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Acoustic Consultancy Report

Environmental Noise Survey Results,
Local Authority Plant Noise Requirements
and Garage Enclosure Plant Noise Impact Assessment

6 Templewood Avenue

Client:	c/o Red Square
Project:	6 Templewood Avenue London NW3 7XA
Our Ref:	10858/1
Revision:	0
Survey Completed By	N. Fowler M.I.O.A.
Report Prepared By	N. Fowler M.I.O.A.
Date:	30th May 2018

1.0 Introduction

1.1 ACP Ltd were requested by Red Square to carry out environmental noise monitoring, determine the plant noise criteria and provide a noise impact assessment for a proposed Garage enclosure at 6 Templewood Avenue, in line with the London Borough of Camden standard noise requirements.

1.2 This report provides the results of our environmental noise survey and establishes the specific plant noise criteria, based on the London Borough of Camden standard requirements and the response from The London Borough of Camden to the pre-application enquiry dated 13th March 2018.

1.3 The predicted plant noise levels for the proposed plant have been established based on the plant selection and noise data. A plant noise assessment has been included within this report detailing the resultant noise levels at the nearest and most affected noise sensitive properties. The nearest residential window adopted in this revised assessment report would be the rear elevation to No 8 Templewood Avenue.

1.4 The resultant plant noise levels have been compared to the required target noise levels in accordance with the London Borough of Camden standard noise requirements and mitigation measures proposed as appropriate.

2.0 Site Layout and Nearest Noise Sensitive Buildings

2.1 No 6 Templewood Avenue is a large detached property located on the junction of Templewood Avenue and Templewood Gardens.

2.2 The proposed plant would consist of two Mitsubishi air conditioning condensing unit, located in the rear part of the existing garage building at the rear south east elevation of the building. The existing garage building is constructed with brick walls and solid roof. There will be louvred openings in the front face of the enclosure for attenuated fresh air supply into the enclosure and attenuated discharge air from the enclosure.

2.3 The front face of the enclosure will be orientated so that the intake and discharge openings face south east towards the consulate building.

2.4 The nearest residential property facades would be as follows:

RPA The rear of No 8 Templewood Avenue to the north west. The proposed unit would be approximately 10m from the first floor rear façade and at an angle of, at least 90 degrees to the enclosure intake and discharge.

RPB The front elevation of the consulate building to the south of the site. The proposed unit would be approximately 40m from the front façade and with line of sight to the enclosure intake and discharge.

RPC The front elevation of the building on the opposite side of Templewood Gardens. The proposed unit would be approximately 45m from the front façade and with line of sight at an angle of 45 degrees to the enclosure intake and discharge.

2.5 A site plan is provided in Appendix 2

3.0 Plant and Enclosure Information

3.1 The proposed plant would consist of two Mitsubishi PUMY-SP-140VKM condensing units, located in rear part of the existing garage building at the rear south east elevation of the building within an attenuated plant enclosure.

3.2 The units have the following manufacturers noise data based on standard mode operation.

Air Conditioning Plant Manufacturers Noise Data Sound Pressure Level, dB at 1m									
Unit	**63Hz**	**125Hz**	**250Hz**	**500Hz**	**1kHz**	**2kHz**	**4kHz**	**8kHz**	**dBA**
PUMY-SP-140VKM	62	58	56	53	52	47	41	34	56

3.3 The above manufacturers noise data was measured in free field conditions over a reflecting plane. The manufacturers are unable to provide sound power level data for these units. We note the overall sound power level in cooling mode is given as 74dBA. Using the highest octave band sound pressure levels provided by the manufacturers we have assessed the probable octave band sound power level and this has been adopted for our calculations.

3.4 We understand the units could operate at any time during a 24 hour period on any day of the week.

3.5 The orientation of the enclosure, relating to the three receptor positions, is detailed in section 2.4.

4.0 Environmental Noise Monitoring Location

4.1 Extended, unmanned environmental noise monitoring was completed in the rear garden of the property with the microphone set up on an extension pole mounted on a tripod.

4.2 The position was considered representative of the existing noise climate affecting the facades of the adjacent dwellings.

5.0 Monitoring Equipment

5.1 The noise monitoring equipment comprised of a Svantek 971 type 1 real time analyser, serial number 34934. A weatherproof microphone protection system was also used.

5.2 The meter calibration was verified before and after the measurement period by a Svantek SV31 acoustic calibrator, serial number 24688. Any deviation was within an acceptable tolerance.

5.3 The meter and calibrator have current calibration certificates, available upon request.

6.0 Noise Monitoring Period and Survey Weather Conditions

6.1 The survey was carried out between 15.00 hours on Monday 6th November and 12.00 hours on Monday 13th November 2017.

6.2 Due to an unmanned survey being undertaken, weather conditions during the survey period were based on weather records for the area which indicated conditions were mostly acceptable for environmental noise monitoring, particularly at night, with good spells of dry weather with wind speeds well below 5.0m/sec.

7.0 Noise Measurement Parameters

7.1 The survey established the prevailing L_{AFmax}, $L_{Aeq,T}$, $L_{A10,T}$, and $L_{A90,T}$ noise levels, measured using F time weighting, with a 15 minute reference time period.

8.0 Monitoring Results and Observations

8.1 The recorded environmental noise measurements are representative of the existing noise climate applicable to the nearest noise sensitive receptors.

8.2 Our observations on site confirmed the existing noise climate was mainly influenced by traffic noise from the surrounding roads, together with general activity in the area.

8.3 The lowest measured background noise level during the entire survey period was 30 dB $L_{A90(15min)}$ recorded at night between 01.00-03.00 hours.

9.0 Local Authority Criteria for Proposed Plant Noise

9.1 The London Borough of Camden standard noise requirement is specified in the Camden Local Plan, adopted version dated July 2017. Camden Policy A4: Noise and Vibration makes reference to the Noise and Vibration Thresholds provided in Appendix 3.

9.2 Appendix 3 identifies the following thresholds for noise and vibration in terms of the “effect” levels described in the National Planning Policy Framework and Planning Practice Guidance.

NOEL – No Observed Effect Level
LOAL – Lowest Observed Adverse Effect Level
SOAEL – Significant Observed Adverse Effect Level

9.3 The Industrial and Commercial Noise Sources section detailed in Appendix 3 state:

"A relevant standard or guidance document should be referenced when determining values for LOAEL and SOAEL for non-anonymous noise. 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 (BS4142) will be used. For such cases a Rating Level of 10dB below background (15dB if tonal components are present) should be considered as the design criterion".

Table C: Noise levels applicable to proposed industrial and commercial developments (including plant and machinery)

Existing Noise Sensitive Receptor	**Assessment Location**	**Design Period**	**LOAEL (Green)**	**LOAEL to SOAEL (Amber)**	**SOAL (Red)**
Dwellings	Outside dining or bedroom window (façade)	Day	Rating level 10dB below background	Rating level between 9dB below and 5dB above background	Rating level greater than 5dB above background
	Outside bedroom window (façade)	Night	Rating level 10dB below background and no events exceeding 57dBL_{Amax}	Rating level between 9dB below and 5dB above background or noise events between 57dB and 88dBL_{Amax}	Rating level greater than 5dB above background and/or events exceeding 88dBL_{Amax}

9.4 This type of modern air conditioning plant would not have a distinguishable discrete continuous note audible at the receptor positions.

