

<b>Reference:</b>	9769.ATN01.CAL.0
<b>Revision:</b>	0
<b>To:</b>	Edward Davis – London Borough of Camden
<b>From:</b>	Ignacio Alonso
<b>Date:</b>	24 July 2020
<b>Project:</b>	Abbey Area Phase 2
<b>Subject:</b>	Plant Calculations

## 1.0 INTRODUCTION

Phase 2, Abbey Area is proposed to comprise a Community Centre and a Health Centre over two floors.

As part of the planning application RBA Acoustics have provided an Acoustic Assessment Report reference 9769.RP01.AAR.4 dated 27 May 2020 and Note 9769.ATN01.AAR.0.20072020.IAM

Plant calculations examples have been provided within Appendix B of the above report.

This note extends on the example calculations provided to date to provide a full set of calculations for consideration of the London Borough of Camden.

## 2.0 PLANT NOISE CALCULATIONS FOR REAR OF BELZISE ROAD (RECEPTOR 1)

Below we include detailed plant noise calculations at the worst affected receptor, i.e. Receptor 1 (Rear of Belsize Road) for which the applicable criteria is 40dBA (daytime use only).

### *Condensers*

Element	Octave-band Noise Levels (dB) at Octave-band Centre Frequency (Hz)								dBA
	63	125	250	500	1000	2000	4000	8000	
Mitsubishi CAHV-P500YA-HPB (Lp@1m)	70	65	60	57	52	46	49	44	59
Subtotal of 6 Units	78	73	68	65	60	54	57	52	67
Distance losses @ 30m (Rear of Belsize Road)	-30	-30	-30	-30	-30	-30	-30	-30	-30
Noise level at receiver	48	43	38	35	30	24	27	22	37

*AHU1 Intake*

Element	Octave-band Noise Levels (dB) at Octave-band Centre Frequency (Hz)								dBA
	63	125	250	500	1000	2000	4000	8000	
AHU 01 – Intake in duct Lw	81	86	82	82	82	79	77	74	87
Attenuator	-5	-10	-16	-25	-34	-34	-29	-22	--
End Reflection	-5	-2	0	0	0	0	0	0	--
Lw at grille	71	74	66	57	48	45	48	52	--
Directivity (180deg)	-2	-4	-8	-9	-9	-8	-8	-8	--
Divergence (30m hemispherical)	-38	-38	-38	-38	-38	-38	-38	-38	--
Noise level at receiver	31	32	20	10	1	-1	2	6	18

*AHU1 Exhaust*

Element	Octave-band Noise Levels (dB) at Octave-band Centre Frequency (Hz)								dBA
	63	125	250	500	1000	2000	4000	8000	
AHU 01 – Intake in duct Lw	79	84	80	80	80	77	75	72	85
Attenuator	-5	-10	-16	-25	-34	-34	-29	-22	--
End Reflection	-5	-2	0	0	0	0	0	0	
Lw at grille	69	72	64	55	46	43	46	50	
Directivity (90deg)	0	0	-1	-5	-8	-7	-7	-7	
Divergence (30m hemispherical)	-38	-38	-38	-38	-38	-38	-38	-38	
Noise level at receiver	31	34	25	12	0	-2	1	5	21

*AHU 01 – HTM – Intake*

Element	Octave-band Noise Levels (dB) at Octave-band Centre Frequency (Hz)								dBA
	63	125	250	500	1000	2000	4000	8000	
AHU 01 – Intake in duct Lw	80	85	81	81	81	78	76	73	86
Attenuator	-4	-7	-13	-19	-23	-23	-16	-13	--
End Reflection	-5	-2	0	0	0	0	0	0	
Lw at grille	71	76	68	62	58	55	60	60	
Directivity (180deg)	-2	-4	-8	-9	-9	-8	-8	-8	
Divergence (30m hemispherical)	-38	-38	-38	-38	-38	-38	-38	-38	
Noise level at receiver	31	34	22	15	11	9	14	14	22

*AHU 01 – HTM – Exhaust*

Element	Octave-band Noise Levels (dB) at Octave-band Centre Frequency (Hz)								dBA
	63	125	250	500	1000	2000	4000	8000	
AHU 01 – Intake in duct Lw	78	83	79	79	79	76	74	71	84
Attenuator	-4	-7	-13	-19	-23	-23	-16	-13	--
End Reflection	-5	-2	0	0	0	0	0	0	--
Lw at grille	69	74	66	60	56	53	58	58	--
Directivity (90deg)	0	0	-1	-5	-8	-7	-7	-7	--
Divergence (30m hemispherical)	-38	-38	-38	-38	-38	-38	-38	-38	--
Noise level at receiver	31	36	27	17	10	8	13	13	24

*MVHR Discharge*

Element	Octave-band Noise Levels (dB) at Octave-band Centre Frequency (Hz)								dBA
	63	125	250	500	1000	2000	4000	8000	
AHU 01 – Intake in duct Lw	82	75	79	65	66	66	60	58	74
Attenuator	-4	-7	-13	-19	-23	-23	-16	-13	--
End Reflection	-12	-8	-4	-1	0	0	0	0	--
Lw at grille	66	60	62	45	43	43	44	45	--
Directivity (45deg)	0	1	2	2	3	3	4	4	--
Screening (Building)	-5	-5	-5	-5	-5	-5	-5	-5	--
Divergence (5m hemispherical)	-22	-22	-22	-22	-22	-22	-22	-22	--
Noise level at receiver	39	34	37	20	19	19	21	22	31

*MVHR Intake*

Element	Octave-band Noise Levels (dB) at Octave-band Centre Frequency (Hz)								dBA
	63	125	250	500	1000	2000	4000	8000	
AHU 01 – Intake in duct Lw	77	69	69	58	58	56	48	39	65
Attenuator	-1	-2	-7	-10	-11	-9	-8	-7	--
End Reflection	-12	-8	-4	-1	0	0	0	0	--
Lw at grille	64	59	58	47	47	47	40	32	--
Directivity (45deg)	0	1	2	2	3	3	4	4	--
Screening (Building)	-5	-5	-5	-5	-5	-5	-5	-5	--
Divergence (5m hemispherical)	-22	-22	-22	-22	-22	-22	-22	-22	--
Noise level at receiver	37	33	33	22	23	23	17	9	29

*Cumulative Noise Level*

Element	Octave-band Noise Levels [dB] at Octave-band Centre Frequency [Hz]								dBA
	63	125	250	500	1000	2000	4000	8000	
Condensers	48	43	38	35	30	24	27	22	37
AHU1 Intake	31	32	20	10	1	-1	2	6	18
AHU1 Exhaust	31	34	25	12	0	-2	1	5	21
AHU 01 - HTM - Intake	31	34	22	15	11	9	14	14	22
AHU 01 - HTM - Exhaust	31	36	27	17	10	8	13	13	24
MVHR Discharge	39	34	37	20	19	19	21	22	31
MVHR Intake	37	33	33	22	23	23	17	9	30
<b>Total</b>	<b>49</b>	<b>45</b>	<b>42</b>	<b>35</b>	<b>31</b>	<b>27</b>	<b>29</b>	<b>26</b>	<b>39</b>

The worst-case cumulative noise level is 39dB and hence 1dB below the target criterion of 40dBA.