NoiseAir
ACOUSTICS & AIR QUALITY

Tel: 0116 272 5908
Email: info@noiseair.co.uk
Web: www.noiseair.co.uk

SOKA GAKKAI INTERNATIONAL - UK

NOISE IMPACT ASSESSMENT REPORT

7 WAKEFIELD STREET, LONDON WC1N 1PG

Client: Soka Gakkai International - UK

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Unit 4, Chapel Court, Wervin, Chester, Cheshire, CH2 4BT
The Counting House, High Street, Lutterworth, Leicestershire, LE17 4AY

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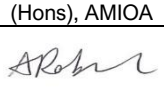
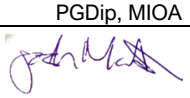
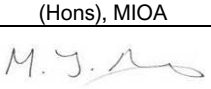
P6187-R1-V1	30/06/23	A.Roberts, BEng (Hons), AMIOA	J. McLelland, Ba(Hons), PGDip, MIOA	M. J. Malone, BSc (Hons), MIOA
				

CONTENTS

APPENDICES

1 INTRODUCTION

1.1 Overview

1.1.1 By instruction from Soka Gakkai International - UK ('the client'), NoiseAir was commissioned to undertake a noise impact assessment (NIA) for the installation of 1 no. platform lift as part of a planning application at 7 Wakefield Street, London WC1N 1PG, herein referred to as the 'development site'.

1.1.2 General limitations of this report are outlined in **Appendix A**.

1.2 Site Description

1.2.1 At the time of writing, the development site is a Buddhist Centre surrounded by commercial and residential uses and located within a wider residentially dominated area of Bloomsbury.

1.2.2 The development site is bound to the north by a United Reformed Church which faces onto Tavistock Place. To the east, the development site is bound by commercial and residential properties. To the south, the development site is bound by an access road, which commercial and residential properties face onto, beyond which is St George's Gardens. To the west, the development site is bound by Wakefield Street beyond which are University College London teaching facilities.

1.2.3 Wakefield Street is a single carriageway trafficked by vehicles travelling up to 30 miles per hour (mph).

1.3 Noise Sensitive Receptors

1.3.1 The nearest identified noise sensitive receptors (NSRs) are the office buildings and residential properties located to the south of the development site.

1.3.2 **Figure 1** shows an aerial photograph of the development site with respect to the local area and its context.

Figure 1: Development site aerial photograph

1.4 Development Proposals

1.4.1 Proposals for the development site outline the demolition of the existing rear entrance staircase to be replaced by a platform lift installed as part of the construction of a new accessible rear entrance way. The platform lift is outlined below:

- **Platform Lift** – 1 no. British Style Hydraulic Vertical Platform Lift by Platform Lift Company with a sound pressure level of 66 dB(A) L_{Aeq} at 1 m from the hydraulic control cabinet.

1.4.2 It is understood that the platform lift will be intermittently operational depending on use requirements during the daytime (07:00 – 23:00).

1.4.3 This assessment is based on the proposed site layout as presented in **Figure 2** and **Figure 3**.

Figure 2: Proposed site layout.