9.5 It is also noted that our initial acoustic report has been reviewed by the Council's Environmental Health Officer who stated the following condition should be imposed if a formal planning application was to be approved:

"The sound level from the plant shall be 10dB (15dB if tonal) below the lowest background sound level at the nearest residential receptor at any time. The mitigation measures identified in the Fixed Plant Noise Impact Assessment reference: 10858 shall be installed and maintained to ensure compliance with the above requirements. "

9.6 Based on the requirements from the Environmental Health Officer, and the results of our environmental noise survey given in Appendix 1, the plant noise criteria to be achieved at the façades of all receptor positions detailed in Section 2.0 of this report, and allowing for 24 hour operation of the plant, would be:

Plant Noise Criteria **20 dB $L_{Aeq,T}$**

10.0 Plant Noise Assessment

10.1 The proposed plant noise has been calculated at the façade of the three receptor positions and attenuation proposals will need to be incorporated into the intake and discharge louvred openings, and acoustic wall lining to the intake plenum, to ensure the target noise levels are achieved in accordance with the London Borough of Camden standard noise requirements.

10.2 The required attenuation for the intake and discharge openings for the three receptor positions has been calculated as detailed below.

Receptor Position	Louvred Openings	Minimum Required Insertion Loss, dB							
		63	125	250	500	1k	2k	4k	8k
RPA	Intake	10	14	17	21	28	26	20	16
	Discharge	14	18	28	39	37	35	25	16
RPB	Intake	10	14	17	21	28	26	20	16
	Discharge	14	18	28	39	37	35	25	16
RPC	Intake	10	14	17	21	28	26	20	16
	Discharge	14	18	28	39	37	35	25	16

10.3 Based on the above tables the required attenuation to be installed behind the intake and discharge openings, to ensure compliance with the external requirements of the London Borough of Camden at any of the receptor positions, would be as follows.

Louvred Openings	Minimum Required Insertion Loss, dB							
	63	125	250	500	1k	2k	4k	8k
Intake	10	14	17	21	28	26	20	16
Discharge	14	18	28	39	37	35	25	16

10.4 The attenuated calculations for each receptor position are provided in Appendix 3.

11.0 Conclusions

11.1 Our plant calculations confirm that attenuation proposals will need to be incorporated into the intake and discharge louvred openings and the walls of the intake plenum to ensure the target noise levels are achieved in accordance with the London Borough of Camden standard noise requirements.

11.2 We have proposed attenuation measures for the louvred openings that will result in the London Borough of Camden noise criteria being achieved as confirmed by calculations in Appendix 3. The predicted cumulative noise levels from the attenuated plant are given in the table below.

Receptor Position	Predicted Plant Noise Level $L_{Aeq(15min)}$ dB	Target Plant Noise Level $L_{Aeq(15min)}$ dB
RPA	18	20
RPB	15	20
RPC	10	20

Appendix 1

Environmental Noise Monitoring Results

Date	Monitoring Position	Time			Measured Sound Pressure Level, dB				Lowest LA90,T
					LAFmax	LAeq,T	LA10,T	LA90,T	
Monday 06.11.207	MP1	15:00	to	15:15	72.2	47.2	48.9	38.9	38.8
		15:15	to	15:30	65.3	47.0	50.5	38.8	
		15:30	to	15:45	65.5	49.9	52.7	40.3	
		15:45	to	16:00	67.1	50.4	51.9	39.9	
		16:00	to	16:15	67.1	44.8	47.6	39.7	39.5
		16:15	to	16:30	70.8	47.4	50.0	40.3	
		16:30	to	16:45	63.7	46.4	49.7	39.5	
		16:45	to	17:00	57.8	46.6	50.7	40.1	
		17:00	to	17:15	58.8	46.8	49.3	41.2	41.1
		17:15	to	17:30	67.8	49.1	51.9	43.4	
		17:30	to	17:45	76.1	50.8	53.8	41.7	
		17:45	to	18:00	66.8	47.1	49.5	41.1	
		18:00	to	18:15	66.0	46.1	49.0	41.2	41.1
		18:15	to	18:30	59.9	45.8	48.1	41.8	
		18:30	to	18:45	75.8	47.4	49.3	41.6	
		18:45	to	19:00	64.6	45.2	47.7	41.1	
		19:00	to	19:15	59.5	44.6	47.2	40.9	40.9
		19:15	to	19:30	63.7	49.2	51.8	41.3	
		19:30	to	19:45	62.5	46.5	49.3	42.1	
		19:45	to	20:00	61.1	44.7	47.2	41.1	
		20:00	to	20:15	62.6	45.3	47.4	41.9	41.2
		20:15	to	20:30	57.2	44.7	47.6	41.2	
		20:30	to	20:45	61.9	45.5	47.5	41.8	
		20:45	to	21:00	64.4	46.2	48.5	41.7	
		21:00	to	21:15	60.4	44.4	46.0	41.3	41.3
		21:15	to	21:30	72.8	48.2	47.3	41.5	
		21:30	to	21:45	63.9	44.8	46.9	41.4	
		21:45	to	22:00	56.8	44.1	45.5	41.3	
		22:00	to	22:15	62.9	44.5	45.6	40.4	40.4
		22:15	to	22:30	57.2	43.8	45.9	40.5	
		22:30	to	22:45	63.8	44.0	45.9	40.8	
		22:45	to	23:00	60.0	45.7	47.0	40.5	
		23:00	to	23:15	52.8	42.4	44.1	39.7	38.4
		23:15	to	23:30	56.6	42.4	44.3	39.7	
		23:30	to	23:45	52.3	41.8	44.1	38.8	
		23:45	to	00:00	55.9	41.6	43.3	38.4	

