38 Chester Terrace

Environmental Noise Report for Planning

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P01	26 November 2020	For planning
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Executive Summary

An environmental noise survey has been undertaken at 38 Chester Terrace, London. Background noise levels have been measured and noise emission limits for new items of building services plant have been proposed.

Noise limits for externally mounted plant and equipment associated with the proposed development have been proposed based on the Local Authority requirements and guidance in BS 4142: 2014. Plant and equipment noise emissions from the proposed development should not exceed the limits summarised in the table below at the nearest Noise Sensitive Receptors (NSRs):

Period	Lowest measured background noise level dB $L_{A90,15min}$	Maximum plant noise level dB $L_{Aeq,T}$ (without tonal components)	Maximum plant noise rating level dB $L_{Ar,Tr}$ (with tonal components)
Daytime (07:00 – 23:00)	43	35*	30*
Night-time (23:00 – 07:00)	34	35*	30*
*Due to the low levels of background noise and based on guidance in BS 4142:2014 and B 8233, plant noise limits below 35 dB $L_{Aeq,T}$ (and 30 dB $L_{Aeq,T}$ for tonal noise) are not considered appropriate in urban areas. Therefore, the noise emission limits above have been limited to these values. However, it should confirmed that this is acceptable to the London Borough of Camden planning and environmental health teams.			

By meeting the proposed noise emission limits, the planning requirements of the London Borough of Camden should be met.

Contents

1.0 Introduction

Cundall has been commissioned by Nathan Harley to undertake an environmental noise survey and assessment for the proposed renovation of 38 Chester Terrace, London.

The purpose of this report is to:

- Review appropriate national and local planning policy and relevant guidance
- Determine existing background noise levels at nearby noise sensitive receptors
- Propose noise emission limits at nearby NSRs for externally mounted building services plant and equipment associated with the proposed development.

2.0 Proposed Development

Proposals are for the renovation of the existing residential dwelling at 38 Chester Terrace, London, NW1 4ND. There are no proposals for changes to the façade or glazing of the property that would materially affect internal noise levels.

Therefore, this assessment will focus on the potential noise impacts from new plant and equipment associated with the development at the nearest NSRs to the proposed development.

The site is bounded by Chester Terrace to the west and Chester Place to the east and by adjoining residential properties to the north and south.

2.1 Noise-sensitive receptors

Adjacent residential properties to the site are considered to be the nearest NSR to the proposed development.

The figure below provides an indication of the extent of the site and the location of the nearest NSR.

Figure 2-1: Indicative site boundary and nearest noise sensitive receptors (NSR)

3.0 Assessment Criteria

This section of the report outlines the key legislation and guidance relevant to the assessment of noise for a development of this type. The assessment methodology adopted has been based on relevant British Standards and the requirements of the London Borough of Camden (LBC).

3.1 Noise Policy Statement for England

The Noise Policy Statement for England (NPSE) was published by Defra in March 2010. The NPSE sets out the long-term vision of Government noise policy:

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

The NPSE long term vision is supported by the following 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."*

3.2 National Planning Policy Framework (NPPF)

The revised National Planning Policy Framework was updated on 20 July 2021 and sets out the Government's planning policies for England and how these are expected to be applied.

The NPPF states:

"134. Development that is not well designed should be refused, especially where it fails to reflect local design policies and government guidance on design, taking into account any local design guidance and supplementary planning documents such as design guides and codes. Conversely, significant weight should be given to:

a) development which reflects local design policies and government guidance on design, taking into account any local design guidance and supplementary planning documents such as design guides and codes; and/or

b) outstanding or innovative designs which promote high levels of sustainability, or help raise the standard of design more generally in an area, so long as they fit in with overall form and layout of their surroundings.

174. 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. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans;

185. 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;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; […]

187. Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development

permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed."

3.3 BS 4142: 2014+2019 'Methods for rating and assessing industrial and commercial sound' (BS 4142)

BS 4142 provides a methodology for assessing the impacts arising at sensitive receptors due to noise from industrial and commercial activities.

The BS 4142 method involves comparing the rating level of the sound source (the 'specific' noise level plus a range of potential feature corrections) to the measured background sound level in order to estimate its initial impact, as follows:

"Typically, the greater this difference, the greater the magnitude of the impact.

a) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.

b) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

c) 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 suggests that the noise source of interest will have a 'low impact' when the 'rating level' of a noise source is less than the existing background noise. It is also important to note that the standard requires that any quantitative assessment results are assessed in light of the context in which the sound occurs.

