OD Group

14 & 15 Southampton Place

Environmental Noise Impact Report

MLM. Group

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Contents

1 Introduction

MLM Consulting Engineers Ltd has been commissioned by OD Group to undertake an environmental noise survey at 14 & 15 Southampton Place, London, WC1A 2AJ, and assess the impact of noise on the nearest noise-sensitive receptor from potential new plant installations. This report is to accompany a planning application to Camden Council.

The proposals comprise a refurbishment of the existing buildings to provide air conditioned offices and meeting rooms.

The assessment considers noise arising from proposed external plant, with respect to the existing noise levels in the area, which has been assessed in accordance with the assessment methodology contained in British Standard 4142:2014 Methods for Rating and Assessing Industrial and Commercial Sound.

The following report presents the results of a background noise monitoring exercise, carried out to determine the existing noise climate at the nearest sensitive receptors to the proposed development. The environmental noise survey was conducted by MLM Consulting Engineers Ltd between Wednesday 29 and Thursday 30 November 2017. This sample is considered sufficient to provide details of representative and typical prevailing noise levels during a typical weekday period.

Based on the results of the noise survey, considering relevant national guidance on plant noise impacts and Local Authority guidance, the assessment set out limits for the noise emissions from the proposed plant.

This report contains references of a technical nature, a glossary of acoustic terminology has therefore been provided in Appendix A to assist in any interpretation.

2 Policy and Assessment Methodology

2.1 National Planning Policy Framework

National Planning Policy Framework (NPPF)[1] published on 27 March 2012 sets out the Government's economic, environmental and social planning policies for England. It summarises in a single document all previous national planning policy advice. Taken together, these policies articulate the Government's vision of sustainable development, which should be interpreted and applied locally to meet local aspirations.

The NPPF sets out the Government's requirements for the planning system only to the extent that it is relevant, proportionate and necessary to do so. It provides a framework within which local people and their accountable councils can produce their own distinctive local and neighbourhood plans, which reflect the needs and priorities of their communities. Under Section 11; Conserving and enhancing the natural environment, the following is stated:

The planning system should contribute to and enhance the natural and local environment by:

- *Preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability.*

The document goes on to state:

Planning policies and decisions should aim to:

- *Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;*
- *Mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;*
- *Recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established; and*
- *Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.*

As stated above, this document makes reference to avoiding noise generation from new developments that would adversely impact on health and quality of life.

[1] Department for Communities and Local Government, March 2012. National Planning Policy Framework. HMSO.

2.2 Planning Practice Guidance – Noise

The National Planning Practice Guidance (NPPG[2]) has been revised and updated to be easily accessible and available online. The Noise Guidance advises on how planning can manage potential noise impacts in new development. It sets out when noise is relevant to planning and outlines the following Observed Effect Levels to determine the noise impact:

- *Significant observed adverse effect level: This is the level of noise exposure above which significant adverse effects on health and quality of life occur;*
- *Lowest observed adverse effect level: this is the level of noise exposure above which adverse effects on health and quality of life can be detected;*
- *No observed effect level: this is the level of noise exposure below which no effect at all on health or quality of life can be detected.*

The document recognises the subjective relationship between noise levels and the impact on those affected, and advises on factors which may influence on whether noise could be a concern.

2.3 National Planning Practice Guidance, England

Further guidance in relation to the National Planning Policy Framework and the Noise Policy Statement for England has been published in the National Planning Practice Guidance in England: Noise (NPPG)[3], which summarises the noise exposure hierarchy, based on the likely average response. This is reproduced in Table 1 below.

Table 1: Significance Criteria From NPPG In England: Noise

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise.	Observed Adverse Effect	Mitigate and reduce to a minimum

[2] National Planning Practice Guidance, Department for Communities and Local Government (DCLG), March 2014

[3] Department for Communities and Local Government (DCLG), 2014. National Planning Practice Guidance for England: Noise. DCLG.

Table 1: Significance Criteria From NPPG In England: Noise			
Perception	Examples of Outcomes	Increasing Effect Level	Action
	Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.		
Significant Observed Adverse Effect Level			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

2.4 British Standard 4142:2014 Method for Rating and Assessing Industrial and Commercial Sound

BS4142 describes the method for assessing whether noise sources of an industrial, commercial or fixed nature are likely to give rise to complaints from people residing in the area.