Date	Monitoring Position	Time	Measured Sound Pressure Level, dB				Lowest LA90,T
			LAFmax	LAeq,T	LA10,T	LA90,T	
Tuesday 07.11.2017	MP1	00:00 to 00:15	60.2	42.2	43.6	38.7	38.3
		00:15 to 00:30	60.9	40.8	42.5	38.3	
		00:30 to 00:45	52.9	41.2	42.7	38.8	
		00:45 to 01:00	45.7	40.7	42.4	38.8	
		01:00 to 01:15	55.0	40.9	42.4	38.3	36.7
		01:15 to 01:30	52.0	40.5	42.4	38.0	
		01:30 to 01:45	73.1	42.9	41.9	37.1	
		01:45 to 02:00	49.5	39.1	40.7	36.7	
		02:00 to 02:15	57.0	40.0	42.4	36.3	36.3
		02:15 to 02:30	49.0	39.6	41.9	36.6	
		02:30 to 02:45	55.7	40.7	43.4	36.8	
		02:45 to 03:00	60.9	40.7	42.9	36.4	
		03:00 to 03:15	53.5	41.1	44.4	36.1	35.9
		03:15 to 03:30	52.9	42.3	45.2	37.7	
		03:30 to 03:45	55.1	42.9	45.7	37.5	
		03:45 to 04:00	55.9	40.3	43.0	35.9	
		04:00 to 04:15	51.9	40.7	43.6	35.1	35.1
		04:15 to 04:30	54.8	40.1	42.8	35.7	
		04:30 to 04:45	56.7	40.2	42.6	35.6	
		04:45 to 05:00	50.1	39.4	41.7	35.5	
		05:00 to 05:15	47.5	39.3	41.2	36.4	35.6
		05:15 to 05:30	50.3	38.0	39.3	35.6	
		05:30 to 05:45	57.5	41.6	42.6	36.5	
		05:45 to 06:00	55.8	39.6	40.6	35.7	
		06:00 to 06:15	45.9	37.9	39.6	35.6	35.6
		06:15 to 06:30	55.3	39.5	41.0	36.6	
		06:30 to 06:45	49.7	39.7	41.6	37.4	
		06:45 to 07:00	51.2	40.3	41.5	38.1	
		07:00 to 07:15	54.9	42.2	44.3	38.9	38.9
		07:15 to 07:30	58.9	44.9	47.8	40.3	
		07:30 to 07:45	57.4	43.2	44.8	40.4	
		07:45 to 08:00	60.8	46.0	47.9	41.1	
		08:00 to 08:15	69.2	45.9	46.7	41.4	41.4
		08:15 to 08:30	55.5	44.2	45.7	42.0	
		08:30 to 08:45	63.1	46.8	49.2	42.9	
		08:45 to 09:00	66.6	47.2	49.4	43.3	
		09:00 to 09:15	64.2	48.1	50.8	43.5	43.2
		09:15 to 09:30	62.0	47.7	50.4	43.2	
		09:30 to 09:45	59.7	47.9	50.7	43.9	
		09:45 to 10:00	59.2	47.5	49.9	43.6	
		10:00 to 10:15	65.4	47.8	49.7	43.6	42.4
		10:15 to 10:30	59.2	48.7	51.2	44.6	
		10:30 to 10:45	66.4	49.9	52.5	44.0	
		10:45 to 11:00	60.7	47.1	49.5	42.4	
		11:00 to 11:15	61.1	49.1	51.8	43.1	43.0
		11:15 to 11:30	65.8	48.0	50.7	43.3	
		11:30 to 11:45	59.9	47.3	49.7	43.0	
		11:45 to 12:00	70.3	50.5	52.2	43.5	
		12:00 to 12:15	59.8	47.7	50.7	42.8	42.3
		12:15 to 12:30	60.7	47.2	50.4	42.3	
		12:30 to 12:45	62.1	48.9	51.7	43.7	
		12:45 to 13:00	65.6	48.1	50.3	43.9	
		13:00 to 13:15	62.9	47.5	49.8	43.6	43.6
		13:15 to 13:30	62.2	50.0	53.3	45.2	
		13:30 to 13:45	61.4	48.5	50.8	44.3	
		13:45 to 14:00	62.1	48.8	51.2	44.4	
		14:00 to 14:15	62.9	48.8	51.3	45.2	42.6
		14:15 to 14:30	66.4	48.3	50.5	44.1	
		14:30 to 14:45	61.6	48.1	51.0	42.6	
		14:45 to 15:00	64.0	47.6	49.2	43.1	
		15:00 to 15:15	59.8	46.2	48.1	43.4	43.3
		15:15 to 15:30	64.0	48.2	50.7	43.3	
		15:30 to 15:45	66.1	48.2	50.4	44.1	
		15:45 to 16:00	68.7	50.3	52.7	44.0	
		16:00 to 16:15	65.0	47.6	49.8	42.5	42.3
		16:15 to 16:30	63.6	48.0	50.9	42.3	
		16:30 to 16:45	64.5	47.1	49.5	42.5	
		16:45 to 17:00	58.5	47.1	49.8	42.5	
		17:00 to 17:15	59.4	47.7	50.8	42.3	42.0
		17:15 to 17:30	69.8	49.1	50.7	42.0	
		17:30 to 17:45	60.0	47.4	49.9	43.5	
		17:45 to 18:00	64.2	48.3	50.8	42.4	
		18:00 to 18:15	65.9	47.3	49.8	42.5	41.6
		18:15 to 18:30	61.9	46.5	49.5	41.6	
		18:30 to 18:45	78.3	47.7	48.1	42.3	
		18:45 to 19:00	62.6	46.7	49.5	42.5	
		19:00 to 19:15	65.0	47.5	49.7	42.6	41.3
		19:15 to 19:30	55.0	44.3	46.7	41.3	
		19:30 to 19:45	59.7	47.0	50.1	42.3	
		19:45 to 20:00	58.4	45.7	48.2	42.3	
		20:00 to 20:15	64.5	46.7	49.4	41.5	41.5
		20:15 to 20:30	64.9	48.1	50.9	42.0	
		20:30 to 20:45	66.0	49.6	52.5	42.0	
		20:45 to 21:00	69.0	54.5	58.1	46.5	
		21:00 to 21:15	75.2	51.8	55.6	41.4	40.8
		21:15 to 21:30	72.0	50.9	53.6	40.8	
		21:30 to 21:45	68.7	55.2	58.4	47.4	
		21:45 to 22:00	70.5	56.1	59.5	48.3	
		22:00 to 22:15	69.4	55.2	58.3	48.0	48.0
		22:15 to 22:30	72.0	56.8	60.4	49.8	
		22:30 to 22:45	70.6	56.7	60.0	49.6	
		22:45 to 23:00	72.8	59.3	62.3	53.3	
		23:00 to 23:15	71.1	57.9	61.3	50.9	47.4
		23:15 to 23:30	69.7	56.4	60.1	48.8	
		23:30 to 23:45	69.5	55.7	59.3	47.4	
		23:45 to 00:00	70.3	55.3	58.9	47.9	