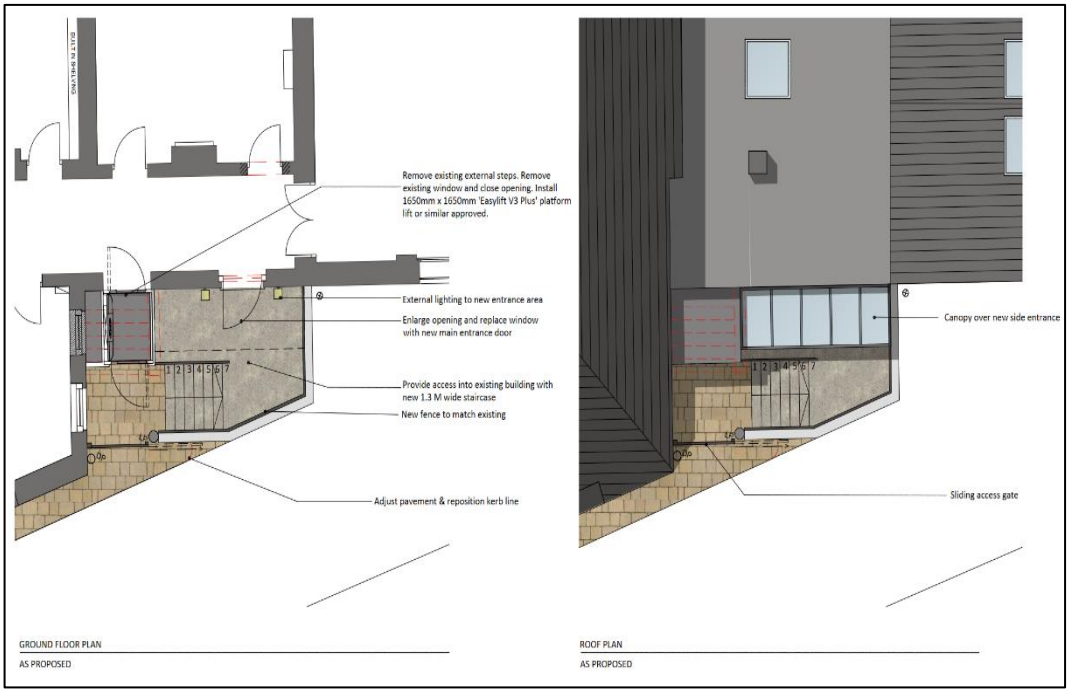


Figure 3: Proposed site layout – floor plan.

2 ASSESSMENT METHODOLOGY AND SCOPE OF WORKS

2.1 National Planning Policy Framework [NPPF 2021]

2.1.1 The NPPF sets out the government's planning policies for England and how they are expected to be applied. It aims to achieve sustainable development and states that planning policies and decisions should prevent unacceptable levels of noise pollution from new and existing development while affirming that the National Policy Statements form part of the national planning policy framework and should be considered in planning decisions.

2.2 Noise Policy Statement for England (NPSE)

2.2.1 The Noise Policy Statement for England (NPSE), published in March 2010, states the long-term vision of Government noise policy is to "promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development".

2.2.2 The NPSE sets out the government's overall policy on noise within the context of sustainable development. It introduces three concepts for noise management: avoid significant adverse effects; mitigate and minimise adverse effects; and where possible, contribute to improvements in health and quality of life.

2.2.3 It also establishes a hierarchy of noise management actions: avoid; reduce; remedy; mitigate; compensate.

2.2.4 The NPSE also introduces the below categories with respect to 'adverse impacts'.

'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'.

2.2.5 The NPSE states that significant adverse effects on health and quality of life should be avoided. Where the impact lies somewhere between LOAEL and SOAEL, it requires that all

reasonable steps are taken to mitigate and minimise the adverse effects of noise. In this regard, a certain degree of impact between LOAEL and SOAEL would be acceptable in terms of planning policy, provided that the impact has been mitigated and minimised by design.

2.3 Planning Practice Guidance - Noise [PPG 2019]

2.3.1 PPG 2019 provides guidance on how noise should be considered in planning decisions. It was published in 2014 and updated in 2019. The document advises on how to avoid, mitigate or minimise adverse effects of noise through good acoustic design and appropriate conditions or obligations.

2.3.2 **Table 1** summarises the noise exposure hierarchy outlined within the PPG.

Table 1: National Planning Practice Guidance Noise Exposure Hierarchy

Perception	Increasing Effect Level	Action
Not noticeable	No Observed Effect	No specific measures required
Noticeable and not intrusive	No Observed Adverse Effect	No specific measures required
Lowest Observed Effect Level		
Noticeable and intrusive	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Effect Level		
Noticeable and disruptive	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Unacceptable Adverse Effect	Prevent

The London Plan – 2021 [TLP:2021]

2.3.3 The London Plan, 2021 (TLP:2021) is part of the statutory development plan for London, meaning that the policies in the Plan should inform decisions on planning applications across the capital. Borough's Local Plans must be in 'general conformity' with the London Plan, ensuring that the planning system for London operates in a joined-up way and reflects the overall strategy for how London can develop sustainably, which the London Plan sets out.

2.3.4 The general objectives for the TLP:2021, and the process for drawing it up, altering it and replacing it, are set out in the Greater London Authority Act 1999 and the Town and Country Planning (London Spatial Development Strategy) Regulations 2000. The London Plan has been developed in line with these requirements.

2.3.5 The legislation stipulates that the TLP:2021 should only deal with things of strategic importance to Greater London taking account of the principal purposes of the Greater London Authority which are:

- promoting economic development and wealth creation in Greater London;
- promoting social development in Greater London; and,
- promoting the improvement of the environment in Greater London.

2.3.6 Policy D14 of TLP:2014 specifically considers noise and the impacts of noise-generating activities on a wider scale. Policy D14 of TLP:2021 states that:

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

2.3.7 TLP:2021 goes on to state:

"BS 4214:2014 provides guidance on monitoring noise issues in mixed residential/industrial areas."

