Warner Street

Baseline noise survey

GSN Warner LLP

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Executive Summary

A baseline noise survey has been undertaken at 8 -10 Warner Street, located in the Clerkenwell area of Camden, London. The purpose of this survey was to help to establish noise emission limits for any new plant and equipment associated with the redevelopment of the site.

Plant noise limits have been proposed based on measured background noise levels and the requirements of The London Borough of Camden (LBC). To meet LBC's requirements, overall noise emission levels should not exceed the limits summarised in the table below at the nearest noise sensitive receptors (NSRs):

Receptor Group	Daytime plant noise emission limit, $L_{Aeq,1hr}$ (dB)	Night time plant noise emission limit, $L_{Aeq,15mins}$ (dB)
A	36	34
B	43	34
Should noise from the new plant and equipment contain tonal characteristics, the noise emission limits should be reduced by 5 dB.		

If the plant noise emission requirements outlined in this report are met, it is unlikely that adverse effects as a result of noise from the proposed development will occur.

Contents

1.0 Introduction

Cundall has been instructed by GSN Warner LLP to undertake a baseline noise survey and assessment for new items of plant to be installed on the roof of 8-10 Warner Street, London as part of the proposed development to provide new commercial office space.

This report details the existing noise climate around the site and identifies noise emission limits for the proposed plant at nearby noise-sensitive receptors, in line with London Borough of Camden's requirements and guidance from relevant British Standards.

2.0 Proposed development

2.1 Site location

The site is located at 8-10 Warner Street, London EC1R 5HA in the London Borough of Camden. The site is bounded by Warner Street to the north and a mix of residential and commercial properties to the east, south and west.

Figure 1 provides an approximate indication of the extent of the site and proposed plant locations.

Figure 1 - Site map and proposed plant locations

2.2 Noise environment

The dominant noise sources in the area directly around the site are road traffic from Warner Street, Mount Pleasant and Rosebury Avenue and noise from existing plant on the patio area of the site.

2.3 Noise sensitive receptors

The nearest noise sensitive receptors (NSRs) to the proposed development were identified as being the facades of residential properties to the north, west and south-west of the proposed plant locations. Existing background noise levels vary at different noise sensitive receptors due to the presence of the existing plant. Therefore, different plant noise limits have been set for different receptor locations.

The nearest noise NSRs have been grouped with respect to measured background levels as follows:

- Group A – Results from measurement position 2 are deemed representative of this group of NSRs
- Group B – Results from measurements taken at existing plant, attenuated for distance, are considered representative of this group of NSRs during the daytime, as noise from existing plant is dominant at this location.

During the night-time the levels measured at position 2 are considered representative (as the existing plant does not operate).

Figure 2 provides an illustration of the NSR groups identified.

Figure 2 - Nearest noise sensitive receptors

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.

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

The National Planning Policy Framework was revised in July 2018, the updated document replaces the original version published in March 2012.

The NPPF states:

"130. Permission should be refused for development of poor design that fails to take the opportunities available for improving the character and quality of an area and the way it functions, taking into account any local design standards or style guides in plans or supplementary planning documents. Conversely, where the design of a development accords with clear expectations in plan policies, design should not be used by the decision-maker as a valid reason to object to development. Local planning authorities should also seek to ensure that the quality of approved development is not materially diminished between permission and completion, as a result of changes being made to the permitted scheme (for example through changes to approved details such as the materials used).

170. 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;

180. 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; […]

182. 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 'Method for rating and assessing industrial and commercial sound'

BS 4142:2014 outlines a method for assessing noise from industrial and commercial sound. This involves comparing the 'rating' level (the 'specific' sound level plus a range of potential feature corrections) of the sound source to the measured background sound level in order to estimate its initial impact, as follows:

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

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

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

d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."

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 or equal to 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.

3.4 Local policy

The site falls within the London Borough of Camden (LBC). Policy A4 of the Camden Local Plan, adopted in 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 thresholds for noise and vibration evaluate 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."* (SOAEL)

Appendix 3 of the Camden Local Plan Adoption details the noise and vibration thresholds set out by the LBC. In which, 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."