Date	Monitoring Position	Time	Measured Sound Pressure Level, dB				Lowest LA90,T
			LAFmax	LAeq,T	LA10,T	LA90,T	
Wedsnesday 08.11.2017	MP1	00:00 to 00:15	67.6	53.9	57.5	46.2	42.0
		00:15 to 00:30	66.8	51.1	54.1	43.6	
		00:30 to 00:45	67.4	50.6	53.6	42.6	
		00:45 to 01:00	66.5	49.2	51.9	42.0	
		01:00 to 01:15	66.6	50.9	54.1	44.1	39.6
		01:15 to 01:30	65.0	49.4	52.5	41.6	
		01:30 to 01:45	72.2	48.2	50.0	40.1	
		01:45 to 02:00	70.6	48.9	49.8	39.6	
		02:00 to 02:15	68.0	48.3	51.3	38.1	35.2
		02:15 to 02:30	65.8	45.6	47.6	36.4	
		02:30 to 02:45	63.7	42.8	44.3	37.0	
		02:45 to 03:00	65.8	43.6	45.9	35.2	
		03:00 to 03:15	60.0	39.8	41.7	35.0	31.5
		03:15 to 03:30	56.3	37.5	40.0	32.4	
		03:30 to 03:45	60.3	36.5	36.1	32.0	
		03:45 to 04:00	58.3	35.7	35.9	31.5	
		04:00 to 04:15	57.1	35.2	37.6	32.0	32.0
		04:15 to 04:30	55.7	35.8	36.8	32.4	
		04:30 to 04:45	48.0	34.5	34.9	32.4	
		04:45 to 05:00	52.3	35.0	35.3	32.4	
		05:00 to 05:15	54.6	34.2	35.4	32.5	32.5
		05:15 to 05:30	47.7	35.5	37.0	33.1	
		05:30 to 05:45	50.6	36.4	38.1	33.8	
		05:45 to 06:00	66.4	48.0	51.6	34.3	
		06:00 to 06:15	58.2	40.0	41.5	35.6	35.5
		06:15 to 06:30	48.4	38.2	39.6	36.0	
		06:30 to 06:45	44.2	37.5	39.1	35.5	
		06:45 to 07:00	59.9	40.9	40.8	36.6	
		07:00 to 07:15	52.9	39.8	41.9	37.0	37.0
		07:15 to 07:30	55.5	42.1	45.5	38.0	
		07:30 to 07:45	65.9	49.1	53.0	39.3	
		07:45 to 08:00	63.9	45.0	46.0	39.2	
		08:00 to 08:15	63.8	47.9	51.3	39.2	39.2
		08:15 to 08:30	68.9	51.0	53.0	40.4	
		08:30 to 08:45	69.0	48.3	49.9	40.2	
		08:45 to 09:00	69.9	48.4	51.5	41.0	
		09:00 to 09:15	66.4	47.7	50.2	41.3	41.3
		09:15 to 09:30	68.7	49.0	51.1	43.1	
		09:30 to 09:45	66.7	49.2	52.4	42.7	
		09:45 to 10:00	63.6	49.3	52.0	44.5	
		10:00 to 10:15	74.5	56.1	61.2	45.1	43.6
		10:15 to 10:30	74.5	57.7	63.5	45.3	
		10:30 to 10:45	66.9	55.1	59.5	44.4	
		10:45 to 11:00	60.8	48.3	51.4	43.6	
		11:00 to 11:15	61.1	48.5	51.4	43.0	42.5
		11:15 to 11:30	61.0	48.9	51.8	43.2	
		11:30 to 11:45	63.1	49.0	52.0	42.5	
		11:45 to 12:00	66.9	51.5	54.4	46.0	
		12:00 to 12:15	67.9	50.3	52.3	44.6	41.1
		12:15 to 12:30	67.0	48.9	51.5	42.6	
		12:30 to 12:45	67.6	48.0	51.7	41.1	
		12:45 to 13:00	68.2	49.4	51.4	41.8	
		13:00 to 13:15	59.1	47.0	50.0	40.5	39.9
		13:15 to 13:30	66.4	50.0	52.7	41.1	
		13:30 to 13:45	61.5	46.8	49.9	40.5	
		13:45 to 14:00	63.3	49.0	52.7	39.9	
		14:00 to 14:15	66.3	49.3	51.9	39.6	39.1
		14:15 to 14:30	57.2	45.7	48.8	40.8	
		14:30 to 14:45	62.5	46.0	49.2	39.1	
		14:45 to 15:00	65.0	49.4	53.0	41.2	
		15:00 to 15:15	61.0	45.7	49.0	40.0	39.9
		15:15 to 15:30	64.0	48.8	51.9	41.6	
		15:30 to 15:45	62.4	47.2	50.8	39.9	
		15:45 to 16:00	62.3	54.4	58.6	42.8	
		16:00 to 16:15	63.5	53.6	57.2	43.0	40.4
		16:15 to 16:30	70.4	53.7	56.6	45.5	
		16:30 to 16:45	69.9	54.1	58.1	41.4	
		16:45 to 17:00	60.7	46.8	50.3	40.4	
		17:00 to 17:15	69.8	48.5	51.9	40.3	38.5
		17:15 to 17:30	70.0	46.7	48.8	38.5	
		17:30 to 17:45	70.0	49.1	51.0	39.7	
		17:45 to 18:00	68.9	48.0	50.5	38.6	
		18:00 to 18:15	60.9	44.7	47.8	38.4	38.4
		18:15 to 18:30	71.2	50.2	52.8	40.2	
		18:30 to 18:45	57.3	44.3	47.3	39.6	
		18:45 to 19:00	56.8	43.5	46.4	38.9	
		19:00 to 19:15	58.9	45.3	48.8	39.5	39.1
		19:15 to 19:30	60.7	45.5	48.8	39.5	
		19:30 to 19:45	72.0	48.2	50.0	39.2	
		19:45 to 20:00	57.5	44.1	47.4	39.1	
		20:00 to 20:15	60.3	45.1	48.3	38.5	38.4
		20:15 to 20:30	58.1	42.3	44.3	38.4	
		20:30 to 20:45	59.4	45.0	48.4	38.8	
		20:45 to 21:00	60.0	46.2	50.1	38.5	
		21:00 to 21:15	60.3	47.0	50.5	38.6	38.6
		21:15 to 21:30	61.7	46.0	49.1	40.1	
		21:30 to 21:45	63.1	47.6	51.0	41.3	
		21:45 to 22:00	57.1	42.3	43.7	39.9	
		22:00 to 22:15	57.1	44.6	47.5	40.2	38.4
		22:15 to 22:30	58.3	43.5	44.8	40.1	
		22:30 to 22:45	69.2	46.2	46.1	39.0	
		22:45 to 23:00	58.0	42.2	43.5	38.4	
		23:00 to 23:15	56.1	40.7	41.6	38.0	38.0
		23:15 to 23:30	57.0	43.7	45.0	39.2	
		23:30 to 23:45	62.9	42.6	43.2	39.2	
		23:45 to 00:00	54.8	42.2	43.6	40.0	