2.4 Camden Local Plan – 2017 [CLP:2017]

2.4.1 The Camden Local Plan, 2017 (TLP:2021) is part of the development plan for the London Borough of Camden and sets out all the policies that should inform decisions on planning applications across the borough.

2.4.2 Policy A4 addresses noise and vibration stating:

> ***Policy A4 Noise and vibration***
>
> *The Council will seek to ensure that noise and vibration is controlled and managed.*
>
> *Development should have regard to Camden's Noise and Vibration Thresholds (Appendix 3). We will not grant planning permission for:*
>
> *a. development likely to generate unacceptable noise and vibration impacts; or*
>
> *b. development sensitive to noise in locations which experience high levels of noise, unless appropriate attenuation measures can be provided and will not harm the continued operation of existing uses.*
>
> *We will only grant permission for noise generating development, including any plant and machinery, if it can be operated without causing harm to amenity. We will also seek to minimise the impact on local amenity from deliveries and from the demolition and construction phases of development.*

2.4.3 Appendix 3, as referenced in Policy A4, details how factors such as noise source, receptor type and operational times can influence the significance of the noise impact. It sets out Camden's noise thresholds which evaluate noise impacts based upon effect levels described in NPPF and PPG and three basic design criteria which aim to indicate the degree of consideration noise should be given within a proposed development.

2.4.4 The design criteria are:

- *"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."*

2.4.5 For industrial and commercial noise sources it states:

"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)."

2.4.6 **Table 2** details applicable noise levels as described in Table C of Appendix 3.

Table 2: Noise levels applicable to proposed industrial and commercial developments (including plant and machinery)

Existing Noise sensitive receptor	Assessment Location	Design Period	LOAEL (Green)	LOAEL to SOAEL (Amber)	SOAL (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 57dB L_{Amax}	'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 88dB L_{Amax}

2.5 Camden Planning Guidance - Amenity - 2021 [CPG – A:2021]

2.5.1 In support of CLP: 2017, supplementary planning documents (SPDs) have been prepared to provide additional detailed guidance to assist with planning decisions. This guidance focuses on amenity standards. Section 6 of Camden Planning Guidance – Amenity, 2021 (CPG – A:2021) specifically relates to Noise and Vibration and expands upon Policy A4 from CLP:2017. The key messages from this section are:

- *"The Council will assess the impact of noise and vibration through the consideration of acoustic reports submitted by applicants.*
- *Noise mitigation (where appropriate) is expected to be incorporated into developments at the design stage.*

- *The Council will secure mitigation measures through planning condition or legal agreement where necessary.*
- *The Council will adopt the 'agent of change' principle."*

2.6 Camden Planning Guidance - Design - 2021 [CPG – D:2021]

2.6.1 Camden Planning Guidance – Design, 2021 (CPG – D:2021) is a SPD which provides additional planning decision guidance promoting high quality design in many areas including for building service equipment (Section 9). The key messages within this section are:

"Building services equipment should:

- *not harm occupant or neighbour amenity, health and/or wellbeing;*
- *be incorporated into the host building aesthetically;*
- *have a minimal impact on the environment; and*
- *not harm listed buildings, conservation areas or streetscapes."*

2.7 Consultation and Scope of Works

2.7.1 Pre-application advice was sought from the London Borough of Camden Council, pre-application reference: 2021/3663/PRE. A response was received from Jaspreet Chana, Senior Planning Officer from the Planning Solution Team, on 11th April 2022, stating in respect to noise:

*'**8. Amenity***

Policy A1 seeks to protect the amenity of Camden's residents by ensuring the impact of development is fully considered and would not harm the amenity of neighbouring residents.

This includes privacy, outlook, noise, daylight and sunlight.

…

- *Furthermore due to the lift being of a mechanical nature and additional plant equipment required to run it, it is considered that when it would be used there would be sounds coming from the movement, therefore a noise impact assessment would be required to be submitted of the lift with any formal planning permission.'*

2.7.2 NoiseAir contacted Camden Council Planning Department on the 22nd May 2023, however no response has yet been received.

2.8 Assessment Criteria

2.8.1 Given the nature of the proposed operations at the development site, it is considered that an assessment should be undertaken primarily in accordance with the following British Standard and guidance documentation:

- BS 4142:2014+A1:2019 (BS 4142:2014) – Methods for rating and assessing industrial and commercial sound.

2.8.2 A summary of the above documentation is provided below for reference.

British Standard 4142:2014 (BS 4142:2014)

2.8.3 British Standard 4142:2014 – Methods for rating and assessing industrial and commercial sound, sets the methodology for rating and assessing sound of an industrial and commercial nature, which includes sound from fixed installations such as mechanical and electrical plant and equipment.