Regarding background noise levels, BS 4142 states:

"In using the background sound level in the method for rating and assessing industrial and commercial sound it is important to ensure that values are reliable and suitably represent both the particular circumstances and periods of interest. For this purpose, the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods."

A formal BS 4142 impact assessment has not been carried out in this report; however, the principles of the standard have been used to inform the method used.

3.4 London Plan

Policy 7.15, Section B of the London Plan states the following regarding planning decisions:

"Development proposals should seek to manage noise by:

- *Avoiding significant adverse noise impacts on health and quality of life as a result of new development;*
- *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 development or adding unduly to the costs and administrative burdens on existing businesses;*
- *Improving and enhancing the acoustic environment and promoting appropriate soundscapes (including Quiet Areas and spaces of relative tranquillity);*
- *Separating new noise sensitive development from major noise sources, such as road, rail, air transport and some types of industrial development) through the use of distance, screening or internal layout – in preference to sole reliance on sound insulation;*

- *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 the application of good acoustic design principles;*
- *Having particular regard to the impact of aviation noise on noise sensitive development;*
- *Promoting new technologies and improved practices to reduce noise at source, and on the transmission path from source to receiver."*

3.5 Local policies – The London Borough of Camden

The site falls within the London Borough of Camden (LBC). Policy A4 of the Camden Local Plan, adopted June 2017 gives details of the local authority planning policy where "uses sensitive to noise are proposed close to an existing source of noise or when development that is likely to generate noise is proposed". It states that: "Development should have regard to Camden's Noise and Vibration Thresholds (Appendix 3)."

Camden's Planning Guidance document on Amenity, adopted in March 2018 contains a chapter on noise and vibration and has been referenced as guidance for the application of the noise policies and thresholds contained within Camden's Local Plan.

3.5.1 Noise thresholds

Camden's policy evaluates noise in terms of various 'effect levels' described in the Planning Practice Guidance:

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

LBC set out three basic design criteria for proposed developments:

- "Green – where noise is considered to be at an acceptable level [LOAEL];
- 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 [LOAEL to SOAEL];
- Red – where noise is observed to have a significant adverse effect level." [SOAEL]

Appendix 3 of the Camden Local Plan Adoption details the noise thresholds set out by the LBC. The following is stated with regards to industrial and commercial noise sources:

"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 (15 dB if tonal components are present) should be considered as the design criterion)."

In addition to the above, London Borough of Camden has previously stated that assessments should be based on the lowest measured background noise level, $L_{A90,15min}$[1].

[1] Email correspondence between Jon Barnard of Cundall and Nick Priddle of London Borough of Camden dated 13/12/2018.

4.0 Environmental Noise Survey

4.1 Measurement times and location

An environmental noise survey was carried out between 29 October 2020 and 4 November 2020. The survey consisted of a 'long-term' sound level meter, constantly logging noise levels at the site.

Figure 4-1 shows the approximate noise measurement position. This position was chosen to be representative of the lowest background noise levels at nearby sensitive receptors. The quietest time periods are during the middle of the night such that noise levels at the front and the rear of the property would be similar.

Figure 4-1 - Noise survey measurement location

The microphone was attached to a pole at a height of 2m on the 1st floor balcony of the property, approximately 1.5m from the façade. A façade noise level correction of 3 dB has been applied to the measured noise levels.

4.2 Measurement equipment

Table 4-1 below provides relevant details of the equipment used for the baseline noise survey. The sound level meters used conform to BS EN 61672 class 1 accuracy and were field calibrated before and after use with no significant drift in measurements observed between calibrations.

Equipment	Manufacturer & model	Serial number
Sound level meter	01dB Fusion	11766
Calibrator	Casella	2652023

Table 4-1 – Noise survey equipment

Copies of external calibration certificates are available upon request.

Measurements were made of various noise descriptors, but the key parameter in this assessment is the $L_{A90,T}$ - the noise level exceeded for 90% of the measurement period T, referred to as the 'background' noise level.

4.3 Weather conditions

The following weather conditions were noted whilst on site, with wind speeds measured with a handheld anemometer:

- 29 Oct 2020: Generally overcast and dry. 12°C with maximum wind speeds of approximately 3-4 m/s;
- 4 Nov 2020: Generally sunny and dry. 4°C with negligible wind speeds.