Date	Monitoring Position	Time	Measured Sound Pressure Level, dB				Lowest LA90,T
			LAFmax	LAeq,T	LA10,T	LA90,T	
Thursday 09.11.2017	MP1	00:00 to 00:15	55.4	43.2	44.0	40.5	37.8
		00:15 to 00:30	58.4	42.9	43.9	39.1	
		00:30 to 00:45	56.7	41.4	42.3	37.8	
		00:45 to 01:00	54.6	40.9	41.9	38.3	
		01:00 to 01:15	65.3	43.2	42.8	38.1	36.1
		01:15 to 01:30	50.3	39.7	41.2	37.7	
		01:30 to 01:45	46.2	39.6	41.3	37.3	
		01:45 to 02:00	45.8	38.3	40.0	36.1	
		02:00 to 02:15	46.5	37.7	39.4	35.8	35.7
		02:15 to 02:30	49.4	38.4	39.8	36.3	
		02:30 to 02:45	48.9	37.8	39.8	35.7	
		02:45 to 03:00	43.8	37.3	38.7	35.9	
		03:00 to 03:15	55.1	38.1	38.6	35.2	35.0
		03:15 to 03:30	50.9	37.6	39.3	35.0	
		03:30 to 03:45	49.5	38.4	41.1	35.4	
		03:45 to 04:00	45.2	37.4	39.1	35.0	
		04:00 to 04:15	49.3	39.1	42.4	35.2	35.2
		04:15 to 04:30	54.9	38.0	39.8	36.0	
		04:30 to 04:45	52.8	40.4	44.2	36.2	
		04:45 to 05:00	58.3	40.2	41.6	36.0	
		05:00 to 05:15	51.0	38.8	40.9	36.0	36.0
		05:15 to 05:30	53.2	39.8	41.1	36.7	
		05:30 to 05:45	49.4	40.3	43.5	36.2	
		05:45 to 06:00	64.8	48.1	51.4	37.5	
		06:00 to 06:15	53.5	43.1	46.3	39.0	38.5
		06:15 to 06:30	51.9	41.3	43.9	38.5	
		06:30 to 06:45	51.1	42.2	43.9	40.2	
		06:45 to 07:00	54.3	44.1	46.5	41.4	
		07:00 to 07:15	63.3	46.2	48.8	42.0	42.0
		07:15 to 07:30	59.9	48.2	51.7	43.9	
		07:30 to 07:45	63.8	49.2	50.4	45.0	
		07:45 to 08:00	65.9	49.2	51.6	45.0	
		08:00 to 08:15	66.6	48.5	50.4	44.6	44.6
		08:15 to 08:30	57.2	47.3	48.9	45.3	
		08:30 to 08:45	65.6	48.1	49.5	45.7	
		08:45 to 09:00	60.5	50.0	53.1	46.0	
		09:00 to 09:15	67.9	49.1	50.8	46.0	46.0
		09:15 to 09:30	68.5	51.7	53.7	47.1	
		09:30 to 09:45	60.6	49.9	52.8	46.5	
		09:45 to 10:00	61.4	49.7	51.6	46.4	
		10:00 to 10:15	62.7	48.7	50.6	46.2	45.3
		10:15 to 10:30	66.7	48.9	50.6	46.1	
		10:30 to 10:45	59.8	48.1	50.3	45.3	
		10:45 to 11:00	70.0	51.2	52.0	46.1	
		11:00 to 11:15	69.5	49.9	51.9	46.1	46.1
		11:15 to 11:30	68.0	51.1	54.1	46.4	
		11:30 to 11:45	61.8	52.0	55.6	47.0	
		11:45 to 12:00	69.1	52.5	55.4	47.2	
		12:00 to 12:15	60.0	49.7	53.2	45.2	44.1
		12:15 to 12:30	58.3	46.7	48.4	44.1	
		12:30 to 12:45	76.3	49.5	50.2	45.5	
		12:45 to 13:00	68.1	50.2	52.4	45.8	
		13:00 to 13:15	62.5	49.7	53.0	44.3	40.5
		13:15 to 13:30	71.0	48.4	49.7	41.8	
		13:30 to 13:45	62.6	48.2	51.3	41.7	
		13:45 to 14:00	58.7	46.0	49.2	40.5	
		14:00 to 14:15	61.4	45.0	47.9	40.3	37.2
		14:15 to 14:30	63.3	48.0	51.1	40.4	
		14:30 to 14:45	63.2	45.4	48.4	37.2	
		14:45 to 15:00	57.1	43.2	46.1	38.5	
		15:00 to 15:15	71.9	51.6	53.5	40.7	40.7
		15:15 to 15:30	65.8	50.2	53.6	41.6	
		15:30 to 15:45	66.3	48.1	49.2	41.5	
		15:45 to 16:00	57.8	46.6	48.7	42.4	
		16:00 to 16:15	71.3	49.9	51.9	45.7	43.7
		16:15 to 16:30	82.5	57.8	54.0	44.3	
		16:30 to 16:45	60.5	51.3	53.8	44.4	
		16:45 to 17:00	65.4	53.8	58.7	43.7	
		17:00 to 17:15	68.1	56.8	61.2	44.3	42.5
		17:15 to 17:30	71.3	48.3	49.7	43.7	
		17:30 to 17:45	60.1	47.7	50.7	42.5	
		17:45 to 18:00	62.9	48.1	50.1	43.4	
		18:00 to 18:15	61.2	48.5	52.1	43.1	42.0
		18:15 to 18:30	56.1	46.4	48.8	43.4	
		18:30 to 18:45	58.8	46.9	49.3	43.2	
		18:45 to 19:00	59.3	45.1	47.1	42.0	
		19:00 to 19:15	59.2	46.1	48.6	43.0	35.7
		19:15 to 19:30	68.3	48.9	50.0	42.9	
		19:30 to 19:45	61.4	45.5	48.7	37.9	
		19:45 to 20:00	58.3	42.4	45.7	35.7	
		20:00 to 20:15	60.7	45.1	47.8	37.1	36.3
		20:15 to 20:30	57.5	43.3	46.1	37.8	
		20:30 to 20:45	60.3	43.7	46.6	37.3	
		20:45 to 21:00	58.5	42.0	44.8	36.3	
		21:00 to 21:15	56.1	40.6	42.0	35.9	35.2
		21:15 to 21:30	56.1	41.5	44.3	35.8	
		21:30 to 21:45	67.3	44.3	46.1	36.9	
		21:45 to 22:00	59.7	41.8	44.0	35.2	
		22:00 to 22:15	56.3	40.6	42.6	36.1	35.4
		22:15 to 22:30	66.6	45.2	45.4	37.6	
		22:30 to 22:45	60.7	43.7	46.4	37.8	
		22:45 to 23:00	54.4	40.3	43.5	35.4	
		23:00 to 23:15	55.3	39.5	40.4	33.4	33.4
		23:15 to 23:30	65.4	45.9	44.9	35.1	
		23:30 to 23:45	58.2	40.7	44.3	34.3	
		23:45 to 00:00	55.9	38.1	39.6	33.4	