2.8.4 In BS 4142:2014, a noise rating is determined and compared with the existing local background sound level based on several more cumulative acoustic feature corrections to apply where appropriate. For example, if the noise includes a distinguishable tone, impulse, intermittency or other readily distinguishable sound characteristic, then additional cumulative penalties individually ranging from 0 to 9 dB may be applied depending on the type of noise.

2.8.5 BS 4142:2014 seeks to determine a “representative” background sound level, stating that “…the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods”.

2.8.6 The assessment of the impact depends upon the margin by which the rating level of the specific sound source exceeds the background sound level but also promotes a consideration of the context in which the sound occurs when making an assessment. BS 4142:2014 states that an initial estimate of the impact of the specific sound is made by subtracting the measured background sound level from the rating level, while considering the following points:

- Typically, the greater this difference, the greater the magnitude of the impact;
- 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; and,
- 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.

3 ACOUSTIC SURVEY

3.1 Acoustic Survey Details

3.1.1 NoiseAir conducted unattended noise monitoring between the 28th April 2023 and the 3rd May 2023 at the development site.

3.1.2 Noise monitoring was undertaken at one monitoring location (ML1), the position of which is shown in **Figure 4** below.

Figure 4: Approximate noise monitoring location

3.1.3 The noise measurement was made using a Class 1, integrating sound level meter (SLM).

3.1.4 The acoustic equipment was calibrated to comply with Section 4.2 of BS7445-1:2003[1] before and after the noise monitoring periods.

3.1.5 Details of the SLM and associated field calibration can be found in **Table 3** below.

Table 3: Summary of SLM Used for Survey and Associated Field Calibration

SLM (Serial No.)	Preamp (Serial No.)	Microphone (Serial No.)	Calibrator (Serial No.)	Start Calibration	End Calibration	Drift
NOR140 (1403057)	NOR1209 (12320)	NOR1225 (72835)	B&K 4231 (2482550) SVANTEK SV30A (10818)	-25.9 dB	-26.4dB	0.5

3.1.6 The weather conditions were noted to be as outlined in **Table 4** at the start and end of the monitoring period.

[1] BS7445-2003 "Description and measurement of environmental noise – Part 1: Guide to quantities and procedures.

Table 4: Summary of Weather Conditions Noted at the Start and End of the Monitoring Duration		
	28th April 2023	**3rd May 2023**
Roads (Wet / Dry)	Damp	Dry
Temperature (˚C)	16	13
Wind speed (ms^{-1})	5 W	4.5 E
Cloud Cover (Approx. %)	100	30
Humidity (%)	74	61

3.2 Measured Sound Levels

3.2.1 Data is shown in **Figure 5** detailing a level vs. time graph of the recorded L_{Amax}, L_{Aeq} and L_{A90} sound level over 15-minute time periods for ML1.

