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42151/T02
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Tim Cork
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Dear Tim

163 Iverson Road Commissioning Noise Measurements - Plant Noise

Planning Permission ref 2012/0099/P (dated 12 December 2012) contains conditions relating to plant noise levels and requires that compliance with the noise criteria is demonstrated by measurement on completion of the scheme. The relevant condition is given in full in Appendix A and the criteria are summarised below:

Condition 21

Noise from plant or equipment associated with the scheme must not increase the existing background noise level ($L_{A90,1hour}$ day, $L_{A90,5mins}$ night) at the nearest noise sensitive properties.

The plant associated with this scheme is minimal and includes water tanks and booster pumps located in a ground floor plant room and mechanical ventilation heat recovery (MVHR) units located within each apartment with an exhaust air discharge to the external façade.

1.0 Summary of Measured Noise Levels

1.1 Condition 21 - Plant Noise Levels

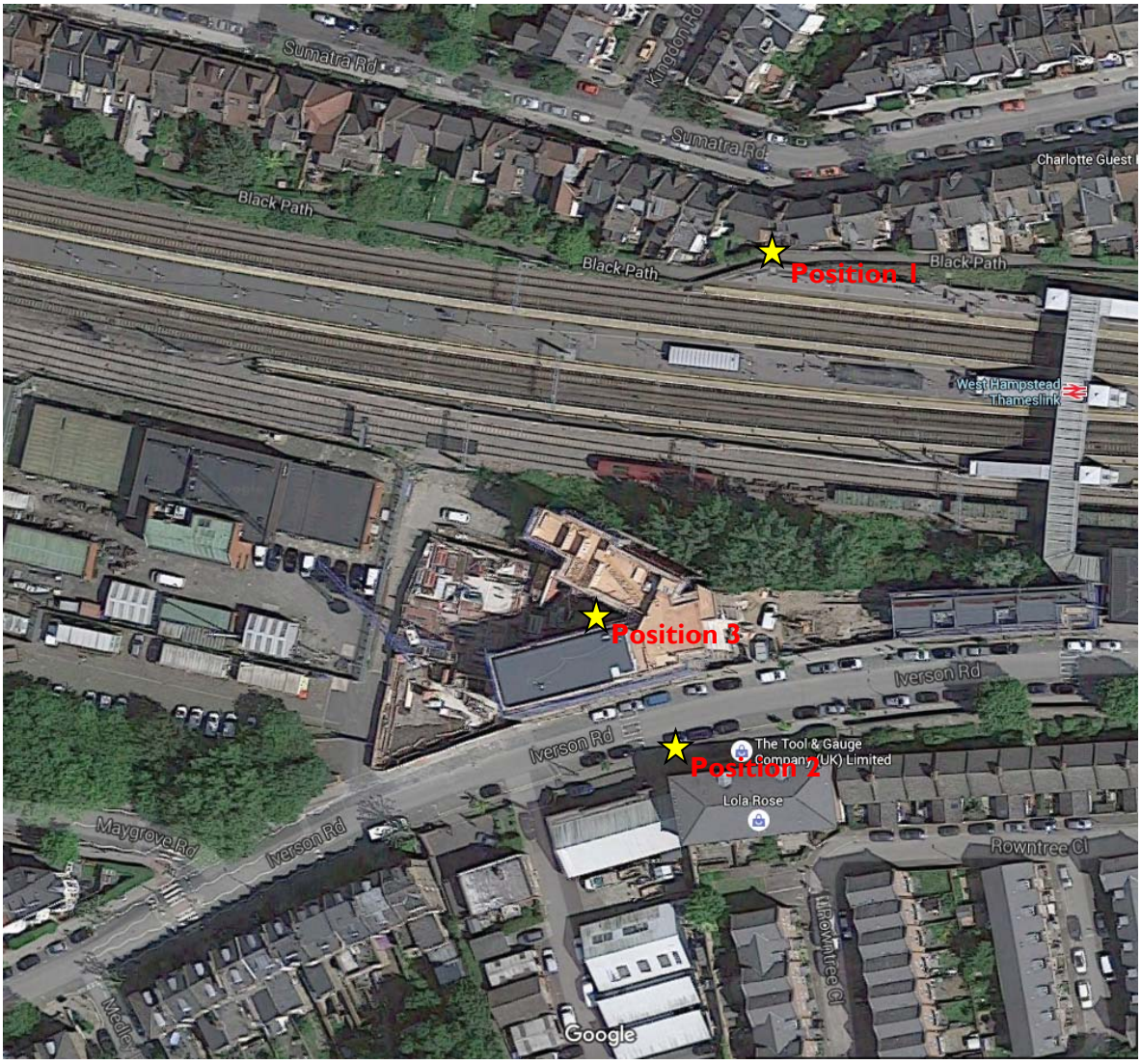
1.1.1 Measurement Details

Noise levels were measured at positions representative of the nearest noise sensitive locations, given below.

Position 1 - houses on Sumatra Road on the opposite side of the railway (measurements made on 'Black Path')

Position 2 - apartments directly opposite on Iverson Road

Position 3 - nearest duplex apartment of the development to the plant room



Measurements were made with the plant turned on and off. All measurements were made in free-field conditions and in accordance with the guidance in BS4142:1997.

The L_{A90} has been compared with plant on and off as this represents the steady noise from plant (discounting short term events such as cars passing) and demonstrates the effect that the plant has on the background noise level.

1.1.2 Measured Noise Levels

The measured L_{A90} noise levels are summarised below. The raw data is given in Appendix C.

In all cases noise from the plant was inaudible at Iverson Road and Sumatra Road and barely audible at the nearest point of the development itself at night.

Background Levels, dB $L_{A90,5minutes}$

	Day		Night	
	Plant On	Plant Off	Plant On	Plant Off
Position 1 Sumatra Road	44	43	34	34
Position 2 Iverson Road	49	49	35	31
Position 3 Nearest Apartment	43	42	36	36

1.1.3 Discussion

At all positions the L_{A90} is not increased when the plant is turned on. This indicates that noise from the plant associated with the scheme is at least 10dB lower than the prevailing background noise level.