New commercial development can often incorporate plant and processes that have the potential to generate noise, especially if operated at night-time when background noise levels are at their lowest.

BS 4142 sets out a method to assess whether noise from factories, industrial premises or fixed installations and sources of an industrial nature in commercial premises are likely to give rise to complaints from noise-sensitive receptors in the vicinity.

The procedure contained in BS 4142 for assessing the likelihood of complaint is to compare the measured or predicted noise level from the source in question, the LAeq,T 'specific noise level', immediately outside the dwelling with the LA90,T background noise level.

Where the noise contains a tonality, impulsivity, intermittency and other sound characteristics, then a correction depending on the grade of the aforementioned characteristics of the sound is added to the specific noise level to obtain the LAr,Tr 'rating noise level'. A correction to include the consideration of a level of uncertainty in noise measurements, data and calculations can also be applied when necessary.

BS 4142 states: "*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 periods associated with day and night, for the purposes of the Standard, are considered to be 07.00 to 23.00 and 23.00 to 07.00, respectively.

2.5 London Borough of Camden

Camden Council's noise criteria are set out in Policy A4 – Noise and Vibration which is detailed in the Camden Local Plan 2017, these are presented in the table below.

The noise criteria relevant to the proposed development relate to plant noise, and these are set out below.

The significance of noise impact varies dependent on the different noise sources, receptors and times of operation presented for consideration within a planning application. Therefore, Camden's thresholds for noise and vibration evaluate noise impact in terms of the various 'effect levels' described in the National Planning Policy Framework and Planning Practice Guidance:

- NOEL – No Observed Effect Level
- LOAEL – Lowest Observed Adverse Effect Level
- SOAEL – Significant Observed Adverse Effect Level

Three basic design criteria have been set for proposed developments, these being aimed at guiding applicants as to the degree of detailed consideration needed to be given to noise in any planning application. The design criteria outlined below are defined in the corresponding noise tables. The values will vary depending on the context, type of noise and sensitivity of the receptor:

- Green – where noise is considered to be at an acceptable level.
- Amber – where noise is observed to have an adverse effect level, but which may be considered acceptable when assessed in the context of other merits of the development.
- Red – where noise is observed to have a significant adverse effect.

A relevant standard or guidance document should be referenced when determining values for LOAEL and SOAEL for non-anonymous noise. Where appropriate and within the scope of the document it is expected that British Standard 4142:2014 'Methods for rating and assessing industrial and commercial sound' (BS 4142) will be used. For such cases a 'Rating Level' of 10 dB below background (15dB if tonal components are present) should be considered as the design criterion).

Table 2: Noise levels applicable to proposed industrial and commercial developments (including plant and machinery)					
Existing Noise sensitive receptor	Assessment Location	Design Period	NOEL(Green)	LOAEL to SOAEL(Amber	SOAEL(Red)
Dwellings**	Garden used for main amenity (free field) and Outside living or dining or bedroom window (façade)	Day	'Rating level' 10dB* below background	'Rating level' between 9dB below and 5dB above background	'Rating level' greater than 5dB above background
Dwellings**	Outside bedroom window(façade)	Night	'Rating level' 10dB* below background and no events exceeding 57dBLmax	'Rating level' between 9dB below and 5dB above background or noise events between 57dB and 88dB L_{Amax}	'Rating level' greater than 5dB above background and/or events exceeding 88dBL_{Amax}

*10dB should be increased to 15dB if the noise contains audible tonal elements (day and night). However, if it can be demonstrated that there is no significant difference in the character of the residual background noise and the specific noise from the proposed development then this reduction may not be required. In addition, a frequency analysis (to include, the use of Noise Rating (NR) curves or other criteria curves) for the assessment of tonal or low frequency noise may be required.

**levels given are for dwellings, however, levels are use specific and different levels will apply dependent on the use of the premises.

The periods in Table 2 correspond to 0700 hours to 2300 hours for the day and 2300 hours to 0700 hours for the night. The Council will take into account the likely times of occupation for types of development and will be amended according to the times of operation of the establishment under consideration. There are certain smaller pieces of equipment on commercial premises, such as extract ventilation, air conditioning units and condensers, where achievement of the rating levels (ordinarily determined by a BS:4142 assessment) may not afford the necessary protection. In these cases, the Council will generally also require a NR curve specification of NR35 or below, dependant on the room (based upon measured or predicted Leq,5mins noise levels in octave bands) 1 metre from the façade of affected premises, where the noise sensitive premise is located in a quiet background area.