It should be noted at this point that the 'rating level' ($L_{Ar,Tr}$) as defined in BS 4142:2014 already includes adjustments for acoustic features, including tonality.

Therefore, using the 'rating level' to set criteria 15 dB below the background level for tonal plant noise is considered overly stringent, as the penalty for tonality will be effectively doubled.

It is therefore suggested that the assessment is based on the 'specific sound level' which is in line with London Borough of Camden's requirements and previous version of BS 4142 (BS 4142:1997). Where the specific sound level contains does not contain tonal components it assumed that 10 dB be low background is acceptable. Where noise from plant and equipment is tonal a design target of 15 dB below background will be assumed. For the purposes of this assessment, the specific sound level is equivalent to the plant noise emission level given in terms of $L_{Aeq,T}$.

In addition to the above, London Borough of Camden has stated that the assessment 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 Baseline noise survey

This section of the report details the environmental noise survey that has been undertaken for the proposed development.

4.1 Measurement locations

Attended and unattended noise monitoring was carried out between 7 December and 12 December 2018 at the measurement positions indicated in Figure 3.

Figure 3 - Indicative measurement positions

Conditions for each measurement position are summarised as follows:

- **Position 1:** Attended measurement of noise levels from existing plant. Measurements were taken 1.5 m from the noise source and 1.5 m from the ground and are considered to be free-field. It is understood that existing plant operates during daytime hours only (07:00 – 23:00).
- **Position 2:** Attended and unattended measurements taken at the northern edge of the patio. These measurements are considered representative of noise levels at the nearest noise sensitive receptors during both daytime and night-time. The noise environment at this location consisted of a mix of road traffic noise from surrounding roads and existing plant (barely audible). Measurements were taken 2 m from the nearest façade and more than 1.5 m from ground level and are considered representative of the noise level at the nearest sensitive receptor

4.2 Measurement equipment

Table 1 provides relevant details of the equipment used for the baseline noise survey. The sound level meters used confirm to BS EN 60650 type 1 accuracy and were field calibrated before and after use.

Equipment	Manufacturer & model	Serial number	Calibration date
Sound level meter	01dB Fusion	11766	20/07/2018
Calibrator	01dB Cal31	84908	10/09/2018

Table 1 - Survey equipment

Copies of external calibration certificates are available upon request.

Measurements were made of various noise descriptors, but the key indices in this assessment are as follows:

- $L_{Aeq,T}$ (the average A-weighted noise level exposure over a given time period, T);
- $L_{A90,T}$ (the noise level exceeded for 90% of the measurement period T, referred to as the 'background' noise level).

4.3 Weather conditions

While on site, the general weather conditions were noted as being dry with no cloud cover and temperatures ranging from 9-12 °C. Maximum wind speeds did not exceed 5ms^{-1}.

4.4 Survey results

The background noise levels measured during the survey are summarised in Table 2. All values are presented as integer A-weighted decibels. Full measurement results for each period are available upon request.

For the unattended measurement in position 2, the $L_{A90,15min}$ data for the day and night periods was assessed and the lowest[2] value for $L_{A90,15min}$ for each day / night was identified. This approach is based on the requirements of the London Borough of Camden. This is considered to represent a worst case assessment.

Location	Date	Time Period	Measurement Period (T)	Lowest measured background noise level dB $L_{A90,15min}$
Position 1	Fri 7 Dec	Daytime	13:15 – 13:30 (*15 minutes)	63
Position 2	Fri 7 Dec	Daytime	14:45 – 15:45 (1 hour)	53
	Mon 10 Dec		15:30 – 23:00 (7 hours)	45
	Tue 11 Dec		07:00 – 23:00 (16 hours)	47
	Wed 12 Dec		07:00 – 15:00 (8 hours)	46
	Mon 10 Dec	Night time	23:00 – 07:00 (8 hours)	44
	Tue 11 Dec		23:00 – 07:00 (8 hours)	46
*Due to the constant nature of the noise source, a 15-minute measurement was deemed sufficient in this location Day time refers to the time between 7am and 11pm, Night-time refers to the time between 11pm and 7am.				

