PRIESTS BRIDGE, EAST SHEEN RICHMOND

NOISE IMPACT ASSESSMENT REQUIREMENTS

PROJECT NUMBER: P1591

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Revision	Date	Details	Authored	Checked
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OFFICES

KENT (HQ) – Unit 3 Grove Dairy Farm Business Centre, Bobbing Hill, Bobbing, Sittingbourne, Kent ME9 8NY

LONDON – One Bridge Wharf, 56 Caledonian Road, London, N1 9UU

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EXECUTIVE SUMMARY

- Mr Leo Pelleriti on behalf of Wimshurst Pelleriti Ltd, instructed QuinnRoss Consultants Ltd to undertake a noise impact assessment for the proposed mixed use residential and commercial premises to be located at Priests Bridge, East Sheen, Richmond.

- QuinnRoss Consultants will undertake an environmental noise survey at the site in order to determine prevailing ambient, background and maximum noise levels that are representative of the residential premises.

- A baseline environmental noise survey and assessment will be undertaken in line with the guidance contained in British Standard (BS) 8233:2014 and BS4142:2014, measurements being taken over continuous 5-minute periods.

- Said assessment will be measured at two fixed secure monitoring positions deemed representative of the worst affected façades of the proposed site.

- Existing noise levels at the site will be compared to relevant standards and guidance. The results of the noise survey will be considered reasonable given the location of the chosen measurement positions and the existing noise sources in the local vicinity. The representative time-averaged ambient and night-time maximum noise levels will be recorded from the site in order to ascertain the acoustic requirements of the site.

- The assessment will indicate whether internal noise levels within the proposed development predict it will meet the guideline noise criteria contained in BS 8233:2014 and ensure the development is provided appropriate minimum specified glazing, ventilation and façade materials and that they are installed to a good manner of workmanship to ensure compliance.

- Recommendations provided in respect to sound insulation of the building and the ensuing design will be based on achieving the desired internal noise levels in BS 8233:2014.

- For this stage of planning application, a maximum cumulative mechanical plant emission level has been set, so as to be 5dB below typical background at nearest noise sensitive facade. The noise emission criteria level will be calculated and set according to the site noise assessment and ensure compliance with stated standards to the proposed development and all surrounding buildings.

- During the detailed design stage of the project, and upon determining mechanical plant numbers, location, manufacturer type and model numbers, a full BS4142:2014 assessment will be undertaken.

SITE OVERVIEW

Quinn Ross Consultants was commissioned by Wimshurst Pelleriti to develop a specification to the noise assessment for the proposed Priests Bridge development that would demonstrate how it will provide noise mitigation techniques in order to adhere to requirements as set by national and local policy.

The site is located on 26-28 Priests Bridge, East Sheen, in the London Borough of Richmond. See site image below:

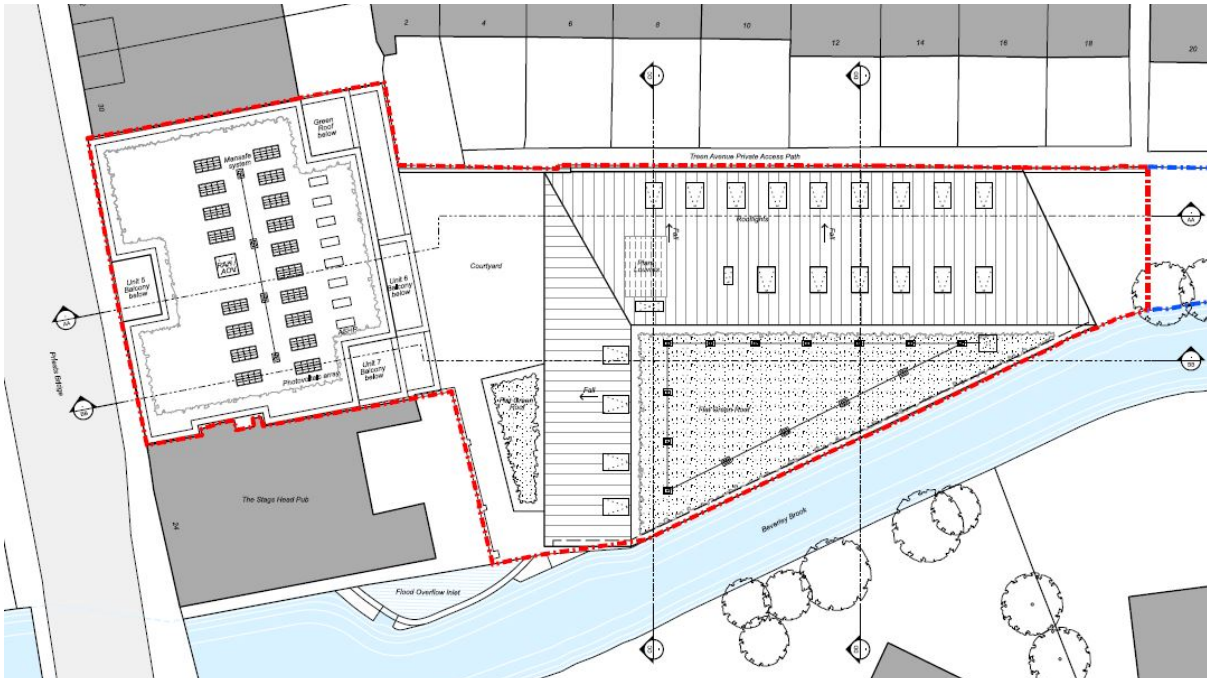

Figure 3: Site plan of site

The new development is expected to comprise 9 residential units, mainly one and two-bedroom apartments at 3 storeys. There will also be 649 m^2 of commercial space, in the form of a 94 m^2 unit in the front building and a separate larger unit at the rear consisting of a 555m^2 unit all fitted out to a shell & core level.

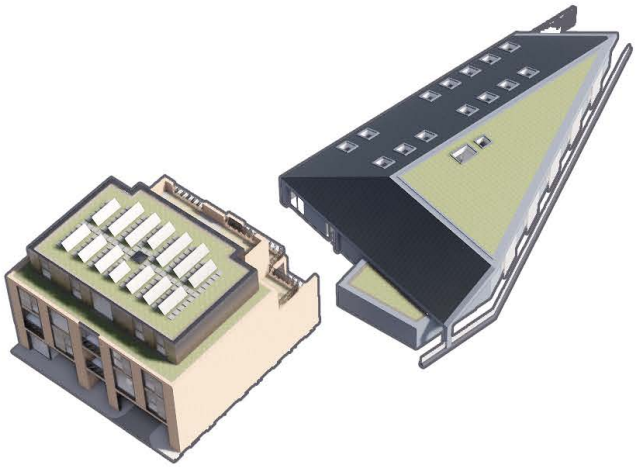

Figure 4: Architect's model image of scheme

It is expected the existing ambient noise climate could have the potential to affect the premises.

PROPOSED DESIGN APPROACH

The purposes of this report is to confirm that the development will be designed:

- To determine and assess prevailing ambient, background and maximum noise levels affecting the proposal due to nearby noise sources (e.g. air and road traffic);
- To present desired internal noise levels to be achieved within the residential premises in accordance with BS 8233:2014, and
- To detail appropriate sound insulation requirements for the purposes of mitigating noise caused by prevailing and potential noise sources such that internal noise levels are achieved.
- To set a maximum noise emission level at source for any proposed mechanical plant belonging to the commercial premises, in line with BS 4142: 2014.

PROPOSED ENVIRONMENTAL NOISE SURVEY METHODOLOGY

- An unattended environmental noise survey will be undertaken at two secure single measurement locations. The surveys are to be undertaken between 16:00 hours on Day 1 and 10:00 on Day 3.
- Ambient, background and maximum sound pressure level measurements (L_{Aeq}, L_{A90} and $L_{Amax,F}$ respectively) will be measured throughout the noise survey with continuous recorded 5 minute periods. The measurement positions are to be indicated within the assessment.
- The sound level meters (SLM's) will be located 1m from the façades at the front and rear boundary of the proposed development. The SLM for position 1 is to be mounted at least 1.5 metres above ground level. The SLM for position 2 is to be mounted at first floor height. The positions are not considered to be in 'free-field' conditions so a façade correction of -3dB is to be applied to the data. The positions are to be chosen to gain representative noise levels from any noise sources as well as for monitoring equipment security reasons.
- The equipment to be used for the noise survey is summarised in below table.

Equipment	Description	Quantity	Serial Number
Larson Davis LxT SE	Class 1 automated logging sound level meter	1	0004960
377BO2 microphone	Class 1 ½" microphone	1	168839
Larson Davis LxT SE	Class 1 automated logging sound level meter	1	0005445
377B02 microphone	Class 1 ½" microphone	1	177077
Larson Davis CAL200	Class 1 Calibrator	1	14432

Table 1: Equipment used for survey

- The noise survey and measurements are to be conducted, in accordance with BS7445-1:2003 'Description and measurement of environmental noise. Guide to quantities and procedures'.