3 Site

3.1 Site Description

The site is located west of Southampton Place within the London Borough of Camden. It is bounded by offices to the north, and an RBS Bank to the south. The immediate surrounding area of the site is mostly commercial offices with some restaurants opposite.

The location of the proposed development site is identified in Figure 1.

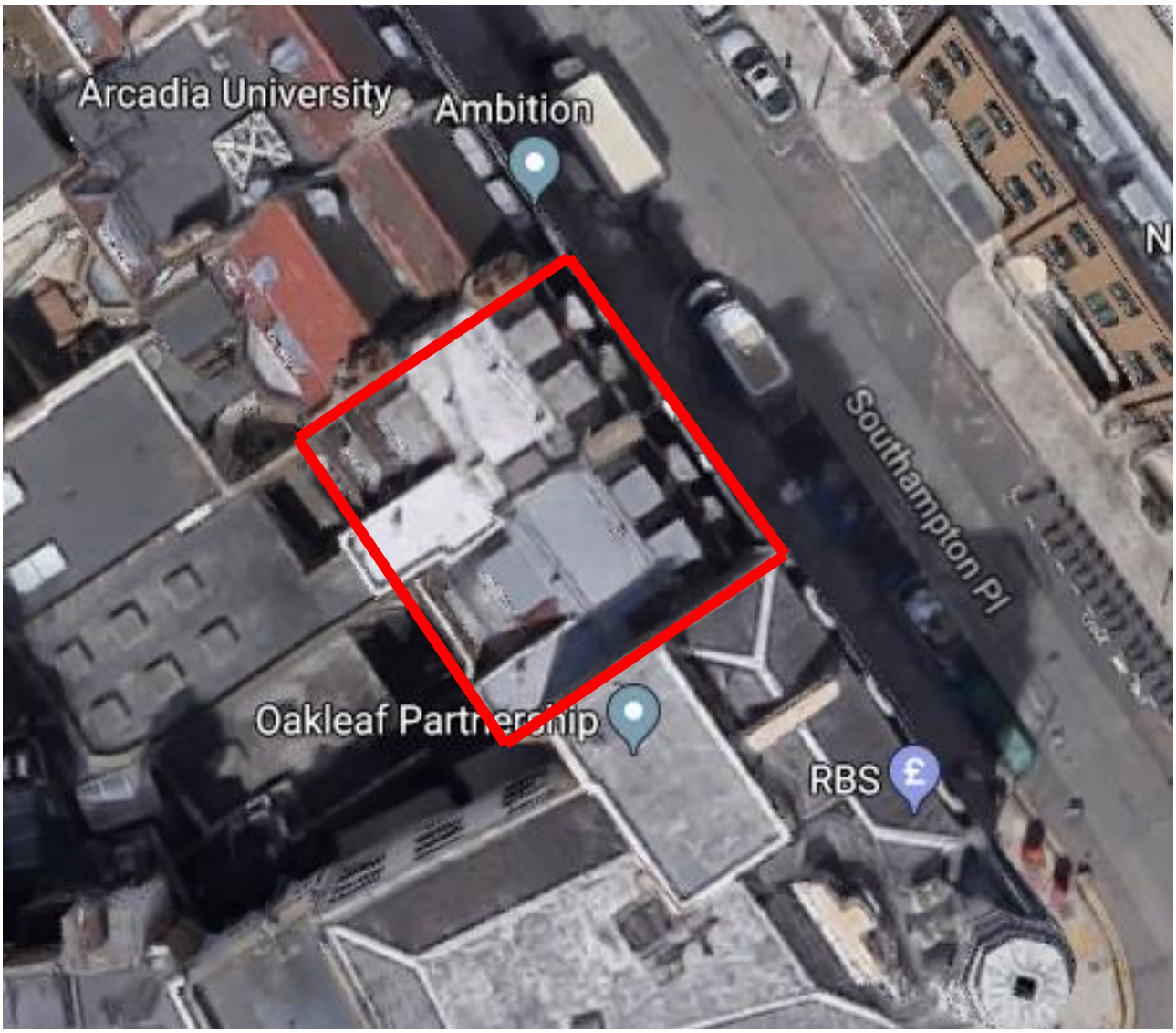


Figure 1: Site Location (approximate red line)

Camden Council's guidance states that noise sensitive developments include offices. Therefore the nearest/worst-affected noise-sensitive receptors are considered to be the offices directly opposite the development, at a distance of approximately 17m.