Date	Monitoring Position	Time	Measured Sound Pressure Level, dB				Lowest LA90,T
			LAFmax	LAeq,T	LA10,T	LA90,T	
Friday 10.11.2017	MP1	00:00 to 00:15	51.2	37.8	39.3	34.5	34.5
		00:15 to 00:30	49.5	38.0	39.6	35.4	
		00:30 to 00:45	49.9	39.9	42.4	36.5	
		00:45 to 01:00	52.1	39.9	41.7	36.7	
		01:00 to 01:15	50.1	39.4	41.0	37.0	36.7
		01:15 to 01:30	50.4	38.9	40.7	36.7	
		01:30 to 01:45	53.9	40.4	42.4	37.3	
		01:45 to 02:00	51.2	39.9	42.0	36.9	
		02:00 to 02:15	51.4	39.8	42.1	36.7	35.6
		02:15 to 02:30	51.7	39.0	40.8	35.7	
		02:30 to 02:45	49.3	38.9	41.3	35.6	
		02:45 to 03:00	52.9	39.6	41.8	36.2	
		03:00 to 03:15	47.7	39.6	41.9	36.7	36.7
		03:15 to 03:30	50.5	40.4	42.3	38.1	
		03:30 to 03:45	57.3	39.8	41.4	37.6	
		03:45 to 04:00	50.1	41.5	43.6	38.6	
		04:00 to 04:15	51.0	41.4	43.4	38.3	37.7
		04:15 to 04:30	64.3	46.1	44.7	37.7	
		04:30 to 04:45	50.8	40.7	42.8	38.1	
		04:45 to 05:00	48.4	40.4	41.9	38.3	
		05:00 to 05:15	50.7	39.4	40.9	37.5	37.5
		05:15 to 05:30	54.3	39.6	41.0	37.7	
		05:30 to 05:45	54.9	40.0	41.8	37.6	
		05:45 to 06:00	50.1	40.8	42.7	38.5	
		06:00 to 06:15	52.2	42.2	44.6	38.8	38.8
		06:15 to 06:30	58.8	43.7	45.6	40.2	
		06:30 to 06:45	59.8	43.9	45.2	41.2	
		06:45 to 07:00	67.0	47.9	48.5	42.6	
		07:00 to 07:15	60.0	45.6	47.5	43.0	43.0
		07:15 to 07:30	63.2	46.7	48.9	44.0	
		07:30 to 07:45	62.0	46.8	48.5	44.0	
		07:45 to 08:00	61.4	47.4	49.1	44.4	
		08:00 to 08:15	59.5	47.1	49.2	44.5	44.5
		08:15 to 08:30	70.8	52.4	51.9	44.5	
		08:30 to 08:45	62.2	49.1	51.4	45.4	
		08:45 to 09:00	61.5	49.2	51.2	46.0	
		09:00 to 09:15	64.1	51.2	54.2	46.4	46.4
		09:15 to 09:30	68.6	55.7	58.9	50.0	
		09:30 to 09:45	71.5	57.1	60.8	48.9	
		09:45 to 10:00	72.2	59.5	62.9	50.7	
		10:00 to 10:15	68.4	53.4	56.3	47.4	44.6
		10:15 to 10:30	65.2	51.7	54.7	46.0	
		10:30 to 10:45	68.2	50.7	53.3	44.6	
		10:45 to 11:00	64.2	52.1	55.9	45.2	
		11:00 to 11:15	66.4	54.8	58.7	47.4	44.4
		11:15 to 11:30	58.0	50.2	52.6	46.7	
		11:30 to 11:45	64.4	48.8	51.2	44.6	
		11:45 to 12:00	69.5	48.9	51.6	44.4	
		12:00 to 12:15	59.1	50.2	53.9	44.6	44.6
		12:15 to 12:30	60.1	48.8	51.4	45.0	
		12:30 to 12:45	60.6	49.9	52.8	44.7	
		12:45 to 13:00	70.3	51.2	52.9	48.0	
		13:00 to 13:15	64.7	50.8	52.8	46.6	44.1
		13:15 to 13:30	58.1	47.9	50.4	44.1	
		13:30 to 13:45	76.2	51.3	53.6	46.9	
		13:45 to 14:00	68.2	55.8	60.3	46.7	
		14:00 to 14:15	61.2	49.7	52.2	45.6	43.7
		14:15 to 14:30	60.7	48.9	52.0	44.6	
		14:30 to 14:45	74.8	51.9	54.5	43.7	
		14:45 to 15:00	63.2	49.8	52.7	44.4	
		15:00 to 15:15	60.0	50.0	52.4	46.0	44.0
		15:15 to 15:30	59.9	48.8	51.5	44.2	
		15:30 to 15:45	64.9	48.9	51.0	45.3	
		15:45 to 16:00	61.4	48.0	50.8	44.0	
		16:00 to 16:15	61.8	48.6	51.0	45.2	42.4
		16:15 to 16:30	63.4	48.5	51.1	43.4	
		16:30 to 16:45	59.9	46.4	48.8	42.4	
		16:45 to 17:00	65.8	49.3	52.1	43.4	
		17:00 to 17:15	66.9	48.7	50.4	43.8	43.0
		17:15 to 17:30	59.4	46.7	49.3	43.0	
		17:30 to 17:45	63.5	47.4	50.0	43.3	
		17:45 to 18:00	59.1	47.7	50.1	43.6	
		18:00 to 18:15	57.1	46.4	48.9	43.0	42.6
		18:15 to 18:30	61.0	46.7	48.7	42.8	
		18:30 to 18:45	59.6	46.3	48.8	42.6	
		18:45 to 19:00	67.2	48.5	50.8	43.2	
		19:00 to 19:15	60.6	47.1	49.8	42.9	42.9
		19:15 to 19:30	62.0	47.7	49.2	44.8	
		19:30 to 19:45	60.9	47.6	50.0	43.8	
		19:45 to 20:00	62.1	48.3	50.2	43.1	
		20:00 to 20:15	57.3	46.1	48.6	42.7	42.7
		20:15 to 20:30	57.9	46.7	48.7	43.5	
		20:30 to 20:45	59.0	46.8	48.6	43.7	
		20:45 to 21:00	54.7	46.1	48.3	43.4	
		21:00 to 21:15	71.0	48.2	47.9	42.7	42.0
		21:15 to 21:30	58.5	46.2	48.0	43.4	
		21:30 to 21:45	55.8	45.5	47.4	42.7	
		21:45 to 22:00	60.3	44.6	46.3	42.0	
		22:00 to 22:15	61.8	45.4	46.9	41.8	41.8
		22:15 to 22:30	77.9	46.8	46.9	42.1	
		22:30 to 22:45	55.0	44.7	46.4	42.0	
		22:45 to 23:00	62.7	44.6	45.9	42.0	
		23:00 to 23:15	55.1	44.4	46.5	41.8	41.2
		23:15 to 23:30	55.1	44.2	45.8	42.0	
		23:30 to 23:45	59.6	44.9	47.1	41.9	
		23:45 to 00:00	55.3	43.8	45.7	41.2	