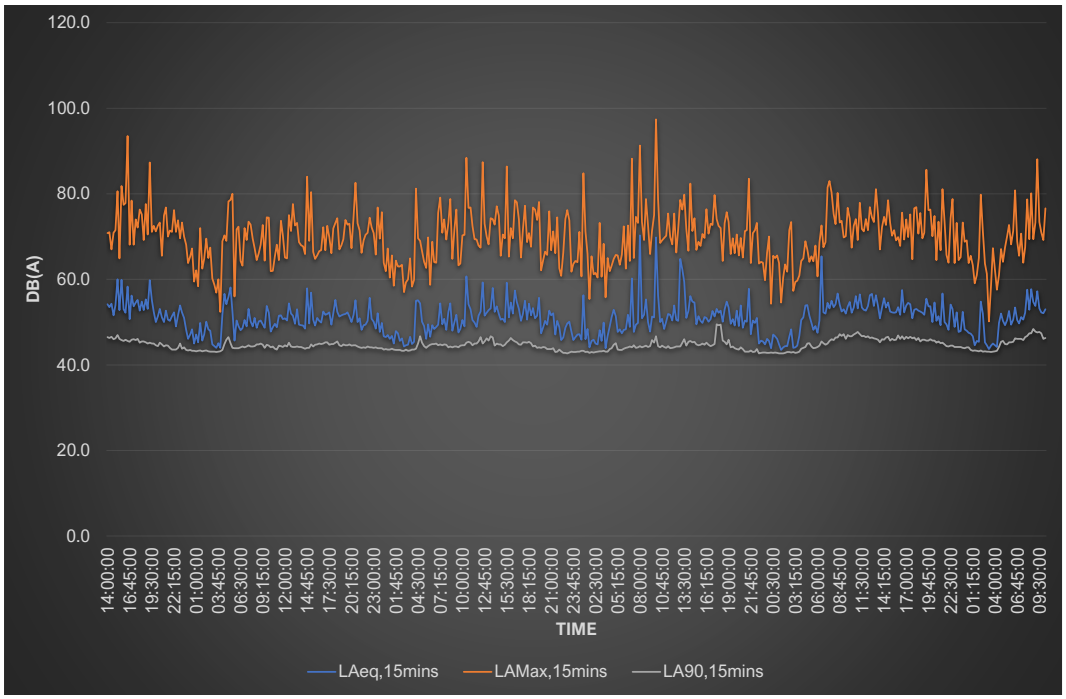


Figure 5: Level vs. time graph showing L_{Amax}, L_{Aeq} and L_{A90} sound levels – ML1

3.2.2 During analysis, data established to be taken during periods of adverse weather have been removed from the data set.

3.3 Background Sound Levels

3.3.1 A histogram showing the distribution of measured $L_{A90,1\ hour}$ sound level for the daytime is presented in **Figure 6** for ML1.

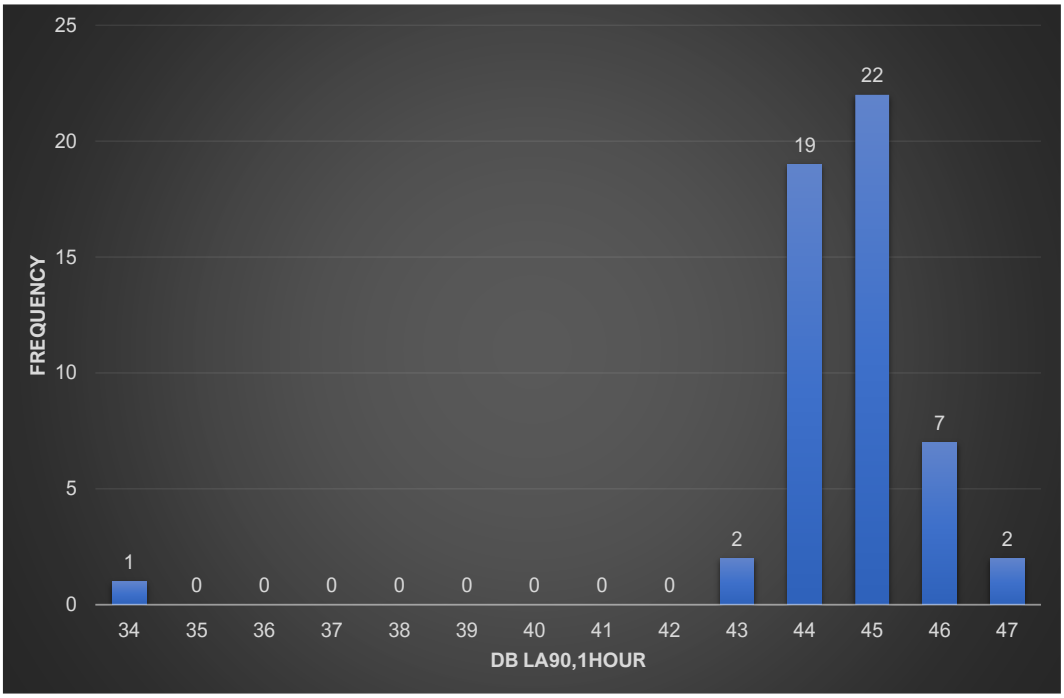


Figure 6: Daytime $L_{A90,1hour}$ noise readings at ML1.

3.3.2 For the daytime, a typical background sound level of 44 dB(A) has been selected.

4 BS 4142:2014+A1:2019

4.1 BS 4142:2014 Assessment

4.1.1 A BS 4142:2014 assessment has been undertaken with respect to noise breakout from the proposed platform lift based on calculated sound levels.

4.2 Specific Sound Level

4.2.1 The sound pressure level at 1 m is 66 dB(A). Using standard acoustic distance calculations, the specific sound level has been calculated to be 50 dB(A).

4.3 Background Sound Level

4.3.1 The measured background sound level is presented within Section 3.3 of this report.

4.3.2 A typical daytime $L_{A90,\ 1\ hour}$ background sound level of 44 dB(A) has been adopted for this assessment.

4.4 Character Corrections

4.4.1 Based on previous experience of assessing mechanical plant, the following character corrections have been applied:

- **Tonality** – Noise breakout from the platform lift is likely to produce tonal components in the low - mid frequency bands. Therefore, a +2 dB character correction has been applied for just perceptible tones.
- **Impulsivity** – Given the nature of the noise assessed, no correction for impulsivity has been applied; and,
- **Intermittency** – It is understood that the platform lift will typically exhibit intermittent characteristics depending on use requirements. However, as per guidance in Section 9.2 Commentary, Note 2, of BS 4142:2014, the tonality of the specific sound is considered the dominant feature therefore no character correction has been applied for the minor characteristic of intermittency.