Table 2 - Background noise level results

[2] It should be noted that it is not normally considered appropriate to default to the lowest background noise level in this type of assessment and, as detailed in BS 4142: 2014, Cundall would normally use the 'typical' background noise level (although in some cases this could be the same as the lowest level). However, to assess a worst-case scenario and comply with Camden's requirements the lowest background noise level has been used in this assessment.

5.0 Plant noise impact assessment

At this stage of the design process, the exact specifications of the plant to be installed are not available as selections have not yet been finalised. In the absence of this information, noise emission limits for new plant and equipment have been set at the facades of the nearest noise-sensitive receptors based on LBC noise policy guidance.

5.1 Calculation of noise limits

Plant noise emission level limits have been determined based upon LBCs requirements and guidance identified in Section 2.3, as follows:

"The noise rating level (ref. BS 4142:2014) from new items of fixed services plant to be designed not to exceed 10 dB below the background noise level ($L_{A90,T}$) at the nearest residential properties (15 dB if tonal components are present)."

Note that the term 'noise rating level' has been replaced with plant noise emission level (or 'specific noise level' ref. BS 4142), as explained in section 3.4

Proposed plant noise emission level limits are given in Table 3 below:

- The background noise levels at receptor group A are the lowest measured background noise levels measured at position 2 (see Table 2).
- During the daytime, the background noise level at receptor group B is based on the measurements taken at position 1 and distance attenuated to the closest façade. During the night-time, the existing plant does not operate and therefore the background noise levels measured at position 2 are considered representative.

Receptor Group	Day time (07:00-23:00 hours)		Night time (23:00-07:00 hours)	
	Background noise level dB $L_{A90,15min}$	Plant noise emission level limit, $L_{Aeq,T}$ (dB)	Lowest measured background noise level dB $L_{A90,15min}$	Plant noise emission level limit, $L_{Aeq,T}$ (dB)
A	45	35	44	34
B	53	43	44	34

Table 3 - Proposed plant noise limit levels

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 3. The limits should be applied to the cumulative noise level from plant when operating at maximum normal design duty ($L_{Aeq,T}$). The limits are free field noise levels at one metre from the nearest sensitive façade / window.

The daytime plant noise emission limit at receptor group B is based on the assumption that the existing plant runs continuously between 07:00 and 23:00 hours. If this is not the case, a lower a noise limit will apply (i.e. the lower noise limit for receptor group B will apply.

This assessment has been based on the assumption the proposed plant will run 24 hours (e.g. during the night-time). If the operating hours are to be limited to daytime office hours, then night-time limit will not apply and the less onerous daytime limits can be used.

Limit levels in Table 3 do not include any correction for the presence of any acoustic features. Where plant or equipment contains tonal characteristics, Camden require 'rating' levels to be 15 dB below the existing background noise levels. Therefore, the plant noise emission limits should be reduced by 5 dB.

Notwithstanding the above., rating levels of 35 dB and background noise levels below 30 dB are considered very low (ref. BS 4142: 1997). Therefore, we would not normally recommend plant noise emission limits below 30 dB $L_{Aeq,T}$ (as would be required during the night-time if noise from plant / equipment is tonal). This will need to be confirmed with LBC.

It is important to note that by meeting the LBC requirements this is effectively the 'lowest observed adverse effect level'. Therefore, based on the Camden noise policy (Section 3.4 of this report) these limits could still be exceeded and (assuming the 'significant observed adverse effect level was not exceeded) the development:

'may be considered acceptable when assessed in the context of other merits of the development'.

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6.0 Conclusion

An environmental noise assessment has been undertaken at the proposed development at 8-10 Warner Street in the London Borough of Camden as part of the planning application for the proposed commercial development.

Existing background noise levels at the site have been measured at locations deemed representative of the nearest noise-sensitive receptors.

Based on the results of the noise survey and the requirements of London Borough of Camden, noise emission limits have been identified for the proposed new items of plant and equipment.

If these noise limits are complied with it is considered unlikely that adverse noise effects will occur as a result of the proposed development.

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