Project

iMRI Building, Southwood Courtyard GOSH Link Building AHU Noise Impact Assessment

Prepared for

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Revision History

Revision	Date	Comments

Summary

Kier Construction are to construct a new iMRI Building in Southwood Courtyard at Great Ormond Street Hospital. SRL Technical Services Limited has been commissioned by Kier to assess the noise impact of the AHU to be installed on the link building between the iMRI and Variety Club buildings.

London Borough of Camden granted planning with a condition (no 7) requiring noise emitted from plant to be at least 10dBA below the existing background noise level at the nearest and/or most affected noise sensitive premises, with all machinery operating together at maximum capacity. Condition no 8 requires all plant equipment and ducting to be adequately vibration isolated and silenced prior to occupation.

The closest noise sensitive properties to the proposed building are:

- hospital bedrooms in the adjacent Southwood Building and
- dwellings on Great Ormond Street, around 125m away.

Cole Jarman measured the background noise level (L_{A90}) in Southwood Courtyard at Great Ormond Street Hospital. The noise level in Southwood Courtyard remains constant over the 24 hour period (at around 56dBA) so a limit of 46dBA applies at the façade of the hospital bedrooms. The typical lowest L_{A90} at the nearest dwellings on Great Ormond Street is 54dBA (day) and 47dBA (night). The plant noise limit is therefore 44dBA (day) and 37dBA (night).

Our assessment reveals that this AHU will meet the requirements at all noise sensitive locations with the possible exception of the church. The noise level predicted at the closest facade of the church is 56dBA which is equal to the lowest L_{A90}. BS4142 states that "Where the rating level does not exceed the background sound level, this is an indication of the sound source having a low impact". We therefore consider that this will be acceptable.

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1.0 Introduction and Planning Conditions

Kier Construction is to construct the iMRI Building in Southwood Courtyard at Great Ormond Street Hospital. London Borough of Camden have granted planning subject to two planning conditions (7 and 8) relating to noise and vibration.

Condition no. 7:

"*The external noise level emitted from plant, machinery or equipment and specified noise mitigation at the development hereby approved shall be lower than the existing background noise level by at least 10dBA as assessed in accordance to BS4142:2015 at the nearest and/or most affected noise sensitive premises, with all machinery operating together at maximum capacity*".

Condition no. 8:

"*Prior to the use of the development, the plant equipment and ducting shall be mounted with proprietary anti-vibration isolators and fan motors shall be vibration isolated from the casing and adequately silenced. The measure shall be implemented prior to occupation of the development and thereafter be permanently retained*".

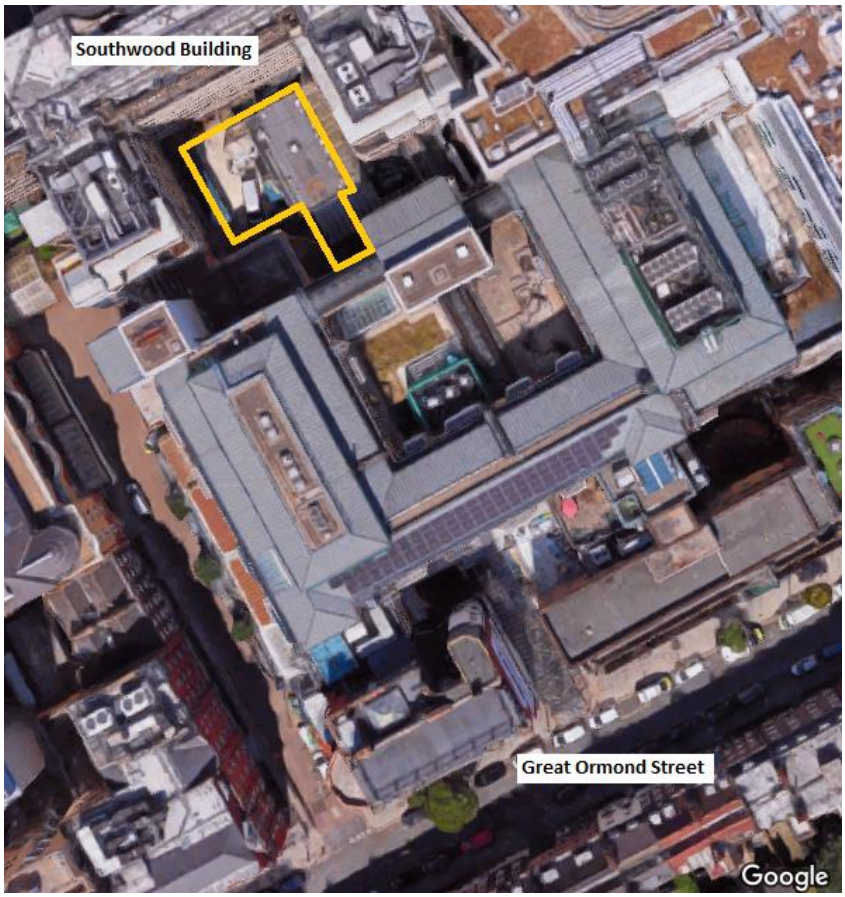
The existing background noise levels were measured by Cole Jarman and reported in document "17/0132/R1-1 Great Ormond Street Hospital, iMRI Plant Noise Assessment Report" dated 26th May 2017. One noise logger was set up within the Southwood Courtyard and a second logger outside the dwellings on Great Ormond Street to establish the noise climate over a four day period. The results of their survey are reproduced in the table below.

