually measured due to previously unknown or unrecognised noise emitters. Furthermore, noise sources may be intermittent or fluctuate in intensity and consequently may not be present or may not be present in full intensity for some or all of the survey duration.

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1.0 INTRODUCTION

EG Group has appointed Dragonfly Consulting to carry out a Noise Impact Assessment to assess the noise impact relating to the installation of air conditioning units at their site at Dudden Hill Lane, London NW10 1DE.

The noise assessment has been conducted with reference to the National Planning Policy Framework and the appropriate British Standards and recognised guidance and reference documents relevant to this site.

This report describes a noise survey of the site and the subsequent analysis to determine the noise environment of the proposed development. It then compares the results with the adopted criteria. Recommendations are also made with respect to the design of the development.

Measurements of external noise levels have been conducted at the proposed development to allow demonstration by calculation that suitable noise levels will be achieved at the nearest Noise Sensitive Receptors (NSRs).

A glossary of technical terminology is included in Appendix A to support this document.

1.1 Site Description

1.1.1 Existing Site Conditions

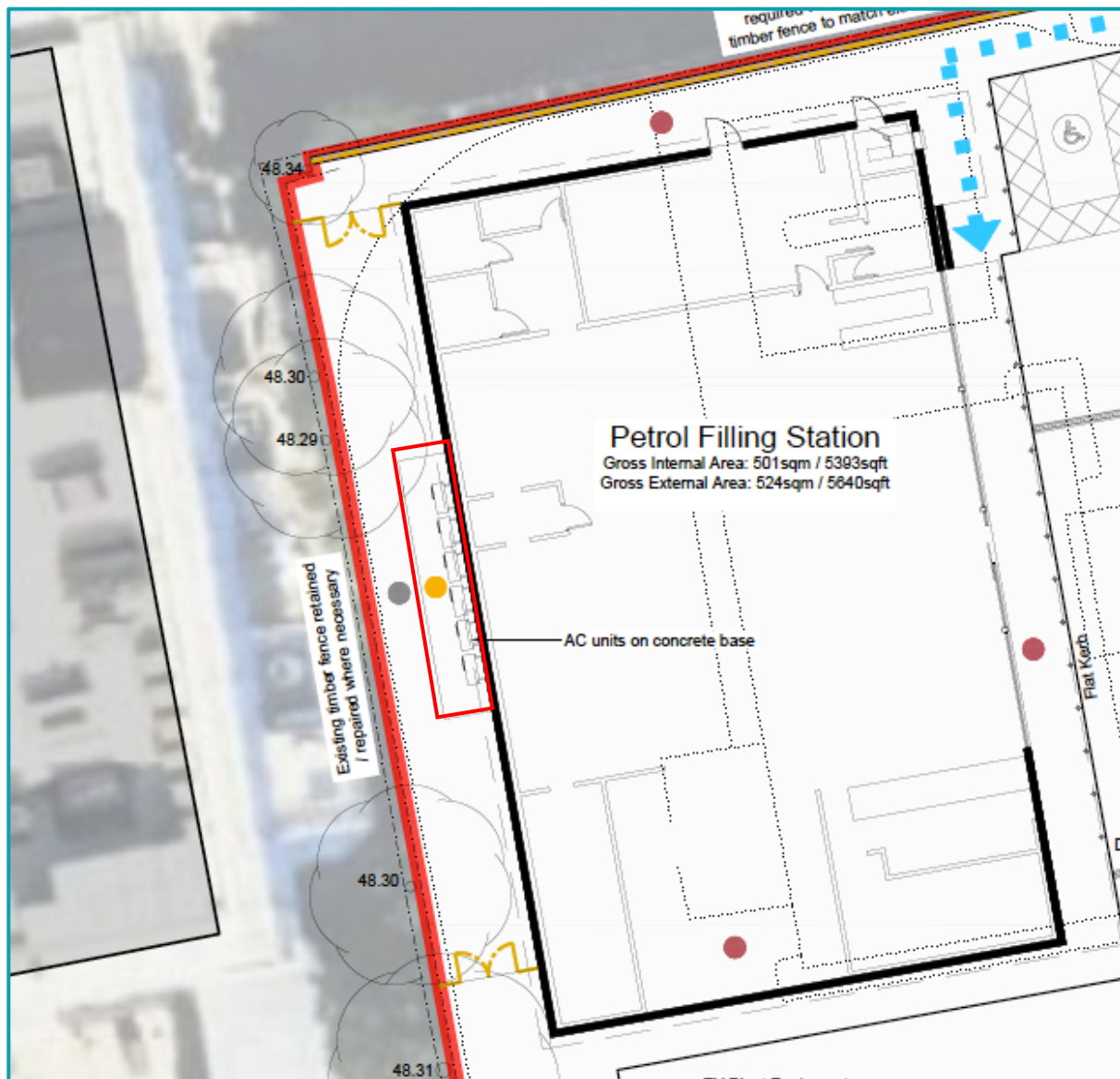
The site is currently an existing petrol station, with air conditioning units located on the western façade of the main building. The site is situated along Dudden Hill Lane, London, and is immediately bound by the following:

- A newly constructed residential apartment block (planning application ref: 16/4010), 'Block A' to the north;
- Dudden Hill Lane and a large storage unit running adjacent to the east;
- Overgrown vegetation and a railway line to the south; and
- A newly constructed residential apartment block (planning application ref: 16/4010), 'Block B' to the west.