4.5 On Time Correction

4.5.1 It is understood that the use requirements of the platform lift is likely to be typically 1-2 times an hour.

4.5.2 It is understood that the platform lift will raise to a height of c.1.2 m and the proposed platform lift has an operational speed of 0.08 m/sec. For one whole cycle of the lift raising

and lowering, the mechanical plant will be operational for 30 seconds. Using the on-time correction calculation detailed in BS 4142:2014, and assuming one use per hour, an on-time correction of -21 dB(A) is applicable.

4.6 Initial Assessment

4.6.1 The BS 4142:2014 initial assessment based on the calculated noise breakout levels for the plant is presented in **Table 5**.

Table 5: BS 4142:2014 Assessment to Determine the Likelihood of Adverse Impacts on at the Surrounding Residential Receptors

Quantity	Sound Level dB(A)
	Daytime
Typical Background Sound Level, dB L_{A90}	44
Specific Sound Level	50
Acoustic Feature Correction for Tonality and Intermittency	+2
On Time Correction	-21
Rating Level	31
Excess of Rating Level over Background Sound Level	**-13**

BS 4142:2014 Assessment and Context

4.6.2 The BS 4142:2014 initial assessment indicates that the excess of rating level over the existing background sound level for the daytime is calculated to be -13 dB(A). The initial assessment therefore indicates that, during the daytime, an low impact is likely.

4.6.3 The context of the assessment is the proposed installation of a platform lift to the rear of the existing building, located c. 6 m north- west of the worst effected NSR. The development site and surrounding NSRs are located within a wider, predominantly residential area with nearfield and distant road traffic being the dominant noise source.

4.6.4 Camden Council has stringent design criteria for mechanical plant. Where tonal characteristics are present, noise breakout is required to be 15 dB(A) below background sound levels. This requirement is understood to be implemented to reduce noise creep, which can occur when new noise sources with continuous noise breakout are introduced to

an area, raising the background level. As established, the noise breakout from the proposed platform lift will be intermittent and infrequent depending on use requirements, therefore this design criteria does not seem applicable as it is unlikely that the introduction of this noise source will contribute to noise creep within the area.

4.6.5 Based on these contextual considerations and due to the rating level being significantly below the existing background sound level, it is likely that the proposed platform lift will have a **low impact** at the nearest NSRs.

4.7 Uncertainty

4.7.1 Uncertainty of measurements can have a significant effect on the outcome and findings of an assessment and therefore such constraints are documented and discussed below.

4.7.2 The SLM used was a Norsonic Class 1 SLM, it is generally recognised that Class 1 SLMs offer an uncertainty of ±1.0 dB. The instrumentation used for the survey has been calibrated by UKAS approved laboratories.

4.7.3 The sound levels measured (which include busier and quieter periods) are considered typical for an urban area.

4.7.4 Wind speeds during the survey visits were typically less than 5 ms-1 and any periods of adverse weather were removed, therefore the effect of wind generated noise is not considered to have a significant impact on this assessment.

4.7.5 It is therefore considered that, in this instance, the uncertainty of the calculations is likely to have minimal influence on the outcome of the assessment.

5 RECOMMENDATIONS

5.1.1 Mechanical equipment typically increases in noise breakout with respect to age. It is recommended that all plant and associated machinery is operated within typical manufacturers specifications, adequately maintained and kept in good repair in accordance with manufacturer's instructions to ensure that noise breakout is kept to a minimum.

5.1.2 General recommendations for mechanical plant often require the use of appropriate anti-vibration mounts to ensure that vibration transfer into the building through structure borne vibration is minimised.

6 CONCLUSIONS

6.1.1 By instruction from Soka Gakkai International - UK, NoiseAir was commissioned to undertake a NIA for the installation of 1 no platform lift as part of a planning application at 7 Wakefield Street, London WC1N 1PG.

6.1.2 A BS 4142:2014 assessment has been undertaken for the daytime in order to ascertain the likelihood of adverse impact due to mechanical noise breakout out at the development site.

6.1.3 The initial assessment indicates that a **low impact** is likely at the worst affected external facades.

6.1.4 The noise breakout from the proposed platform lift will be intermittent and infrequent depending on use requirements, therefore Camden Council design criteria for continuous noise breakout from mechanical plant does not seem applicable to this case as it is unlikely that the introduction of this noise source will contribute to noise creep within the area.