High Holborn (A40) is a busy road and therefore the site is subject to relatively high levels of road traffic noise. The ambient noise environment is that of a busy urban location with contributions to the total noise levels from traffic, existing plant and patrons of the neighbouring premises.

4 Noise Measurements

4.1 Survey Details

The prevailing noise conditions at the location of the proposed development has been determined by an environmental noise survey. The survey was undertaken over a typical period, between 12:00 Wednesday 29 and 13:00 Thursday 30 November 2017. One measurement position was used to gather representative noise levels affecting the site and the surrounding area.

4.2 Noise Monitoring Methodology

All noise measurements were undertaken by a consultant certified as competent in environmental noise monitoring, and in accordance with the principles of BS 7445[4].

All acoustic measurement equipment used during the noise survey conformed to Type 1 Specification of BS 61672[5]. A full inventory of this equipment is shown in table below.

Table 3: Inventory of Acoustic Measurement Equipment

Equipment	Manufacturer-Model Type	Serial Number	Calibration	
			Certificate Number	Expiry Date
Sound Level Meter	Rion NA-28	00370297	1611623	29 Nov. 2018
Preamplifier	Rion NH-23	60306		
Microphone	Rion UC-59	00386		
Calibrator	Rion NC-74	35105086	TCRT17/1344	12 June 2018

The noise measurement equipment used during the surveys was calibrated at the start and end of the measurement period. The calibrator used had itself been calibrated by an accredited calibration laboratory within the 12 months preceding the measurements. No significant drift in calibration was found to have occurred on the sound level meter.

The microphone was fitted with a protective windshield, with an appropriate correction applied on the sound level meter.

4.3 Weather Conditions

Weather conditions were dry with negligible wind during the entire duration of the noise monitoring period.

4.4 Procedure and Measurement Positions

The survey was undertaken on the basis of one unattended measurement position protruding from a window in the existing building.

The measurement position is detailed below and can be seen in Figure 7.

Measurement Position 1 (MP1):

Unattended survey location in the north east corner of the site, protruding approximately 2m from the existing third floor window 1.5m above the level of the roof edge, overlooking Southampton Place.

[4] British Standard 7445: 2003: *Description and measurement of environmental noise.* BSI
[5] British Standard 61672: 2003: *Electroacoustics. Sound level meters.* Part 1 *Specifications.* BSI.