1.1.2 Proposed Site Conditions

It is proposed to demolish the existing petrol station and buildings on site and construct a new petrol station and building including food-to-go units inside. The proposal will also include newly installed and relocated air conditioning units, the location of which can be seen in Figure 1.1 overleaf.

Figure 1.1
Proposed Site Location Plan



1.1.3 Noise Sensitive Receptor (NSR) Locations

Noise contributions will be considered at the following sensitive receptor locations based on their proximity to the site.

- NSR1 – Newly constructed residential apartment block, 111 Dudden Hill, London NW10 1DD (planning application ref: 16/4010), 'Block B' to the west (Grid Ref: 521794, 185318).

The NSR location is shown in Appendix C.

2.0 GUIDANCE

2.1 Local Planning Requirements

2.1.1 Consultation with Local Authority

No direct consultation has been undertaken with Brent Council with respect to the specific methodology to be applied to this assessment. However, Brent Council have previously indicated that they considered a noise assessment was required but declined to provide any specific guidance other than to request an assessment is completed.

2.1.2 Local Policy

The following local and regional planning policy documents are considered to apply to this development

2.1.3 Brent Design Guide SPD1

Section 5.5 of the Brent Design Guide states as follows:

“Developments should minimise and mitigate the existing and potential adverse impacts of noise. BS4142 2014 emphasises the “characteristics” of sound as well the sound levels, for example the annoyance and repetition. These are particularly useful when assessing developments next to dual carriageways, railways, commercial (early morning deliveries at supermarkets and late night noise at nightclubs and bars) and industrial developments.”

2.1.4 Policy D14 of The London Plan

Policy D14 of The London Plan applies across the area covered by the Greater London Authority and states as follows

“In order to reduce, manage and mitigate noise to improve health and quality of life, residential and other non-aviation development proposals should manage noise by:

- 1. avoiding significant adverse noise impacts on health and quality of life*
- 2. reflecting the Agent of Change principle as set out in Policy D13 Agent of Change*
- 3. mitigating and minimising the existing and potential adverse impacts of noise on, from, within, as a result of, or in the vicinity of new development without placing unreasonable restrictions on existing noise-generating uses*
- 4. improving and enhancing the acoustic environment and promoting appropriate soundscapes (including Quiet Areas and spaces of relative tranquillity)*
- 5. separating new noise-sensitive development from major noise sources (such as road, rail, air transport and some types of industrial use) through the use of distance, screening, layout, orientation, uses and materials – in preference to sole reliance on sound insulation*
- 6. where it is not possible to achieve separation of noise-sensitive development and noise sources without undue impact on other sustainable development objectives, then any potential adverse effects should be controlled and mitigated through applying good acoustic design principles*

7. *promoting new technologies and improved practices to reduce noise at source, and on the transmission path from source to receiver.*

Boroughs, and others with relevant responsibilities, should identify and nominate new Quiet Areas and protect existing Quiet Areas in line with the procedure in Defra's Noise Action Plan for Agglomerations."

2.2 National Planning Guidance

2.2.1 National Planning Policy Framework

The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these are expected to be applied. At the heart of the NPPF is a presumption in favour of sustainable development. It requires Local Plans to be consistent with the principles and policies set out in the NPPF with the objective of contributing to the achievement of sustainable development.

The NPPF states that the planning system has three overarching objectives in achieving sustainable development including a requirement to 'contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.'

Paragraph 174 of the NPPF states:

"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."

Additionally, Paragraph 185 of the NPPF states:

"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..."

2.2.2 Noise Policy Statement for England

The document 'Noise Policy Statement for England' sets out the following vision for ongoing noise policy:

"Promote good health and a quality of life through the effective management of noise within the context of Government policy on sustainable development."

This vision should be achieved through the following Noise Policy Aims:

“Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- *avoid significant adverse impacts on health and quality of life;*
- *mitigate and minimise adverse impacts on health and quality of life; and*
- *where possible, contribute to the improvement of health and quality of life.”*

To achieve this vision, the Noise Policy Statement sets 3 noise levels to be defined by the assessor:

NOEL – No Observed Effect Level

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

LOAEL – Lowest Observed Adverse Effect Level

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

SOAEL – Significant Observed Adverse Effect Level

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

The Noise Policy Statement considers that noise levels above the SOAEL would be seen to have, by definition, significant adverse effects and would be considered unacceptable. Where the assessed noise levels fall between the LOAEL and the SOAEL noise levels, the Policy Statement requires that:

“...all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development... This does not mean that such adverse effects cannot occur.”