Adverse weather conditions, including rain and windspeeds above 5 m/s were noted for short periods of the survey. Data for periods where noise measurements have been deemed to have been adversely affected by weather have been discounted from the assessment.

4.4 Existing noise climate

The dominant noise source affecting the site was from road traffic on the Outer Circular to the west and to a lesser extent road traffic on other surrounding roads.

Whilst on site occasional loud noises from a building site next door to the site were noted. In addition, noise from fire alarm testing at the property undertaken on the 29 October was also noted. These are not considered representative of the noise climate and have been removed from the data.

These periods as well as those discounted due to weather conditions not considered conducive with noise monitoring are shown in the time history graph in Appendix A of this report.

4.5 Survey results

The following table provides a summary of noise levels measured during the survey.

Date (2020)	Period	Measurement start time (hh:mm)	Measurement duration, T (hrs)	*Lowest background noise level $L_{A90,15min}$ (dB)
Thu 29 Oct	Daytime (07:00-23:00)	14:00	8.5	45
	Night-time (23:00-07:00)	23:00	8	39
Fri 30 Oct	Daytime (07:00-23:00)	08:00	16	45
	Night-time (23:00-07:00)	23:00	8	37
Sat 31 Oct	Daytime (07:00-23:00)	08:00	16	45
	Night-time (23:00-07:00)	23:00	8	38
Sun 1 Nov	Daytime (07:00-23:00)	08:00	16	43
	Night-time (23:00-07:00)	23:00	8	38
Mon 2 Nov	Daytime (07:00-23:00)	08:00	16	45
	Night-time (23:00-07:00)	23:00	8	34

Date (2020)	Period	Measurement start time (hh:mm)	Measurement duration, T (hrs)	*Lowest background noise level $L_{A90,15min}$ (dB)
Tue 3 Nov	Daytime (07:00-23:00)	08:00	16	44
	Night-time (23:00-07:00)	23:00	8	34
Wed 4 Nov	Daytime (07:00-23:00)	08:00	7.75	45
*The lowest LA90,15min has been used. These figures have had a -3 dB façade correction applied due to the proximity of the sound level meter to the building façade. These are considered to be worst-case assumptions as a façade correction may not always be necessary for a background noise measurement.				

Table 4-2 - Measured ambient and background noise levels

5.0 Plant noise emission limits

The proposed development includes noise-generating building services plant which have the potential to have an impact upon existing noise sensitive receptors in the locality of the site.

In accordance with LBC's noise policy, it is required that building services noise, which fall into the category of industrial and commercial noise sources, "be designed not to exceed a 'Rating Level' of 10 dB below background (15 dB if tonal components are present) should be considered as the design criterion.[2]"

To satisfy the planning requirements of the London Borough of Camden, the level of noise produced by any new items of plant must not exceed the plant noise level limits set out in Table 5-1:

Period	Lowest measured background noise level dB $L_{A90,15min}$	Maximum plant noise level dB $L_{Ar,Tr}$ (without tonal components)	Maximum plant noise rating level dB $L_{Ar,Tr}$ (with tonal components)
Daytime (07:00 – 23:00)	43	35*	30
Night-time (23:00 – 07:00)	34	35*	30
* In situations where external background noise levels are low, BS 4142: 2014 +A1: 2019 states that "BS 8233 indicates that 35 dBA sound level from the plant, equating to an internal noise level of around 25 dBA or lower [with an open window], with no significant acoustically distinguishing characteristics, is suitable for a bedroom." Therefore it is considered that noise limits below 35 dB $L_{Aeq,T}$ (or 30 dB where tonal) are not necessary.			

Table 5-1 - Plant noise emission limits

The limits should be applied to the cumulative noise level from plant at one metre from the nearest noise sensitive façade / window. when operating at maximum normal design duty.

It should be noted that, rating levels of 35 dB are considered very low. Therefore, we would not normally recommend plant noise emission limits below 35 dB $L_{Aeq,T}$ (as would be required if noise from plant / equipment is tonal). This will need to be confirmed with LBC.

By complying with the noise criteria identified above the requirements LBC requirements should be met. In addition, based on LBC's noise policy (Section 3.5 of this report) these criteria are defined as the 'lowest observed adverse effect level' for this type of noise / sound.

