Hann Tucker Associates
Consultants in Acoustics Noise & Vibration
Duke House 1-2 Duke Street Woking Surrey GU21 5BA
(t) +44 (0) 1483 770595
(e) enquiries@hanntucker.co.uk
(w) hanntucker.co.uk

Directors:
Stuart G Morgan CEng MIMechE MCIBSE FIOA (Chairman)
Simon R Hancock BEng(Hons) CEng MCIBSE FIOA (Managing)
John L Gibbs MIOA(D) MSEE CEnv
John R Ridpath BSc(Hons) MIOA
Andrew D Fermer BSc(Hons) MIOA
Andrew G Jameson BSc(Hons) MIOA
Lorraine M. Gregory (Company Secretary)

JOB TITLE	:	329-331 Kentish Town Road
REF	:	HT: 27152/PTM1
DATE	:	19 January 2021
FROM	:	John Ridpath
ISSUED TO	:	Aimee Squires (Savills)

RE: Plant Noise Assessment

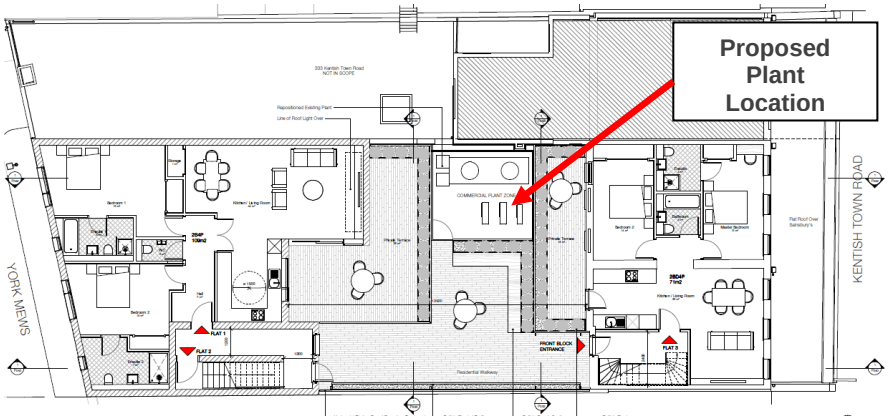
This technical note is an assessment of the noise emissions from the proposed external mechanical plant at 329-331 Kentish Town Road and is an addendum to Environmental Noise & Vibration Survey and Assessment Report 27152/NVR1 dated 8 September 2020.

Proposed External Mechanical Plant

We understand the following external mechanical plant is proposed:

1 x Chiller (Daytime Noise Rating 36dBA@10m, Night Time Noise Rating 25dBA@10m)

3 x Condenser Units (existing units being relocated – 2 x PUHZ-RP125VKA, 1 x MUZ-GC35VA)



Plant Noise Emission Criteria

With reference to the Environmental Noise & Vibration Survey and Assessment Report 27152/NVR1 dated 8 September 2020, an environmental noise survey was undertaken from approximately 11:00 hours on Thursday 3rd September 2020 to 11:00 hours on Monday 7th September 2020.

Measurement Position N2 was located on the 1st floor roof at the western end of the building overlooking York Mews. The microphone was positioned approximately 1m above roof level in free-field conditions.

	Daytime $L_{Aeq(16\text{-}hour)}$	Night-Time $L_{Aeq(8\text{-}hour)}$
Minimum Background Noise Level $L_{A90\ (15min)}$	44 dB	40 dB
Modal Background Noise Level $L_{A90\ (15min)}$	48 dB	42 dB

With regards to Industrial and Commercial Noise Sources, the Camden Local Plan (2017) requires:

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

We therefore propose the following plant noise Rating Level criteria based upon the modal background (L_{A90}) measured noise levels and assuming the plant is not tonal:

Daytime $L_{Aeq(16\text{-}hour)}$	Night-Time $L_{Aeq(8\text{-}hour)}$
38 dB cumulative	32 dB cumulative

Chiller Noise Assessment

The chiller unit (as well as condenser units) is proposed for location within a 1st floor level enclosed plant area with a 2m high solid timber fence on all sides. The nearest / most affected noise sensitive windows are likely to be the 2nd floor residential windows of the front block of the proposed development overlooking the proposed plant area.