Where noise levels are below the LOAEL, it is considered there will be no adverse effect. Once noise levels are below the NOEL, there will be no observable change.

2.3 Best Practice and Other Relevant Guidance

2.3.1 British Standard (BS) 7445-1:2003 – Description and Measurement of Environmental Noise – Part 1: Guide to Quantities and Procedures

This document defines the basic quantities to be used for the description of noise in community environments and describes basic procedures for the determination of these quantities.

The methods and procedures described in this British Standard are intended to be applicable to sounds from all sources, individually and in combination, which contribute to the total noise at a site. This British Standard does not specify limits for environmental noise.

2.3.2 British Standard (BS) 4142:2014+A1:2019 - Methods for Rating and Assessing Industrial and Commercial Sound.

This new edition of BS 4142 clarifies the application of the standard and introduces the consideration of uncertainty as part of the assessment methodology. The standard provides a method for rating and assessing sound of an industrial or commercial nature, including:

- Sound from industrial and manufacturing process;
- Sound from fixed installations which comprise mechanical and electrical plant and equipment;
- Sound from the loading and unloading of goods and materials at industrial and/or commercial premises;
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as from FLTs or that from train or ship movements on or around an industrial/commercial site.

The standard is intended for use for both the assessment of complaints and the assessment of the impact of commercial and industrial noise on both new and existing residential developments.

The method described in this British Standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes at which the sound is incident. The standard specifically excludes itself for the use of determination of nuisance.

The procedure contained in BS 4142 for assessing the likelihood of complaint requires the calculation of the noise level from the source to be assessed at a location immediately outside the relevant dwelling; this is described as the 'specific sound level'. Where the specific noise source already exists, its noise level can be derived by measuring the total noise present, or 'ambient noise', and subtracting from it the noise from sources that are not under consideration. Noises not under consideration are called the 'residual noise'.

A 'rating level' is then calculated from the specific sound level. The rating level is then compared with the measured background noise level at that measurement location. If the specific noise source does not yet exist but the details of the intended plant are known, the specific sound level can be derived from first principles using manufacturers and other data.

The specific, ambient and residual noise levels are measured in terms of $L_{Aeq,T}$ values and the background noise level is measured in terms of an L_{A90} value.

BS 4142 considers that certain acoustic features can increase impact of a new noise source over that expected from a simple comparison between the specific noise level and the background noise level. These features can be assessed in one of three ways:

- Objective method - comparing adjoining third octave band noise levels (if available) for the sound source;
- The reference method by analysing measured plant noise levels using the Joint Nordic method;
- Using the prescribed subjective methodology.

These features and the penalties applied to calculate a rating level when assessing subjectively as defined by BS 4142 are as follows:

- Tonality – For sound ranging from not tonal to prominently tonal, the Joint Nordic Method gives a correction of between 0 and +6dB for tonality.
 - 2dB for a tone which is just perceptible;
 - 4dB where it is clearly perceptible;
 - 6dB where it is highly perceptible.
- Impulsivity – A correction of up to 9dB can be applied for sound that is highly impulsive, considering both the rapidity of change in sound level and the overall change in sound level.
 - 3dB just perceptible impulsivity;
 - 6dB clearly perceptible impulsivity;
 - 9db highly perceptible impulsivity.
- Intermittency – Where the specific sound has identifiable on/off conditions, the specific sound level ought to be representative of the time period of length equal to the reference time period that contain the greatest amount of 'on' time. This can necessitate measuring the specific sound over a number of shorter periods that are in combination less than the reference time interval in total.
 - If the intermittency is readily distinctive against the residual acoustic environment, a penalty of 3dB can be applied.
- Where the specific sound features characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive from the residual acoustic environment, a 3dB penalty can be applied.

In order to assess the significance of the impact, the background noise level is subtracted from the rating level. The standard considers that the greater the difference, the greater the significance.

- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context;
- A difference of around +5 dB 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 standard goes on to highlight that these values are not absolute. There are a number of factors that should be taken into account when assessing the impact and significance of the noise including:

- The absolute level of sound. For a given difference between the rating level and the background sound level, the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low;
- Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night;
- Where residual sound levels are very high, the residual sound might itself result in adverse impacts or significant adverse impacts. The margin by which the rating level exceeds the background might simply be an indication of the extent to which the specific sound source is likely to make those impacts worse;
- The character and level of the residual sound compared to the character and level of the specific sound;
- The sensitivity of the receptor and if the receptor already includes acoustic design features to mitigate noise.