- Measurements are to be made generally in accordance with ISO 1996-2:2007 'Acoustics – Description, measurement and assessment of environmental noise – Part 2: Determination of environmental noise levels'.

- Weather conditions throughout the entire noise survey are to be documented.

- The noise monitoring equipment is to be calibrated before and after the noise survey period. No significant drift is acceptable.

NOISE EMISSION CRITERIA FOR THE DEVELOPMENT

Local Authority Requirements

- In March 2012, the National Planning Policy Framework (NPPF) came into force and was revised in 2018. This document replaces a great many planning guidance documents, which previously informed the planning system in England.

- The NPPF sets out the Government's economic, environmental and social planning policies for England and these policies articulate the Government's vision of sustainable development. It states: *'…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...'*

- The Noise Policy Statement for England (NPSE) published 2010 applies to *'all forms of noise, including environmental noise, neighbour noise and neighbourhood noise'.*

- Paragraph 180 of the NPPF (2018) considers noise, stating *"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 the recreational and amenity value for this reason; and

  C) limit the impact of light pollution from artificial light in local amenity, intrinsically dark landscapes and nature conservation."

- National Planning Policy is guided by the NPPF. With regard to noise, the terms 'significant adverse impact' and 'other adverse impacts' are defined in the explanatory notes of the 'Noise Policy Statement for England' (NPSE). These state that there are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are:

'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, and

LOAEL – Lowest Observed Adverse Effect Level. This is the level above which adverse effects on health and quality of life can be detected.

- Extending these concepts for the purpose of this NPSE leads to the concept of SOAEL - significant observed adverse effect level. This is the level above which significant adverse effects on health and quality of life occur'. However, no specific noise limits for LOAEL and SOAEL have been defined. Therefore, guidance from other acoustic standards must be employed to determine suitable levels within the overall principal of the National Planning Policy Framework; such as BS 8233:2014.

BS8233:2014

- Local Authorities usually stipulate internal noise criteria for new build residential uses based on British Standard 8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings'.

- BS 8233:2014 provides references and guideline values for desirable indoor ambient noise levels for dwellings as shown in Table 4.1 below.

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB $L_{Aeq,16hour}$	—
Dining	Dining room/area	40 dB $L_{Aeq,16hour}$	—
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

- The table is noted to apply to external noise as it affects the internal acoustic environment from sources without a specific character. The above internal ambient noise levels are therefore considered appropriate within this assessment.

- BS 8233:2014 states that '*for traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed an upper guideline value of 55dB L_{Aeq}, which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances…in higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited*'.

BS4142:2014

- The proposed site lies within the jurisdiction of the Local Authority, Richmond Borough Council. An acoustic report is required to support a planning application as stipulated below:

'Noise from any mechanical equipment or building services plant shall not exceed - 5dB(A) below the background noise level when measures outside the window of the nearest noise sensitive or residential premises, when measures as a L90 dB(A) 1 hour.

Reason: to safeguard the amenities of local residents, in accordance with the provisions of saved UDP Policies 7 and Policy 7.15 of the London Plan'

- A policy requirement of the Richmond Council Local Plan states that:

  'The adverse impact of noise is reduced to an acceptable level through the use of attenuation, distance, screening, or internal layout/orientation'

- The operating hours for the plant have not yet been defined, nor the plant chosen, therefore in order to provide a robust assessment a worst case of the plant being operational for 24 hours will be considered. The noise criteria will therefore be set 5dB below the typical background night-time levels.

- BS 4142:2014 "Methods for Rating and Assessing Industrial and Commercial Sound" presents a method for assessing the significance and possible adverse impact due to an industrial or commercial noise source, based on a comparison of the source noise levels and the background noise levels, both of which are measured or predicted at a noise sensitive receiver e.g. a residential property.

- The specific noise level due to the source is determined, with a series of corrections for tonality, impulsivity, intermittency or any other unusual characteristic. This can result in a maximum total correction of +21 dB being added if the new noise source demonstrates all the above characteristics. The background noise level is then subtracted from the rating level and a comparison made.

- The significance of the new noise source and the likelihood of any adverse impact is determined in accordance with the following advice:

  "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.

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

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

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