Chiller Noise Assessment To The 2nd Floor Rear Facing Windows Of The Front Block

Daytime

	Sound Pressure Level (dB re $2x10^{-5}$ Pa)
Sound Pressure Level at 10m (Daytime Operation)	36
Distance Correction to Residential Window (5m approx.)	5
Barrier Correction	-
Penalty Correction for Intermittency	3
Façade Correction	3
Calculated Incident Rating Noise Level at Receptor	47

Night time

	Sound Pressure Level (dB re $2x10^{-5}$ Pa)
Sound Pressure Level at 10m (Night time Operation)	25
Distance Correction to Residential Window (5m approx.)	5
Barrier Correction	-
Penalty Correction for Intermittency	3
Façade Correction	3
Calculated Incident Rating Noise Level at Receptor	36

The above calculations indicate the incident Rating Noise Level of the proposed chiller unit is likely to exceed the proposed cumulative Plant Noise Rating Level Criteria for the daytime by 9dBA and night time operation by 4dBA.

As there are also condenser units proposed within the plant area, we recommend the calculated attenuation requirement for the chiller is increased by 3dBA to allow for a noise contribution to the cumulative criteria by the condensers.

The proposed chiller should therefore be located within an acoustic enclosure inside of the proposed plant area providing a minimum 12dBA attenuation.

We have not been provided with any octave band noise data for this chiller unit. This assessment assumes that the chiller will not have any tonal noise characteristics.

This must be checked prior to final chiller selection as a further 5dB penalty correction may have to be applied i.e. the acoustic enclosure would have to provide a minimum 17dBA attenuation for daytime operation and 12dBA for night time operation.

Chiller Noise Assessment To 1st Floor Amenity Space

The following tables present the calculated chiller noise level within the adjacent amenity space based upon the 12dBA (minimum) attenuation recommended on the previous page (assuming chiller is not tonal).

Daytime

	Sound Pressure Level (dB re $2x10^{-5}$ Pa)
Sound Pressure Level at 10m (Daytime Operation)	36
Distance Correction to 1st Floor Amenity Space (2m approx.)	8
Barrier Correction	-5
Penalty Correction for Intermittency	3
Recommended minimum attenuation (assuming chiller is not tonal)	-12
Calculated Incident Rating Noise Level in amenity space	30

Night time

	Sound Pressure Level (dB re $2x10^{-5}$ Pa)
Sound Pressure Level at 10m (Night time Operation)	25
Distance Correction to 1st Floor Amenity Space (2m approx.)	8
Barrier Correction	-5
Penalty Correction for Intermittency	3
Recommended minimum attenuation (assuming chiller is not tonal)	-12
Calculated Incident Rating Noise Level in amenity space	19

The attenuated chiller Plant Noise Rating Levels are 8dBA below the proposed cumulative daytime criteria and 13dBA below the proposed cumulative night time criteria.

Condenser Noise Assessment

The condenser units (as well as chiller unit) are proposed for location within a 1st floor level enclosed plant area with a 2m high solid timber fence on all sides. The nearest / most affected noise sensitive windows are likely to be the 2nd floor residential windows of the front block of the proposed development overlooking the proposed plant area.