2.4 IEEMA Guidelines for Environmental Noise Impact Assessment

The guidelines state that, for any assessment, the noise level threshold and significance statements should be determined by the assessor, based upon the specific evidence and likely subjective response to the noise.

The impact scale adopted in this assessment is shown in Table 2.1 below:

Table 2.1
Impact Scale for Comparison of Future Noise against Existing Noise

Degree of Effect	Effect Descriptor
None / Not Significant	Less than 2.9dB L_{Aeq} change in sound level and/or all receptors are of negligible sensitivity to noise or marginal to the zone of influence of the proposals
Slight	A 3.0 to 4.9dB L_{Aeq} change in sound level at a receptor of some sensitivity
Moderate	A 3.0 to 4.9dB L_{Aeq} change in sound level at a sensitive or highly sensitive noise receptor, or a greater than 5dB L_{Aeq} change in sound level at a receptor of some sensitivity
Substantial	Greater than 5.0dB L_{Aeq} change in sound level at a noise sensitive receptor or a 5.0 to 9.9dB L_{Aeq} change in sound level at a receptor of great sensitivity to noise
Very Substantial	Greater than 10.0dB L_{Aeq} change in sound level perceived at a receptor of great sensitivity to noise

The criteria above reflect key benchmarks that relate to human perception of sound. A change of 3dB(A) is generally considered to be the smallest change in noise that is perceptible. A 10dB(A) change in noise represents a doubling or halving of the noise level.

It is considered that the criteria specified in the above table do provide a good indication as to the likely significance of changes in noise levels in this case. Therefore, the above noise threshold levels and significance statements have been used to supplement the criteria provided by the British Standard in order to assess the impact on a listener.

3.0 ASSESSMENT METHODOLOGY

3.1 Assessed Sources of Environmental Noise

With reference to the guidance detailed within Section 2.0, Table 3.1 presents the specific methodology adopted for the assessment of noise arising from the development proposals.

Table 3.1
Assessed Sources of Environmental Noise

Potential Noise Source	Relevant Assessment Methodology
Fixed Plant	BS 4142:2014+A1:2019 IEMA Guidelines for Environmental Noise Impact Assessment

3.2 Selection of Assessment Criteria

The following criteria have been selected to determine the threshold of effect levels in the context of the National Planning Policy Framework and Noise Policy Statement for England.

Table 3.2
Assessment Criteria: BS 4142:2014+A1:2019

Effect Level	Criteria	Justification
No Observed Effect Level (NOEL)	Free-field external noise levels at adjacent sensitive receptor locations below the representative background noise level	Noise levels below the background are considered to have no detectable effect on health and quality of life due to the noise.
Lowest Observed Adverse Effect Level (LOAEL)	Free-field external noise levels at adjacent sensitive receptor locations within +5 dB of representative background noise level	Noise levels + 5 dB above background are considered an indication of where adverse noise impacts may occur in the context of BS 4142. Noise levels below this level are an indication that it is less likely that the specific sound source will have an adverse impact
Significant Observed Adverse Effect Level (SOAEL)	Free-field external noise levels at receptor above +10 dB of representative background noise level	None – Planning guidance requires that impacts must be reduced below the SOAEL through mitigation, with adverse impacts above the Lowest Observable Adverse Impact Level (LOAEL) but below the SOAEL being mitigated as far as is reasonable.

Table 3.3
Assessment Criteria: IEMA Guidelines for Environmental Noise Impact Assessment

Effect Level	Criteria	Justification
Lowest Observed Adverse Effect Level (LOAEL)	Less than 2.9dB L_{Aeq} change in sound level at adjacent sensitive receptor locations	IEMA degree of effect – None/ Not Significant
Significant Observed Adverse Effect Level (SOAEL)	More than 2.9dB L_{Aeq} change in sound level at adjacent sensitive receptor locations	IEMA degree of effect – Moderate Mitigate to achieve LOAEL Criteria

4.0 ENVIRONMENTAL NOISE SURVEY

Daytime and night-time measurements were undertaken from the 25th to the 26th of July 2022. The noise measurements established typical external ambient and background noise levels at the site.

4.1 Survey Methodology

The equipment used during the survey is detailed in Appendix B. The sound level meter was calibrated before and after the measurements and no significant calibration drifts were found to have occurred (>0.2dB). All of the noise monitoring equipment had been calibrated to a traceable standard within the twenty-four months preceding the survey. Calibration certificates are available on request.

One measurement location was surveyed in order to establish the typical ambient and background noise levels at the proposed development site. The measurement location is hereby referred to in this report as follows:

- 'Location 1' – sound level meter positioned approximately 1.5m from the ground, north-west of the proposed development site.

The measurement location is shown in Appendix C.