We measured noise from the outlet of an MVHR while in boost mode (which would only be operated occasionally for kitchen or bathroom extract). The level measured at1m from the outlet was 57dB(A). We have then calculated the noise level that would be expected at the nearest property from this data.

The MVHR noise level at the nearest properties, namely those opposite on Iverson Road, would be about 32dB(A) in boost mode and significantly less than this under normal operation. This is a worst case in terms of screening offered by the geometry of the balconies where the MVHR outlets are located.

This is much lower than the measured background noise level during the day/evening (typically 44dB L_{A90} or higher) when the units are most likely to be put in boost, and also lower than the background level at night (and at least 20dB lower than the L_{Aeq}). Noise from the MVHRs in boost mode is unlikely to be audible at the nearest sensitive properties under normal conditions.

On the basis of our assessment, we respectfully suggest that the requirements of the planning condition have been met.

Yours sincerely,

Jonathan Howson
For and on behalf of
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Appendix A - Planning Conditions

21 (i) Any plant machinery, plant or equipment including air ventilation equipment ("machinery") installed or operated in connection with the carrying out of this permission shall be so enclosed and/or attenuated and or sited that the noise generated by the operation of the machinery shall not increase the pre-existing (Daytime (07:00 to 23:00hrs) background noise levels during day time expressed as LA90 [1hour] (day time 07:00-23:00 hours) and Night time (23:00 to 07:00hrs)and/or (b) LA90 [5 mins] during night time (night time 23:00-07:00 hours) at any adjoining noise sensitive locations or premises in separate occupation above that prevailing when the machinery is not operating. The development shall be carried out in such a manner to ensure that the above noise levels are permanently retained thereafter. Noise measurements for the purpose of this condition shall be pursuant to BS 4142:1997

On commissioning the machinery and prior to the building being occupied a noise survey shall be carried out to ascertain the above noise levels from the machinery are being met. A Noise Report shall be submitted to and approved in writing by the Local Planning Authority. The Noise Report shall clearly contain a map/plan showing all measurements locations, tabulated and graphically raw data, calculations /façade corrections /assumptions made, time date, etc.