Condenser Noise Assessment To The 2nd Floor Rear Facing Windows Of The Front Block

	Sound Pressure Level (dB re 2x10^{-5} Pa) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
PUHZ-RP125 VKA Condenser Spl @ 1m (cooling mode)	60.0	54.0	50.0	48.0	45.0	41.0	34.0	26.0	50
No. Units correction (x2)	3	3	3	3	3	3	3	3	
Distance Correction (5m)	-11.2	-11.2	-11.2	-11.2	-11.2	-11.2	-11.2	-11.2	
Barrier Correction	-	-	-	-	-	-	-	-	
Correction for intermittency	3	3	3	3	3	3	3	3	
Façade Correction	3	3	3	3	3	3	3	3	
Calculated Incident Rating Noise Level at Receptor	57.8	51.8	47.8	45.8	42.8	38.8	31.8	23.8	47.9

	Sound Pressure Level (dB re 2x10^{-5} Pa) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
MUZ-GC35VA Condenser Spl @ 1m (cooling mode)	53	50	50	46	42	39	34	27	48
No. Units correction (x1)	-	-	-	-	-	-	-	-	
Distance Correction (5m)	-12.4	-12.4	-12.4	-12.4	-12.4	-12.4	-12.4	-12.4	
Barrier Correction	-	-	-	-	-	-	-	-	
Correction for intermittency	3	3	3	3	3	3	3	3	
Façade Correction	3	3	3	3	3	3	3	3	
Calculated Incident Rating Noise Level at Receptor	46.6	43.6	43.6	39.6	35.6	32.6	27.6	20.6	41.8

The cumulative (all 3) condenser plant Rating Noise Level is 48.9dBA.

The calculated cumulative condenser plant Rating Noise Level exceeds the proposed daytime plant noise rating level criterion by 10.9dBA and exceeds the proposed night time plant noise rating level criterion by 16.9dBA.

As there is also a chiller unit proposed within the plant area, we recommend the calculated attenuation requirement for the condensers be increased by 3dBA to allow for a noise contribution to the cumulative criteria by the chiller.

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The proposed condenser units (x3) would therefore have to be attenuated by a minimum 13.9dBA if limited to daytime operation, or 19.9dBA to include night time operation. This level of attenuation would likely require the condenser units be located within suitably designed high performance acoustic enclosures

Condenser Noise Assessment To 1st Floor Amenity Space

The following table presents the calculated condenser noise level within the adjacent amenity space based upon the 14dBA (13.9dBA minimum) attenuation recommended above.

	Sound Pressure Level (dB re $2x10^{-5}$ Pa) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
PUHZ-RP125 VKA Condenser Spl @ 1m (cooling mode)	60.0	54.0	50.0	48.0	45.0	41.0	34.0	26.0	50
No. Units correction (x2)	3	3	3	3	3	3	3	3	
Distance Correction (2m)	-4	-4	-4	-4	-4	-4	-4	-4	
Barrier Correction	-6	-6	-7	-9	-11	-13	-16	-20	
Correction for intermittency	3	3	3	3	3	3	3	3	
Recommended minimum attenuation (daytime operation only)	-14	-14	-14	-14	-14	-14	-14	-14	
Calculated Incident Rating Noise Level at Receptor	42	36	31	27	22	16	6	-	29

	Sound Pressure Level (dB re $2x10^{-5}$ Pa) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
MUZ-GC35VA Condenser Spl @ 1m (cooling mode)	53	50	50	46	42	39	34	27	48
No. Units correction (x1)	-	-	-	-	-	-	-	-	
Distance Correction (2m)	-6	-6	-6	-6	-6	-6	-6	-6	
Barrier Correction	-7	-8	-10	-12	-15	-17	-20	-24	
Correction for intermittency	3	3	3	3	3	3	3	3	
Recommended minimum attenuation (daytime operation only)	-14	-14	-14	-14	-14	-14	-14	-14	
Calculated Incident Rating Noise Level at Receptor	29	25	23	17	10	5	0	0	19

The cumulative (all 3) condenser plant Rating Noise Level is 29.4dBA (based upon 14dBA attenuation installed for daytime use only). The attenuated condenser Plant Noise Rating Level is 8dBA below the proposed cumulative daytime criteria.

If the level of attenuation required for night time operation was to be installed (20dBA), the cumulative (all 3) condenser plant Rating Noise Level would be 23.4dBA which is 9dBA below the proposed cumulative night time criteria.