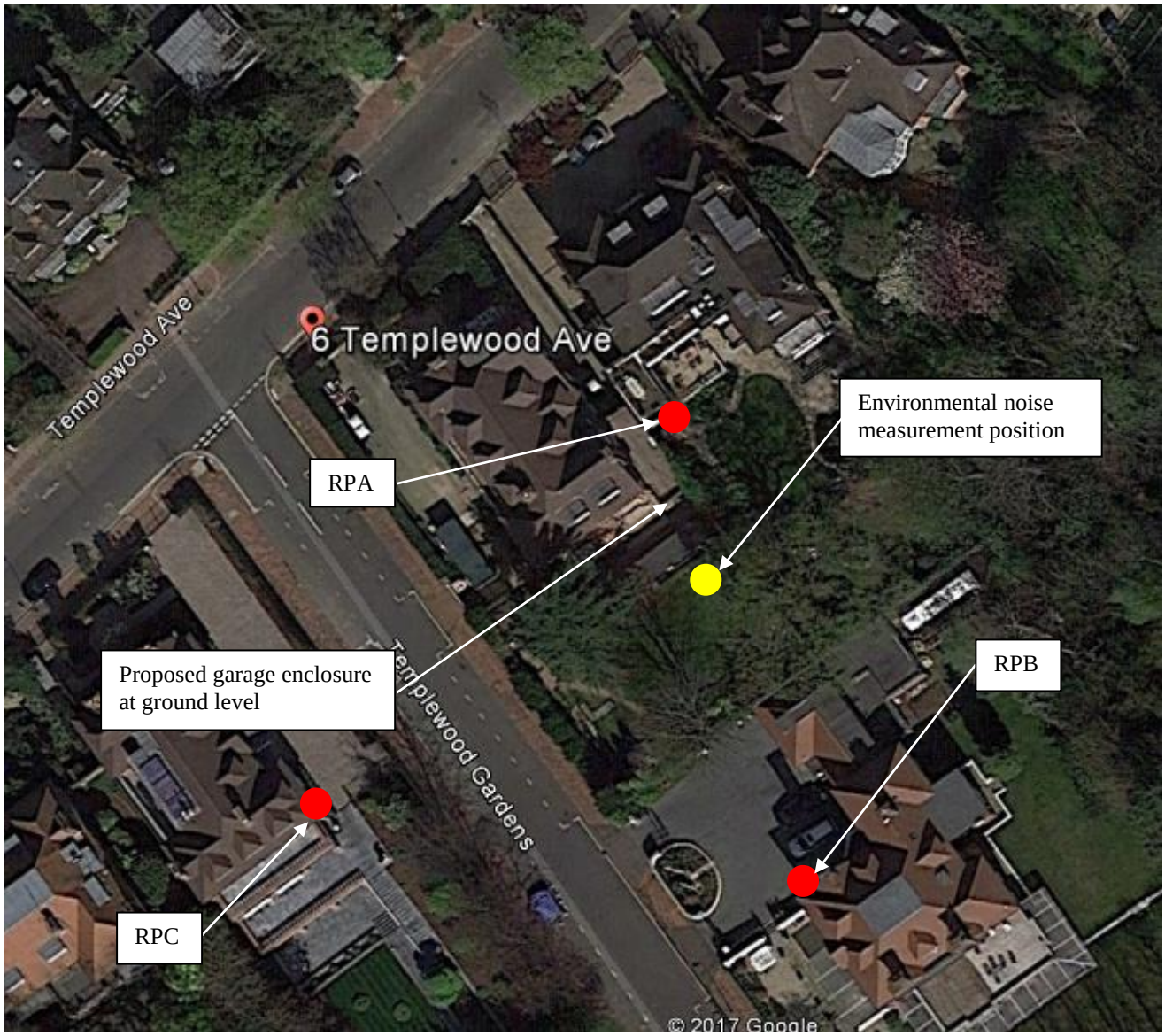
Date	Monitoring Position	Time	Measured Sound Pressure Level, dB				Lowest LA90,T
			LAFmax	LAeq,T	LA10,T	LA90,T	
Saturday 11.11.2017	MP1	00:00 to 00:15	60.5	44.1	44.5	40.2	40.2
		00:15 to 00:30	63.2	44.8	47.6	41.2	
		00:30 to 00:45	54.9	44.6	46.9	41.0	
		00:45 to 01:00	64.2	49.5	51.4	46.5	
		01:00 to 01:15	66.4	49.1	51.5	44.9	42.9
		01:15 to 01:30	65.7	51.9	54.7	47.4	
		01:30 to 01:45	67.7	53.0	56.2	46.3	
		01:45 to 02:00	67.6	50.0	52.8	42.9	
		02:00 to 02:15	67.0	49.6	52.6	42.2	42.2
		02:15 to 02:30	66.4	53.7	56.9	48.4	
		02:30 to 02:45	66.7	52.8	56.2	46.0	
		02:45 to 03:00	66.3	52.3	55.8	45.4	
		03:00 to 03:15	66.5	50.7	54.5	42.1	42.1
		03:15 to 03:30	65.9	51.7	55.3	42.9	
		03:30 to 03:45	67.3	56.4	59.6	49.5	
		03:45 to 04:00	68.1	54.9	58.4	46.7	
		04:00 to 04:15	67.6	54.0	57.7	46.3	46.3
		04:15 to 04:30	66.2	56.8	59.6	52.0	
		04:30 to 04:45	66.5	56.8	59.7	52.0	
		04:45 to 05:00	69.2	56.3	59.5	50.4	
		05:00 to 05:15	67.3	55.6	58.6	50.3	50.3
		05:15 to 05:30	68.8	57.3	60.1	52.6	
		05:30 to 05:45	68.3	57.1	60.1	51.6	
		05:45 to 06:00	69.9	58.3	61.4	50.8	
		06:00 to 06:15	69.9	60.4	63.5	54.7	52.5
		06:15 to 06:30	68.5	57.6	60.5	52.5	
		06:30 to 06:45	69.5	58.6	61.2	54.1	
		06:45 to 07:00	71.7	61.6	64.1	57.1	
		07:00 to 07:15	74.7	62.4	64.6	58.7	54.3
		07:15 to 07:30	77.3	60.5	62.9	56.5	
		07:30 to 07:45	75.3	60.6	62.9	56.5	
		07:45 to 08:00	72.9	59.8	62.7	54.3	
		08:00 to 08:15	76.5	56.0	59.4	48.8	41.7
		08:15 to 08:30	75.6	53.4	56.7	45.8	
		08:30 to 08:45	71.6	52.3	55.9	44.1	
		08:45 to 09:00	70.7	50.3	53.7	41.7	
		09:00 to 09:15	70.7	50.6	53.7	40.5	40.5
		09:15 to 09:30	65.7	51.1	54.5	43.8	
		09:30 to 09:45	65.2	51.8	55.3	44.8	
		09:45 to 10:00	65.9	49.9	53.3	42.4	
		10:00 to 10:15	66.7	49.3	52.4	39.7	39.7
		10:15 to 10:30	72.2	49.9	53.3	40.5	
		10:30 to 10:45	67.7	50.5	53.6	42.4	
		10:45 to 11:00	68.4	50.3	53.8	42.5	
		11:00 to 11:15	66.6	48.2	52.0	38.7	37.7
		11:15 to 11:30	65.0	48.3	51.9	38.9	
		11:30 to 11:45	73.3	48.5	52.1	38.4	
		11:45 to 12:00	67.6	48.1	51.7	37.7	
		12:00 to 12:15	68.0	46.8	49.2	36.5	36.5
		12:15 to 12:30	67.0	51.9	53.8	40.5	
		12:30 to 12:45	71.6	56.3	56.7	47.7	
		12:45 to 13:00	64.1	51.5	54.3	41.9	
		13:00 to 13:15	67.8	53.3	56.7	41.6	35.4
		13:15 to 13:30	67.3	50.1	50.4	35.4	
		13:30 to 13:45	65.7	51.3	53.9	41.3	
		13:45 to 14:00	64.4	48.3	52.0	37.2	
		14:00 to 14:15	63.4	47.7	50.6	37.4	35.3
		14:15 to 14:30	63.1	46.7	49.6	35.3	
		14:30 to 14:45	63.0	47.7	51.7	37.1	
		14:45 to 15:00	65.8	49.9	53.1	38.5	
		15:00 to 15:15	66.0	48.2	51.0	37.5	32.9
		15:15 to 15:30	67.9	48.9	51.9	36.7	
		15:30 to 15:45	70.1	52.4	55.1	34.1	
		15:45 to 16:00	57.4	43.3	47.0	32.9	
		16:00 to 16:15	63.4	45.1	48.6	34.4	31.9
		16:15 to 16:30	63.8	46.4	50.3	35.4	
		16:30 to 16:45	66.4	47.4	50.9	35.5	
		16:45 to 17:00	58.1	44.0	48.1	31.9	
		17:00 to 17:15	64.7	45.5	49.0	33.2	33.2
		17:15 to 17:30	61.9	44.7	47.7	34.2	
		17:30 to 17:45	61.1	46.4	50.3	33.7	
		17:45 to 18:00	59.8	45.6	49.6	36.7	
		18:00 to 18:15	55.1	42.3	45.9	36.5	36.5
		18:15 to 18:30	54.1	42.9	46.1	37.4	
		18:30 to 18:45	58.6	43.9	46.8	37.4	
		18:45 to 19:00	66.8	44.5	47.7	37.7	
		19:00 to 19:15	65.7	45.1	48.2	36.2	36.2
		19:15 to 19:30	57.2	44.9	48.3	37.9	
		19:30 to 19:45	59.2	45.0	48.6	37.6	
		19:45 to 20:00	63.5	44.6	47.6	38.5	
		20:00 to 20:15	74.0	49.8	50.1	39.0	37.3
		20:15 to 20:30	57.1	43.5	47.0	37.3	
		20:30 to 20:45	57.6	42.8	45.8	38.1	
		20:45 to 21:00	56.8	44.6	48.1	38.5	
		21:00 to 21:15	60.8	44.9	47.7	37.0	35.9
		21:15 to 21:30	71.5	54.7	58.2	38.2	
		21:30 to 21:45	82.6	56.9	54.9	36.5	
		21:45 to 22:00	81.7	51.0	48.0	35.9	
		22:00 to 22:15	56.3	41.6	44.1	35.7	34.1
		22:15 to 22:30	56.0	41.0	43.8	34.2	
		22:30 to 22:45	82.8	54.3	48.1	35.7	
		22:45 to 23:00	53.2	38.8	41.2	34.1	
		23:00 to 23:15	58.6	40.4	42.2	33.6	33.6
		23:15 to 23:30	56.7	38.6	39.9	34.6	
		23:30 to 23:45	55.1	39.2	41.0	35.1	
		23:45 to 00:00	59.4	40.9	42.4	34.6	