Table 1.1 - Representative background noise levels, L_{A90}

Location	Representative Background Noise Level, dB(A)	
	Operating Hours (1000-2200 only)	Night time (24-hour)
Courtyard Adjacencies	56	56
Nearest Residences	54	47

Figure 1.1 below shows the nearest noise sensitive uses which are Southwood Building and dwellings on Great Ormond Street:

Figure 1.1 - Site of proposed iMRI building in relation to the nearest noise sensitive properties



From the results in table 1.1 the following plant noise limits were set:

Table 1.2 - Plant noise emission limits at nearest noise sensitive receivers

Location	Noise Emission Limit, dB(A)	
	Operating Hours (1000-2200 only)	Night time (24-hour)
Courtyard Adjacencies	46	46
Nearest Residences	44	37

2.0 Noise Assessment

We have predicted the noise levels due to the AHU on the link building at the nearest properties with the proposed attenuation, see Table 2.1 below.

Table 3.1: Plant noise predictions at housing with all plant operating (dB, L_{Aeq})

Item of Plant	C3056 Bedroom	C5034 Bedroom	Church	Dwellings on Gt Ormond Street
AHU 403 FAI	34	11	54	5
AHU 403 exhaust	29	15	52	1
TOTAL	**35**	**16**	**56**	**6**
CRITERION	**≤ 46**	**≤ 46**	**≤ 46**	**≤ 37**

The results show that the predicted noise levels due to this AHU is negligible at the dwellings and comfortably meets Camden's requirement at all bedrooms in the Southwood building.

The noise level predicted at the church is the same as the lowest existing L_{A90}. BS4142:2014 (referred to by Camden Council in condition 7) states that "Where the rating level does not exceed the background sound level, this is an indication of the sound source having a low impact". As there are already items of plant in the courtyard, it is unlikely that the new plant will attract any of the penalties in BS4142. Therefore, according to BS4142, these sources will have very little or no impact.

Appendix A - Drawings Used

Table A1 - Drawings Used

Author	Drawing no.	Revision	Title
RSP	1717M521	T1	Level 02 Ventilation Services
Ansell + Bailey	(01)030	J	Proposed Level 03 (First Floor) Plan showing surrounding clinical uses
Ansell + Bailey	(01)031	J	Proposed Level 04 (Second Floor) Plan showing surrounding clinical uses
Ansell + Bailey	(01)031	L	Proposed Level 05 (Third Floor) Roof Plan showing surrounding clinical uses

Appendix B - Plant Noise Details

Table B1 - AHU (octave band sound power levels, dB)

Plant Ref.	Octave band centre frequency, Hz						
	63	125	250	500	1k	2k	4k
AHU 403 FAI	80	80	81	65	61	57	57
AHU 403 exhaust	67	73	78	70	65	58	57

Appendix C - Attenuation

Table C1 - Proposed Acoustic Louvres (octave band insertion losses)

Attenuator Ref.	Plant served	Octave band centre frequency, Hz						
		63	125	250	500	1k	2k	4k
L404	AHU 403 FAI	4	4	5	8	12	16	15
L403	AHU 403 exhaust	4	4	5	8	12	16	15

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