[2] It is assumed that no additional character corrections, other than that specifically mentioned for tonality, are required to comply with the LBC requirements

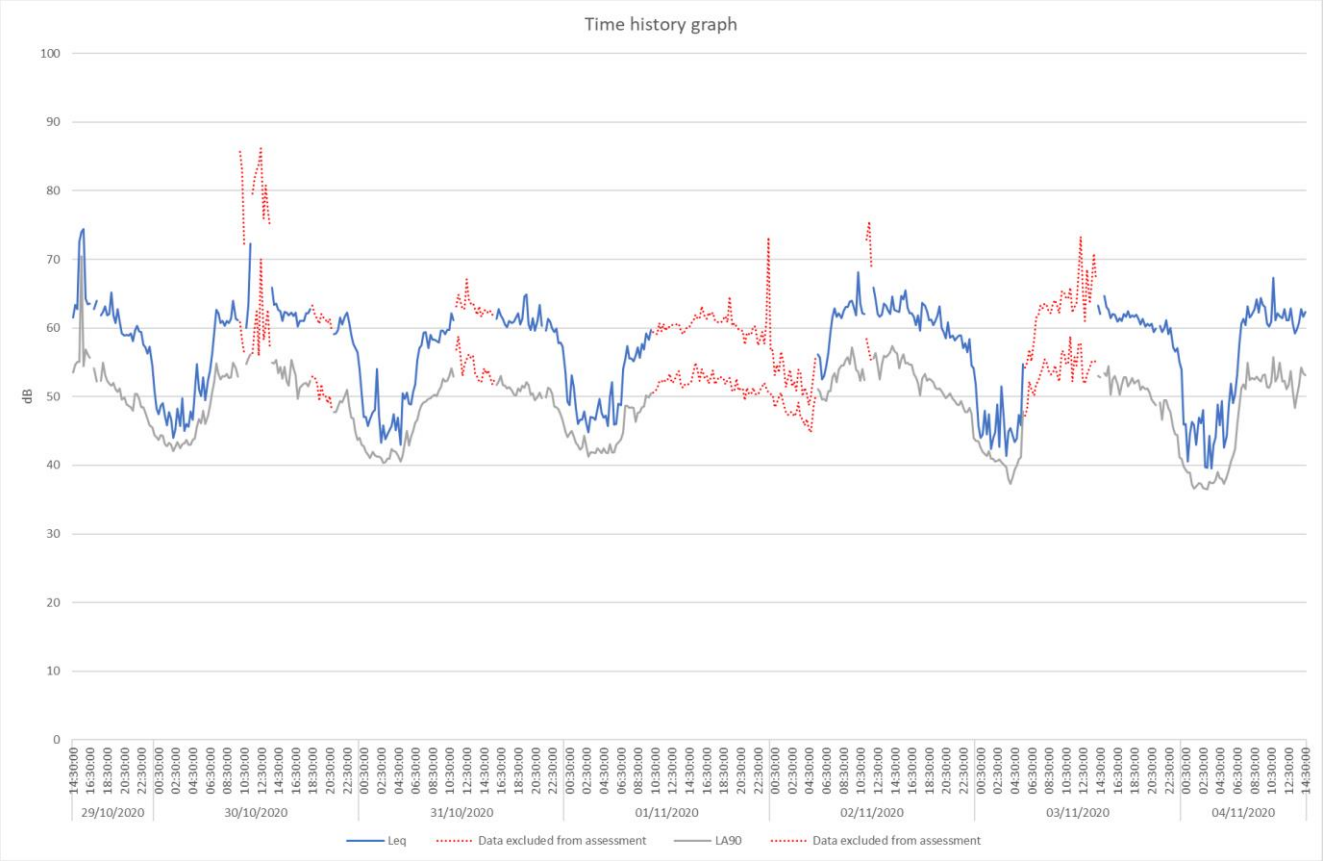
6.0 Conclusion

An environmental noise survey has been undertaken as part of the planning application for the proposed refurbishment of 38 Chester Terrace. Existing background noise levels at the site have been measured and plant noise limits for externally mounted plant have been proposed based on LBC requirements.

Based on the results of the noise survey and the requirements of London Borough of Camden as well as relevant guidance, noise emission limits have been proposed for new items of plant and equipment associated with the development. If these noise limits are complied with, it is considered unlikely that adverse noise effects will occur as a result of the proposed development and are likely to fall within Camden's LOEL (Lowest Observable Effect Level) category.

By meeting the proposed noise emission limits, the planning requirements of the London Borough of Camden should be met.

Appendix A



Appendix A - Time history graph of entire measurement period, also showing removed data due to poor weather conditions and works

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