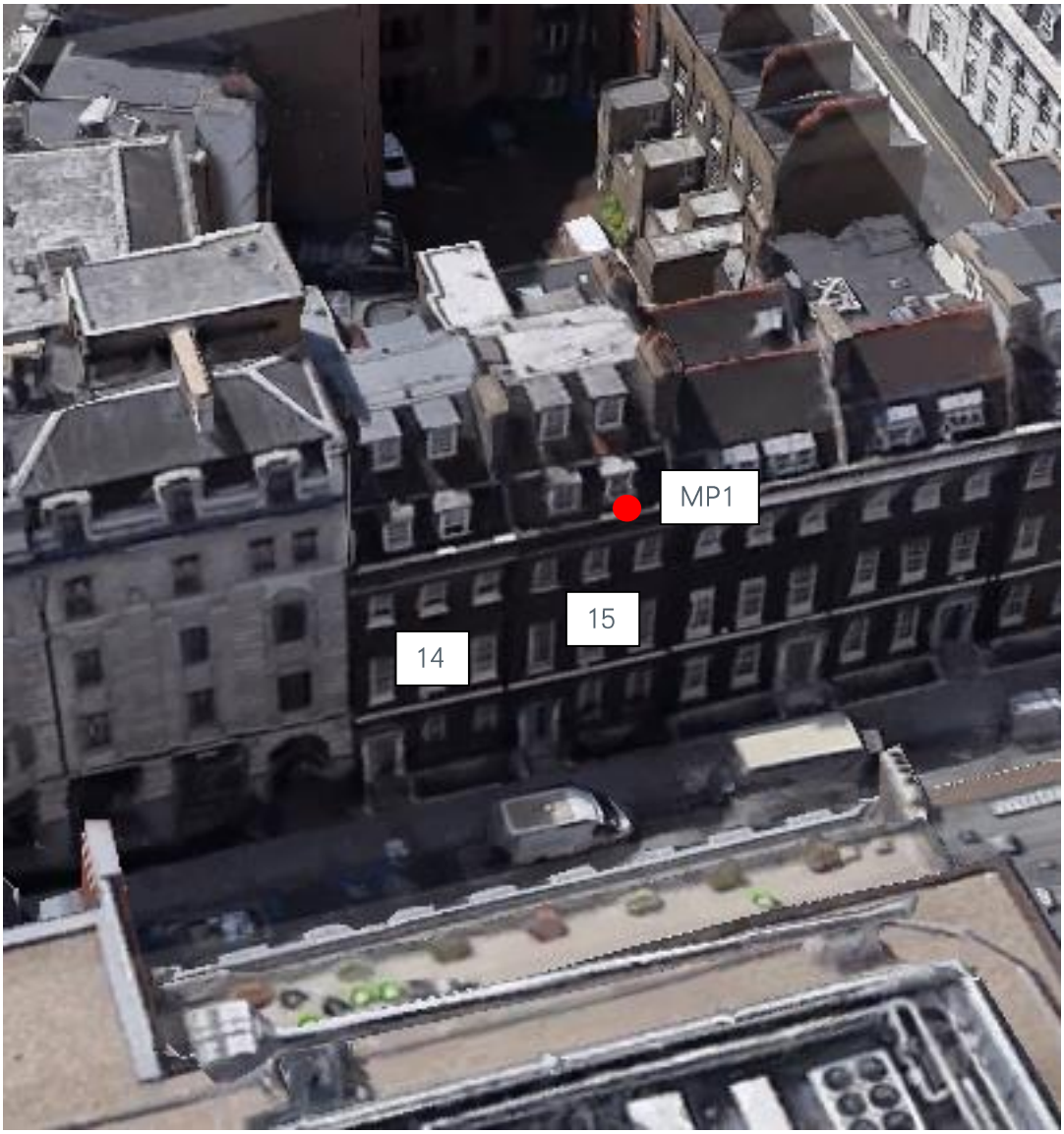


Figure 2: Measurement Location

4.5 Noise Survey Results

The results of environmental noise survey are presented in Table 4 below.

Table 4: Measured Noise Levels at MP1

Date	Period	$L_{Aeq,T}$	Average $L_{A90,15mins}$	Minimum $L_{A90,(1hour\ Day\ \&\ 15min\ Night)}$
27/10/17	12:00 – 23:00	65	58	56
	23:00 – 07:00	62	53	51
28/10/17	07:00 – 13:00	66	59	58

Note: Two measurements were excluded from the assessment during the night as they were abnormally high, this is believed to be due to emergency sirens.

5 Noise Impact Assessment

5.1 Building Services Proposals

It is understood that the following condenser unit is proposed:

Table 5: LG UK Multi V5 Sound Levels		
	Operation Mode	Sound Level dBA
Sound Pressure Level	Cooling	61
	Heating	62
Sound Power Level	Cooling	83
	Heating	85

Two condenser units with the specification set out in Table 5 are proposed within the rear lightwell of 15 Southampton Place.

These are currently the only proposed external plant noise sources.

5.2 Nearest Noise Sensitive Receivers (NNSR)

The nearest existing noise-sensitive receptors to the proposed condenser units are the rear of the residential properties on Barter Street which are at a distance of approximately 25m. It is understood that there is no direct line of site from condenser units to the residential properties.

There are windows to the rear of the adjacent RBS bank however the usage of the overlooking rooms is unclear.

5.3 External Sound Level Criteria

Items of static services plant associated with refurbished offices within the development will be designed to give a cumulative sound rating level ($L_{Ar,Tr}$) of no greater than 5dB below the lowest measured background sound level ($L_{A90,T}$) at any time at the nearest noise-sensitive residential receptors.