4.2 Survey Results

The weather during the unattended survey was suitable for the majority of noise measurements, it being dry with low wind speeds.

Summaries of the measured noise levels are given in Table 4.1 below. Summaries of statistical parameters, L_{A10} and L_{A90} , within this section are based on arithmetic averages of the aggregated 15-minute profiles within each assessment period. Full survey results are available upon request.

Table 4.1
Summary of Measured Noise Levels – 25/07/22 to 26/07/22– free field, dB

Location	Date	Period	Time (h)	$L_{Aeq,T}$	L_{A10}	L_{A90}	L_{AFMax}
1	25/07/22	Daytime	1300-2300	59.7	60.8	54.9	87.3
	25/07/22-26/07/22	Night-time	2300-0700	59.3	58.5	49.0	79.6
	26/07/22	Daytime	0700-0900	60.6	61.6	55.0	88.4

4.2.1 Observations and Comments

The noise environment at 'Location 1' comprised of; vehicular movement within the existing petrol station, and road traffic noise predominantly from Dudden Hill Lane 'A4088' running adjacent towards the east.

It is worthy of note that the existing plant items situated south of 'Location 1' associated with the petrol station were not audible.

For both the daytime and night-time assessments, it is considered that the levels measured are representative of the typical acoustic environment at the nearest NSR.

4.2.2 Background L_{A90} Analysis

The background noise levels for the 15-minute period (daytime & night-time) have been used in the calculations. The statistically derived L_{A90} values can be seen in Figures 4.1 and 4.2 below:

Figure 4.1
Location 1 – Daytime Background (L_{A90}) Analysis

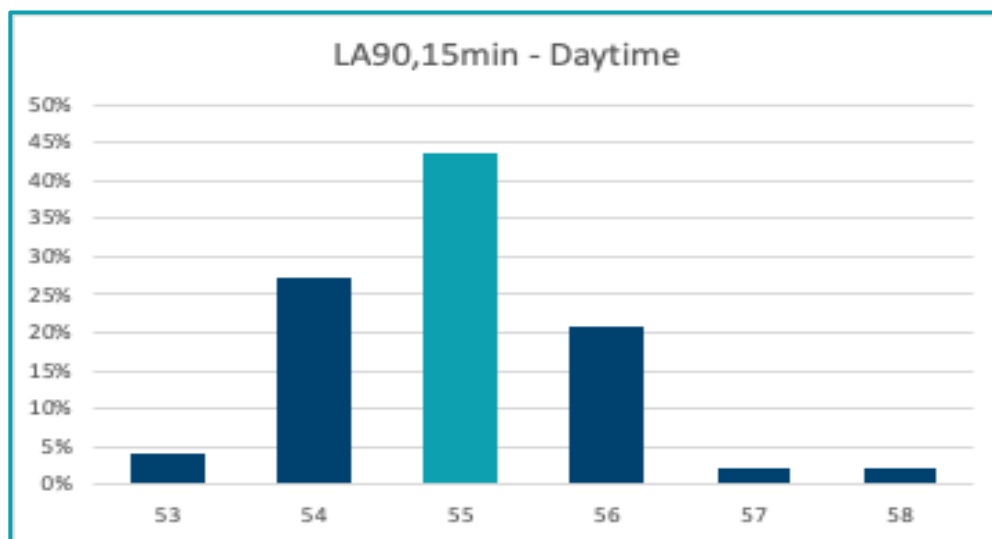
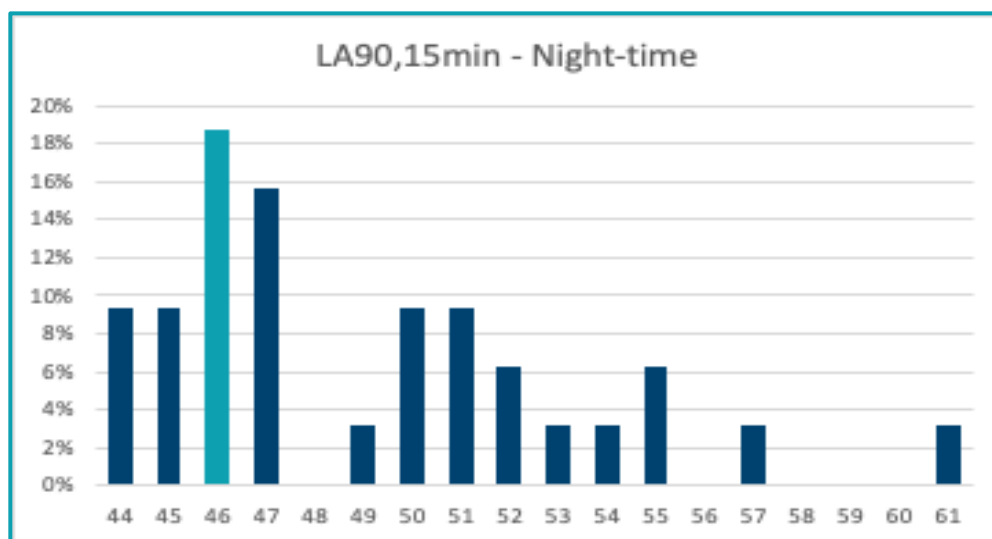