(ii) All plant and machinery, and ventilation ducting shall be installed so as to prevent the transmission of noise and vibration within the building and/or at the boundary of any noise sensitive premises either attached to or in the vicinity of the premises to which this application refers.

Reason: To safeguard the amenities of future occupants in accordance with the requirements of policies CS5 of the London Borough of Camden Local Development Framework Core Strategy and policy DP26 and DP28 of the London Borough of Camden Local Development Framework Development Policies.

Appendix B - Measured Noise Level Data

Position	Plant ON/OFF	Start Time	Duration	LAeq	LA90
MVHR Boost	-	27/06/2016 19:46	02:01	57.6	57.0
1	off	27/06/2016 17:48	05:00	68.7	44.7
1	off	27/06/2016 17:53	05:00	49.6	42.6
1	on	27/06/2016 18:52	05:00	50.8	43.1
1	on	27/06/2016 19:01	05:00	47.4	42.2
2	off	27/06/2016 17:43	05:02	62.7	48.7
2	off	27/06/2016 17:52	05:00	62.3	48.7
2	on	27/06/2016 18:31	05:10	63.7	49.9
2	on	27/06/2016 18:42	05:00	62.1	48.6
3	off	27/06/2016 18:10	05:00	49.3	43.0
3	off	27/06/2016 18:16	05:00	49.4	42.8
3	on	27/06/2016 18:28	05:00	48.0	41.8
3	on	27/06/2016 18:35	05:00	50.4	42.3
1	off	28/06/2016 01:44	05:00	38.0	33.8
1	off	28/06/2016 01:54	05:00	36.5	34.0
1	on	28/06/2016 02:30	05:05	37.7	34.2
1	on	28/06/2016 02:37	05:00	37.4	34.0

Position	Plant ON/OFF	Start Time	Duration	LAeq	LA90
2	off	28/06/2016 01:26	05:00	54.2	33.3
2	off	28/06/2016 01:32	05:00	55.1	36.0
2	on	28/06/2016 02:13	05:00	50.6	32.0
2	on	28/06/2016 02:19	05:00	34.7	29.9
3	off	28/06/2016 01:25	05:03	45.9	36.8
3	off	28/06/2016 01:31	05:00	37.8	36.2
3	on	28/06/2016 02:07	05:00	39.0	36.6
3	on	28/06/2016 02:14	05:00	37.4	36.1

Appendix C - Noise Measurement Details

C1. Location of Survey

163 Iverson Road, West Hampstead, London

C2. Date & Time of Survey

Wednesday 27 June 2016, 17:30 - 20:40

Thursday 28 June 2016, 01:25 - 03:25

C3. Personnel Present During Survey

James Gill (SRL)

Claire Starley (SRL)

C4. Weather Conditions during Survey

dry throughout the survey, low wind

C5. Instrumentation

Description	SRL No.	Make	Type	S/N
Sound Level Analyzer Black	513	Bruel & Kjaer	2270	2623080
Preamplifier	513	Bruel & Kjaer	ZC-0032	9064
Microphone	513	Bruel & Kjaer	4189	2638475
Calibrator	514	Bruel & Kjaer	4231	2665089
Sound Level Analyzer Orange	516	Bruel & Kjaer	2250	2506736
Preamplifier	516	Bruel & Kjaer	ZC-0032	8088
Microphone	516	Bruel & Kjaer	4189	2529958
Calibrator	517	Bruel & Kjaer	4231	2528393

C6. Calibration Procedure

Before and after the survey the measurement apparatus was check calibrated to an accuracy of ±0.3 dB using the calibrator. The calibrator produces a sound pressure level of 93.8 dB re 2 x 10-5 Pa at a frequency of 1 kHz.