In order to meet this requirement and consequently be compliant with Camden Plant Noise Policy, the noise criteria set out in Table 5 have been proposed based on the lowest measured background daytime and night-time noise levels during the environmental noise survey. The limits are set in order to achieve the NOEL in accordance with Policy A4.

Table 5: Proposed Plant Noise Emission Limits			
Operating Period	Lowest Measured Background Noise Level $L_{A90,T}$ (dB)	Proposed Plant "Rating Level" At The Nearest Noise Sensitive Receptor $L_{Ar,Tr}$ (dB)	Proposed Plant "Rating Level" At The Nearest Noise Sensitive Receptor where Noise is Tonal or Impulsive $L_{Ar,Tr}$ (dB)
Daytime (07:00 – 23:00)	56	46	41
Night Time (23:00 – 07:00)	53	43	38

The above limits apply to the total sound emission level from all static plant and processes within the proposed development. Individual plant items may need to be designed to a lower limit such that the overall total achieves the stated criteria above.

Compliance with the above limiting noise levels would be expected to result in a low impact in accordance with BS 4142:2014.

5.4 Expected Plant Noise Levels

The expected plant noise levels at the nearest residential receptor have been calculated taking into account distance attenuation and barrier loss (in accordance with the Maekawa method). The expected noise level is 24dBA at one metre from the nearest residential receptor. This is a very low noise level, and is 29dBA below the lowest measured background noise level during the night and therefore considered compliant with Local Authority plant noise criteria and that plant noise is unlikely to cause an adverse impact in accordance with BS4142:2014.

Although the usage of the rooms overlooking the lightwell from the RBS bank is not known, the plant noise levels to the nearest window have been calculated for information purposes. The expected plant noise level at this location is 43dBA. This is 13dBA below the lowest measured background noise level during the daytime period. Assuming that these rooms are offices or similar, this level of plant noise is unlikely to adversely impact on users.

6 Conclusion

MLM Consulting Engineers Ltd has been commissioned by OD Group to undertake an environmental noise survey at 14 & 15 Southampton Place, London, and to assess the impact of noise on the nearest noise-sensitive receptor from proposed plant installations, as required by Camden Council.

The development comprises the refurbishment of the existing buildings to provide offices and meeting rooms.

The assessment considers noise arising from the proposed plant, with respect to the existing noise levels in the area, which has been assessed in accordance with the assessment methodology contained in British Standard 4142:2014 Methods for Rating and Assessing Industrial and Commercial Sound.