Figure 4.2
Location 1 – Night-time Background (L_{A90}) Analysis



- For the assessment of plant operating during the daytime period (0700h-2300h):
 - $L_{A90,15min} = 55\text{dB(A)} - \text{NSR1}$.
- For the assessment of plant operating during the night-time period (2300h-0700h):
 - $L_{A90,15min} = 46\text{dB(A)} - \text{NSR1}$.

5.0 ASSESSMENT

5.1 Assessment of Noise from Fixed Plant

5.1.1 BS 4142:2014+A1:2019

An assessment has been carried out in accordance with the requirements of BS 4142:2014+A1:2019 to quantify the level and significance of any noise impacts on residents of the properties due to the noise generated by the proposed fixed plant units.

For the purposes of this assessment, it is understood that all plant items will operate for 24 hours a day at full capacity to assess a worst-case scenario.

The specific noise level has been obtained by calculating the noise level at the nearest noise sensitive receptor due to the operation of the proposed plant, using achievable source noise levels supplied to Dragonfly Consulting.

The following values have, therefore, been used within this assessment:

- 2no. Mitsubishi PUHZ-ZRP250YKA2 = 62dB(A) @1m; and
- 1no. Mitsubishi PUHZ-ZRP71YKA2 = 48dB(A) @1m.

Distance correction calculations have been undertaken using standard acoustic formulae for point source noise propagation.

The Plant Items have been measured as being the following distance from the NSR:

Table 5.1
Distances of Plant Items to NSRs

Plant Item	Minimum Distance to NSR1 (m)
2no. Mitsubishi PUHZ-ZRP250YKA2	9m
1no. Mitsubishi PUHZ-ZRP71YKA2	

Based on the above plant information and separation distances, the calculated noise levels at the noise sensitive receptor are as follows:

Table 5.2
Specific Noise Level Incident on Façade of NSR1, dB(A)

Plant Item	Sound Pressure Level at 1m dB(A)	Distance Attenuation dB(A)	Noise Level at NSR dB(A)	Cumulative Specific Noise Level at NSR, dB(A)
Mitsubishi PUHZ-ZRP250YKA2	62.0	-19.1	42.9	46.0
Mitsubishi PUHZ-ZRP250YKA2	62.0	-19.1	42.9	
Mitsubishi PUHZ-ZRP71YKA2	48.0	-19.1	28.9	

When calculating the rating level, there are four correction types that can be considered. They are:

- Tonality;
- Impulsivity;
- Intermittency;
- Specific noise readily distinctive from the residual environment.

As there are existing plant items within the area, it has been determined that no additional character corrections are appropriate. Given the presence of these existing plant items it is not considered that the proposed plant would be distinctive from the residual environment.

The results of the assessment are shown in Table 5.3:

Table 5.3
Assessment of Plant Noise Impact at NSR1, dB

Period	NSR	Rating Level at NSR $L_{A,T,r}$ dB(A)	Measured Background Noise Level $L_{A90, 15mins}$	Difference dB(A)
0700h-2300h	1	46	55	-9
2300h-0700h			46	0

The assessment demonstrates that during daytime period, the rating noise levels impacting on the NSR will be 9dB(A) below the typical background noise level during the daytime period, and equal to the typical background noise level during the night-time period.

For the NSR, given the context of the assessment, it is considered that the noise levels are below the LOAEL for the daytime and night-time period.

Impacts below the Lowest Observable Adverse Effect Level (LOAEL) are considered to be acceptable when assessed against the requirements of the NPPF. On this basis, the assessment demonstrates that the proposed operating hours will not cause an unacceptable adverse impact.

5.1.2 IEMA Guidelines for Environmental Noise Impact Assessment

In order to assess the potential impact of plant noise, the predicted future ambient noise level at the NSR has been compared with the current ambient noise level at the measurement 'Location 1'.

This assessment has been included to ensure that the noise intrusion testing for the NSR undertaken by Stroma Built Environment (report ref: 07-20-83782 AV 4v1) will not be affected by the installation and relocation of the proposed plant items.

As detailed in Section 5.1.1 above, the plant items will operate 24 hours a day and the cumulative noise level at NSR1 is 46dB(A). The potential impact of noise levels has been detailed in Tables 5.4 and 5.5 overleaf.