APPENDIX A - REPORT LIMITATIONS

This Report is presented to Soka Gakkai International - UK and may not be used or relied on by any other person or by the client in relation to any other matters not covered specifically by the scope of this report.

Notwithstanding anything to the contrary contained in the report, NoiseAir Limited is obliged to exercise reasonable skill, care and diligence in the performance of the services required by Soka Gakkai International - UK and NoiseAir shall not be liable except to the extent that it has failed to exercise reasonable skill, care and diligence, and this report shall be read and construed accordingly.

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Where assessments of works or costs identified in this report are made, such assessments are based upon the information available at the time and where appropriate are subject to further investigations or information which may become available.

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APPENDIX B - GLOSSARY

A-weighted sound pressure, p_A	Value of overall sound pressure, measured in pascals (Pa), after the electrical signal derived from a microphone has been passed through an A-weighting network. *NOTE: The A-weighting network modifies the electrical response of a sound level meter with frequency in approximately the same way as the sensitivity of the human hearing system.*
A-weighted sound pressure level, L_{pA}	Quantity of A-weighted sound pressure in decibels (dBA).
Acoustic environment	Sound from all sound sources as modified by the environment [BS ISO 12913-1:2013].
Ambient sound	Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far. *NOTE: The ambient sound comprises the residual sound and the specific sound when present.*
Ambient sound level, $L_a = L_{Aeq,T}$ (BS4142:2014)	Equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T *NOTE: The ambient sound level is a measure of the residual sound and the specific sound when present.*
Background sound	Underlying level of sound over a period, *T*, which might in part be an indication of relative quietness at a given location.
Background sound level, $L_{A90,T}$ (BS4142:2014)	A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels.
Break-in	Noise transmission into a structure from outside.
Break-out	Noise transmission from inside a structure to the outside.
Cross-talk	Noise transmission between one room and another room or space via a duct or other path.
C_{tr}	Correction term applied against the sound insulation single-number values (R_w, D_w, and $D_{nT,w}$) to provide a weighting against low frequency performance. *NOTE: The reference values used within the C_{tr} calculation are based on urban traffic noise.*
Equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$	Value of the A-weighted sound pressure level in decibels (dB) of a continuous, steady sound that, within a specified time interval, T, has the same mean-squared sound pressure as the sound under consideration that varies with time.
Equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$ (BS4142:2014)	Value of the A-weighted sound pressure level in decibels of continuous steady sound that, within a specified time interval, $T = t_2 - t_1$, has the same mean-squared sound pressure as a sound that varies with time.
Equivalent sound absorption area of a room, A	Hypothetical area of a totally absorbing surface without diffraction effects, expressed in square metres (m2), which, if it were the only absorbing element in the room, would give the same reverberation time as the room under consideration
Facade level	Sound pressure level 1 m in front of the façade. *NOTE: Facade level measurements of L_{pA} are typically 1 dB to 2 dB higher than corresponding free-field measurements because of the reflection from the facade.*
Free-field level	Sound pressure level away from reflecting surfaces. *NOTE: Measurements made 1.2 m to 1.5 m above the ground and at least 3.5 m away from other reflecting surfaces are usually regarded as free-field. To minimize the effect of reflections the measuring position has to be at least 3.5 m to the side of the reflecting surface (i.e. not 3.5 m from the reflecting surface in the direction of the source). Estimates of noise from aircraft overhead usually include a correction of 2 dB to allow for reflections from the ground.*