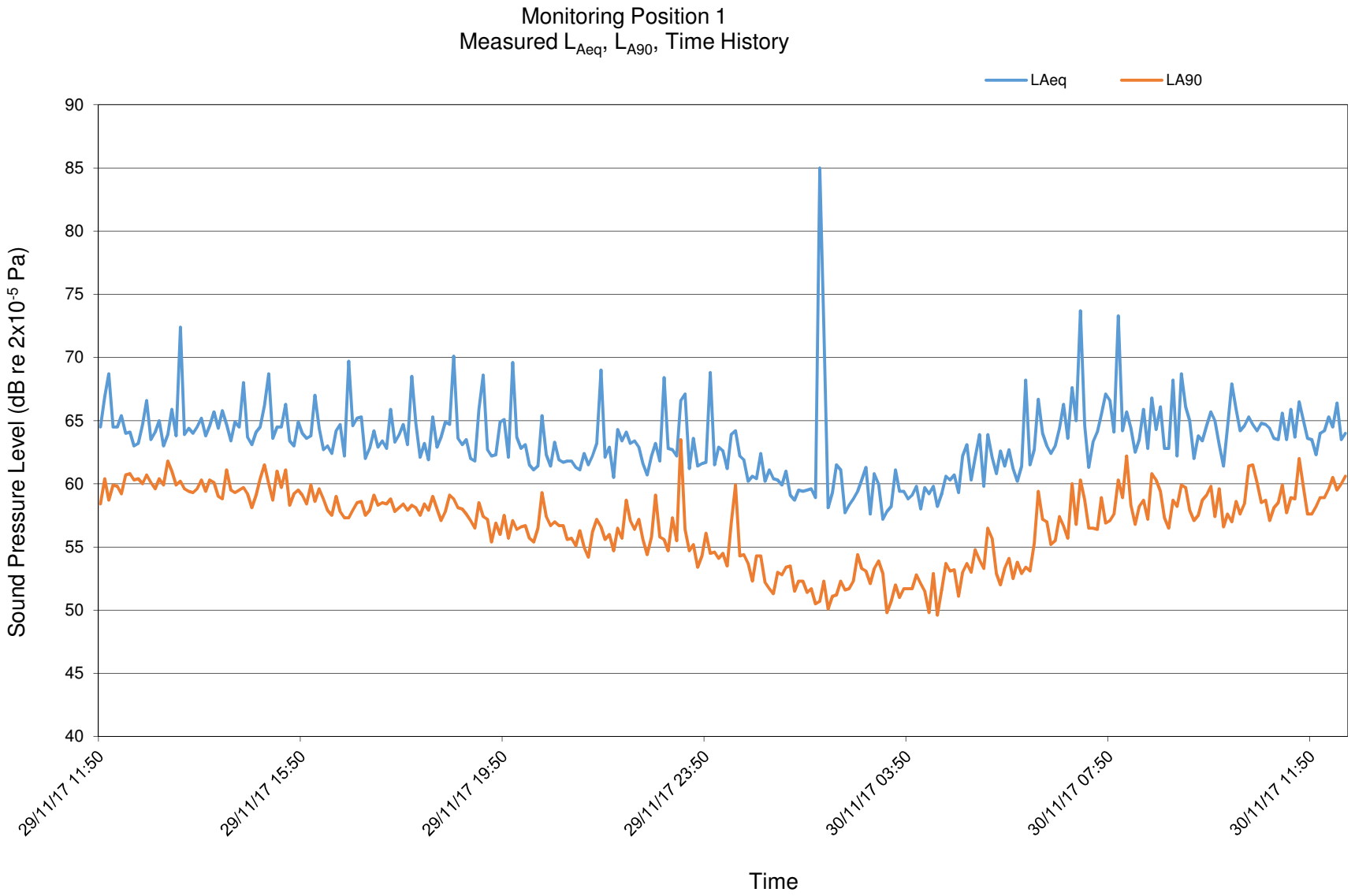
The report presents the results of a background noise monitoring exercise, carried out to determine the existing noise climate at the nearest noise-sensitive receptors to the proposed development. The environmental noise survey was conducted by MLM Consulting Engineers Ltd between Wednesday 29 and Thursday 30 November 2017. This sample is considered sufficient to provide details of representative and typical noise levels during a weekday period.

Target noise criteria have been set for the total noise emissions of all the plant to be included at a later design stage. Providing that the noise levels from all the plant and machinery do not exceed the stated noise criteria, whether through the application of noise control techniques or otherwise, the impact of noise from such sources is expected to have a low impact on existing sensitive receptors. The noise levels from the proposed external condenser units have been assessed and are expected to be compliant with Camden Council plant noise criteria and are unlikely to cause adverse impact in accordance with BS4142:2014.

Appendix A - Glossary of Acoustic Terminology

Wording	Description
Sound Pressure	Sound, or sound pressure, is a fluctuation in air pressure over the static ambient pressure.
Sound Pressure Level (Sound Level)	The sound level is the sound pressure relative to a standard reference pressure of 20μPa (20x10-6 Pascal's) on a decibel scale.
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s1 and s2 is given by 20 log10 (s1 / s2). The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20μPa.
A-weighting, dB(A)	The unit of sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.
Noise Level Indices	Noise levels usually fluctuate over time, so it is often necessary to consider an average or statistical noise level. This can be done in several ways, so a number of different noise indices have been defined, according to how the averaging or statistics are carried out.
Leq,T	A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
Lmax,T	A noise level index defined as the maximum noise level during the period T. Lmax is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall Leq noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
L90,T	A noise level index. The noise level exceeded for 90% of the time over the period T. L90 can be considered to be the "average minimum" noise level and is often used to describe the background noise.
L10,T	A noise level index. The noise level exceeded for 10% of the time over the period T. L10 can be considered to be the "average maximum" noise level. Generally used to describe road traffic noise.
Free-Field	Far from the presence of sound reflecting objects (except the ground), usually taken to mean at least 3.5m
Facade	At a distance of 1m in front of a large sound reflecting object such as a building façade.
Fast Time Weighting	An averaging time used in sound level meters. Defined in BS 5969.

Appendix B - Time History Graph



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