Table 5.4
Current and Predicted Future Ambient Noise Levels, Daytime – free-field, dB

NSR	Period (h)	Current Ambient Noise Level, $L_{Aeq,15min}$	Predicted Noise Level from Patron Noise L_{Aeq}	Combined Noise Level, $L_{Aeq,15min}$	Difference, dB
1	0700-0800	59.2	46.0	59.4	+0.2
	0800-0900	58.5		58.7	+0.2
	0900-1300*	--		--	--
	1300-1400	58.7		58.9	+0.2
	1400-1500	57.7		58.0	+0.3
	1500-1600	57.9		58.2	+0.3
	1600-1700	57.8		58.1	+0.3
	1700-1800	59.3		59.5	+0.2
	1800-1900	57.8		58.1	+0.3
	1900-2000	58.7		58.9	+0.2
	2000-2100	58.1		58.4	+0.3
	2100-2200	58.4		58.6	+0.2
	2200-2300	57.9		58.2	+0.3

*Measurement data unavailable for this period.

Table 5.5
Current and Predicted Future Ambient Noise Levels, Night-time – free-field, dB

NSR	Period (h)	Current Ambient Noise Level, $L_{Aeq,15min}$	Predicted Noise Level from Patron Noise L_{Aeq}	Combined Noise Level, $L_{Aeq,15min}$	Difference, dB
1	2300-0000	56.4	46.0	56.6	+0.2
	0000-0100	55.2		55.7	+0.5
	0100-0200	53.0		53.8	+0.8
	0200-0300	51.9		52.9	+1.0
	0300-0400	51.7		52.7	+1.0
	0400-0500	52.2		53.1	+0.9
	0500-0600	53.3		54.0	+0.7
	0600-0700	57.0		57.3	+0.3

Tables 5.4 and 5.5 show that the predicted change in ambient noise during the daytime and night-time periods is less than 2.9dB. This would result in a 'None/Not Significant' effect upon the local receptors and below the LOAEL, as defined within Section 3.0.

Therefore, it is considered that no further mitigation is required to reduce noise levels from the proposed operation of the proposed plant items and will not affect the results of the previously written noise intrusion report for NSR1.

5.2 Assertion of Competence

This assessment has been completed by Adam Shaw, Acoustic Consultant with responsibilities for completing acoustic reports on behalf of Dragonfly Consulting. I am a Technician Member of the Institute of Acoustics and an Associate Member of the British Occupational Hygiene Society. I hold a Bachelor of Science in Sound Engineering, with Honours, from Birmingham City University.

6.0 CONCLUSIONS

EG Group has appointed Dragonfly Consulting to carry out a Noise Impact Assessment to assess the noise impact relating to the installation of air conditioning units at Dudden Hill Lane, London.

The noise assessment has been conducted with reference to the National Planning Policy Framework and the appropriate British Standards and recognised guidance and reference documents relevant to this site.

This report therefore describes a noise survey of the site and the subsequent analysis to determine the noise environment of the proposed development. It then compares the results with the adopted criteria. Recommendations are also made with respect to the design of the development.

Measurement of external noise levels have been completed for the proposed development to allow demonstration by calculation that suitable noise levels will be achieved at the façade of the most noise exposed dwellings.

6.1 Assessment of Noise from Fixed Plant

6.1.1 BS 4142:2014+A1:2019

The assessment demonstrates that during both the daytime and night-time period, the noise levels impacting on the NSR will be below or equal the typical background noise level.

The assessment determines that, given the context of the assessment, it is considered that the noise levels are below the NOEL for the NSR for both the Daytime and night-time periods.

Impacts below the Lowest Observable Adverse Effect Level (LOAEL) are considered to be acceptable when assessed against the requirements of the NPPF. On this basis, the assessment demonstrates that the proposed operating hours will not cause an unacceptable adverse impact.

6.1.2 IEMA Guidelines for Environmental Noise Impact Assessment

The IEMA impact scale categorises the impact of the relocation of installation of proposed plant items as “None/Not Significant”. It is therefore considered that the predicted noise impact from use of the plant items will fall below the LOAEL.

Appendix A – Glossary of Terminology

In order to assist the understanding of acoustic terminology and the relative change in noise, the following background information is provided.

The human ear can detect a very wide range of pressure fluctuations, which are perceived as sound. In order to express these fluctuations in a manageable way, a logarithmic scale called the decibel, or dB scale is used. The decibel scale typically ranges from 0dB (the threshold of hearing) to over 120dB. An indication of the range of sound levels commonly found in the environment is given in the following table.

Table A-1
Sound Levels Commonly Found in the Environment

Sound Level	Location
0dB(A)	Threshold of hearing
20 to 30dB(A)	Quiet bedroom at night
30 to 40dB(A)	Living room during the day
40 to 50dB(A)	Typical office
50 to 60dB(A)	Inside a car
60 to 70dB(A)	Typical high street
70 to 90dB(A)	Inside factory
100 to 110dB(A)	Burglar alarm at 1m away
110 to 130dB(A)	Jet aircraft on take off
140dB(A)	Threshold of Pain

Acoustic Terminology

dB (decibel) The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2×10^{-5} Pa).

dB(A) A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.