Impact sound pressure level, L_i	Average sound pressure level in a specific frequency band in a room below a floor when it is excited by a standard tapping machine or equivalent.
Indoor ambient noise	Noise in a given situation at a given time, usually composed of noise from many sources, inside and outside the building, but excluding noise from activities of the occupants. *NOTE: The location(s) within the room at which the ambient indoor noise is to be measured or calculated ought to be considered.*
Measurement time interval, T_m (BS4142:2014)	Total time over which measurements are taken. *NOTE: This may consist of the sum of a number of non-contiguous, short-term measurement time intervals.*
Noise criteria	Numerical indices used to define design goals in a given space.
Noise rating, NR	Graphical method for rating a noise by comparing the noise spectrum with a family of noise rating curves.
Normalised impact sound pressure level, L_n	Impact sound pressure level normalized for a standard absorption area in the receiving room. *NOTE: Normalised impact sound pressure level is usually used to characterize the insulation of a floor in a laboratory against impact sound in a stated frequency band.*
Octave band	Band of frequencies in which the upper limit of the band is twice the frequency of the lower limit.
Percentile level, $L_{AN,T}$	A-weighted sound pressure level obtained using time-weighting “F”, which is exceeded for *N*% of a specified time interval.
Reference time interval, T_r (BS4142:2014)	Specified interval over which the specific sound level is determined. *NOTE: This is 1 h during the day from 07:00 h to 23:00 h and a shorter period of 15 min at night from 23:00 h to 07:00 h.*
Residual sound (BS4142:2014)	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.
Residual sound level, $L_r = L_{Aeq,T}$ (BS4142:2014)	Equivalent continuous A-weighted sound pressure level of the residual sound at the assessment location over a given time interval, T.
Rating level, $L_{Ar,Tr}$	Equivalent continuous A-weighted sound pressure level of the noise, plus any adjustment for the characteristic features of the noise. *NOTE: This is used in BS 7445 and BS 4142 for rating industrial noise, where the noise is the specific noise from the source under investigation.*
Reverberation time, *T*	Time that would be required for the sound pressure level to decrease by 60 dB after the sound source has stopped.
Sound exposure level, *L*AE	Level of a sound, of 1 s duration, that has the same sound energy as the actual noise event considered.
Sound level difference, *D*	Difference between the sound pressure level in the source room and the sound pressure level in the receiving room.
Sound pressure, *p*	Root-mean-square value of the variation in air pressure, measured in pascals (Pa) above and below atmospheric pressure, caused by the sound.
Sound pressure level, L_p	Quantity of sound pressure, in decibels (dB).
Sound reduction index, *R*	Laboratory measure of the sound insulating properties of a material or building element in a stated frequency band.

Specific sound level, $L_s = L_{Aeq,Tr}$ (BS4142:2014)	Equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, T_r.
Specific sound source (BS4142:2014)	Sound source being assessed.
Standardised impact sound pressure level, L'_{nT}	Impact sound pressure level normalized to a reverberation time in the receiving room of 0.5 s.
Standardised level difference, D_{nT}	Difference in sound level between a pair of rooms, in a stated frequency band, normalized to a reference reverberation time of 0.5 s for dwellings.
Groundborne noise	Audible noise caused by the vibration of elements of a structure, for which the vibration propagation path from the source is partially or wholly through the ground. *NOTE Common sources of ground-borne noise include railways and heavy construction work on adjacent construction sites.*
Structure-borne noise	Audible noise caused by the vibration of elements of a structure, the source of which is within a building or structure with common elements. *NOTE Common sources of structure-borne noise include building services plant, manufacturing machinery and construction or demolition of the structure.*
Third octave band	Band of frequencies in which the upper limit of the band is 2% times the frequency of the lower limit.
Weighted level difference, D_w	Single-number quantity that characterizes airborne sound insulation between rooms, but which is not adjusted to reference conditions. *NOTE Weighted level difference is used to characterize the insulation between rooms in a building as they are. Values cannot normally be compared with measurements made under other conditions (see BS EN ISO 717-1).*
Weighted normalised impact sound pressure level, $L'_{n,w}$	Single-number quantity used to characterize the impact sound insulation of floors over a range of frequencies.
Weighted sound reduction index, R_w	Single-number quantity which characterizes the airborne sound insulating properties of a material or
Weighted standardised impact sound pressure level $L'_{nT,w}$	Single-number quantity used to characterize the impact sound insulation of floors over a range of frequencies.
Weighted standardised level difference, $D_{nT,w}$	Single-number quantity that characterizes the airborne sound insulation between rooms.

Symbols

D_w	Weighted level difference (dB)
D_{nT}	Standardized level difference (dB)
$D_{nT,w}$	Weighted standardized level difference (dB)
L_{Amax}	Maximum noise level (dB)
$L_{Ar,Tr}$	Rating level (dB)
L_n	Normalised impact sound pressure level (dB)
L'_{nT}	Standardised impact sound pressure level (dB)
$L'_{nT,w}$	Weighted standardised impact sound pressure level (dB)
$L'_{n,w}$	Weighted normalised impact sound pressure level (dB)
L_p	Sound pressure level (dB)
L_{pA}	A-weighted sound pressure level (dB)
$L_{AN,T}$	Percentile level (dB)
L_{AE}	Sound exposure level (dB)
$LAeq,T$	Equivalent continuous A-weighted sound pressure level (dB)
p	Sound pressure (Pa)
p_A	A-weighted sound pressure (dB)
$p_{A(t)}$	Instantaneous A-weighted sound pressure (Pa)

R	Sound reduction index (dB)
R_w	Weighted sound reduction index (dB)
T	Time interval (also used for reverberation time) (s)
t_0	Reference time interval (s)

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EMAIL. INFO@NOISEAIR.CO.UK

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