L_{Aeq} This is defined as the notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.

L₁₀ & L₉₀ If a non-steady noise is to be described, it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time. L₁₀ is the level exceeded for 10% of the time and is often used as a descriptor for road traffic noise. Similarly, L₉₀ is the level exceeded for 90% of the time and is often used to describe the background level. It is common practice to use the L₁₀ index to describe traffic noise.

L_{AMax} This is the maximum A-weighted sound pressure level recorded over the period stated. L_{AMax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment.

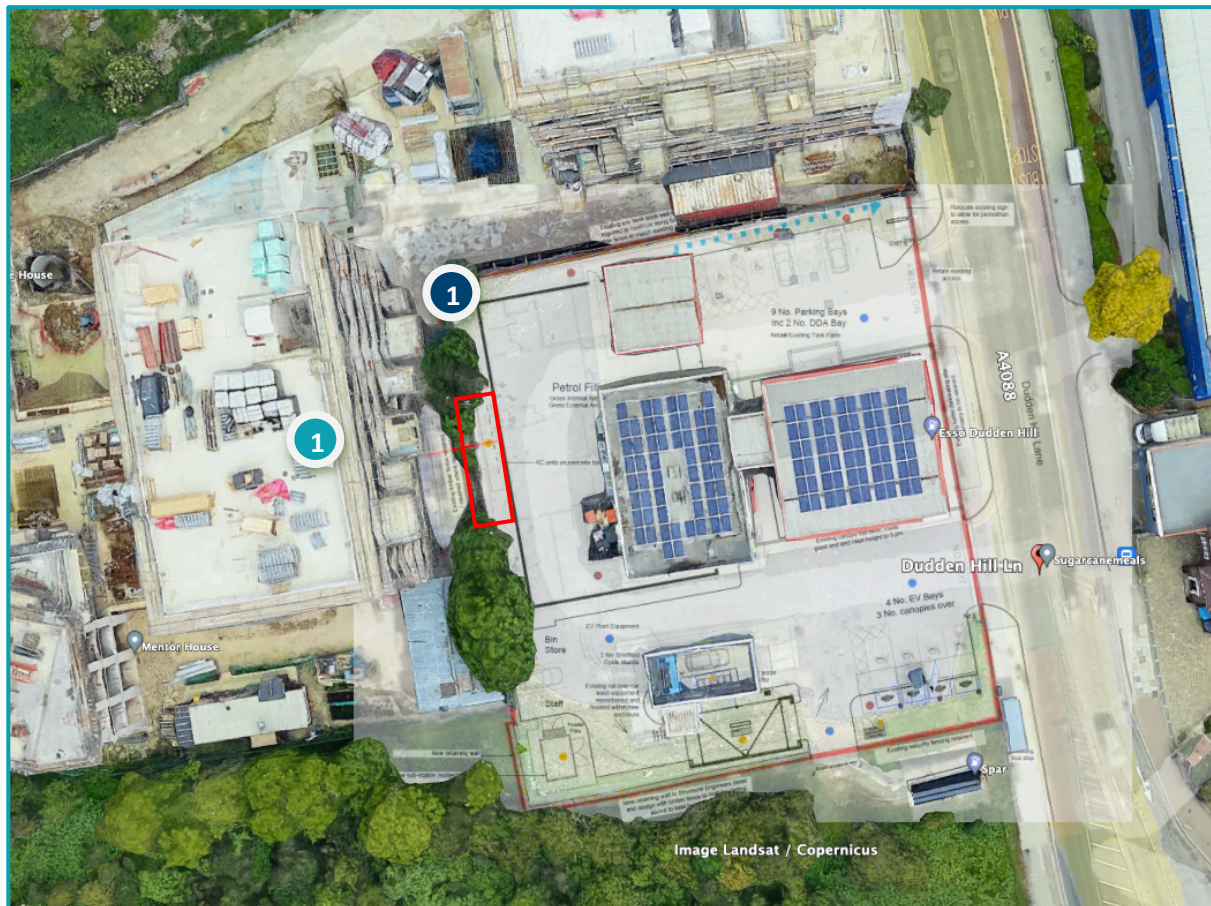
Appendix B – Monitoring Equipment

Table B-1
Noise Monitoring Equipment

Equipment	Serial Number
01dB Cube Sound Level Meter	10892
G.R.A.S 40CD Microphone	233511
01dB PRE22N Preamplifier	11071
Castle GA607 Acoustic Calibrator	043074

Appendix C – Measurement Locations

Figure C-1
Measurement Location Plan



-  Measurement Location
-  Noise Sensitive Receptors
-  Proposed Installation Location