Date	Monitoring Position	Time	Measured Sound Pressure Level, dB				Lowest LA90,T
			LAFmax	LAeq,T	LA10,T	LA90,T	
Sunday 12.11.2017	MP1	00:00 to 00:15	58.1	41.3	45.4	31.3	31.3
		00:15 to 00:30	58.8	42.0	45.3	31.5	
		00:30 to 00:45	57.6	41.2	44.5	32.6	
		00:45 to 01:00	52.6	36.3	38.5	31.8	
		01:00 to 01:15	49.4	36.0	38.4	31.5	30.0
		01:15 to 01:30	54.6	38.0	39.6	32.1	
		01:30 to 01:45	50.5	34.5	36.0	30.0	
		01:45 to 02:00	53.5	36.3	38.0	30.2	
		02:00 to 02:15	54.8	39.5	43.0	30.4	30.1
		02:15 to 02:30	54.2	36.8	39.0	30.1	
		02:30 to 02:45	50.8	37.6	40.7	31.8	
		02:45 to 03:00	63.3	48.5	51.6	38.1	
		03:00 to 03:15	66.7	51.2	54.9	42.1	34.8
		03:15 to 03:30	68.2	50.4	53.9	39.7	
		03:30 to 03:45	67.0	53.3	57.1	42.6	
		03:45 to 04:00	65.0	44.8	47.5	34.8	
		04:00 to 04:15	65.1	49.5	53.6	35.2	35.2
		04:15 to 04:30	68.5	54.1	57.5	46.8	
		04:30 to 04:45	68.8	55.1	58.1	49.5	
		04:45 to 05:00	66.8	52.0	56.1	40.7	
		05:00 to 05:15	67.5	49.2	52.0	37.8	35.2
		05:15 to 05:30	64.9	48.9	52.2	40.6	
		05:30 to 05:45	68.0	48.1	50.5	36.0	
		05:45 to 06:00	64.4	44.5	46.6	35.2	
		06:00 to 06:15	62.9	42.2	42.6	33.0	33.0
		06:15 to 06:30	62.2	42.4	43.2	33.4	
		06:30 to 06:45	61.1	41.9	42.7	34.6	
		06:45 to 07:00	62.0	43.7	46.9	35.3	
		07:00 to 07:15	72.3	57.7	60.9	51.2	41.2
		07:15 to 07:30	71.2	57.5	62.0	44.1	
		07:30 to 07:45	69.9	58.7	62.5	47.1	
		07:45 to 08:00	68.1	50.9	53.8	41.2	
		08:00 to 08:15	69.2	49.5	52.5	40.4	39.6
		08:15 to 08:30	65.6	46.3	49.0	39.6	
		08:30 to 08:45	67.5	47.5	50.1	39.8	
		08:45 to 09:00	66.7	49.8	53.2	40.6	
		09:00 to 09:15	63.0	46.1	48.8	40.2	40.2
		09:15 to 09:30	64.4	46.7	49.7	40.8	
		09:30 to 09:45	61.1	48.4	51.6	42.4	
		09:45 to 10:00	62.9	48.9	52.5	42.9	
		10:00 to 10:15	65.5	48.4	50.7	43.3	43.3
		10:15 to 10:30	69.4	50.1	52.6	43.9	
		10:30 to 10:45	65.0	51.1	54.4	44.9	
		10:45 to 11:00	67.3	50.5	52.4	44.3	
		11:00 to 11:15	61.0	48.8	51.8	43.6	43.6
		11:15 to 11:30	61.3	48.0	50.7	43.9	
		11:30 to 11:45	65.6	50.0	52.6	44.7	
		11:45 to 12:00	63.6	50.9	53.9	44.0	
		12:00 to 12:15	65.5	49.4	52.1	44.2	43.6
		12:15 to 12:30	67.7	50.5	53.1	45.3	
		12:30 to 12:45	61.6	50.5	53.7	45.7	
		12:45 to 13:00	61.7	49.5	52.6	43.6	
		13:00 to 13:15	67.7	50.9	53.9	45.6	43.9
		13:15 to 13:30	65.6	50.3	53.6	43.9	
		13:30 to 13:45	63.1	49.9	52.9	45.0	
		13:45 to 14:00	61.3	50.4	53.5	45.2	
		14:00 to 14:15	67.5	53.3	56.5	45.7	44.1
		14:15 to 14:30	68.0	50.4	53.2	44.1	
		14:30 to 14:45	60.6	50.0	52.8	44.6	
		14:45 to 15:00	68.2	52.1	55.2	46.8	
		15:00 to 15:15	70.1	52.5	55.6	46.2	43.3
		15:15 to 15:30	62.7	50.8	54.1	45.1	
		15:30 to 15:45	68.2	52.6	55.1	44.9	
		15:45 to 16:00	65.0	50.6	54.1	43.3	
		16:00 to 16:15	64.6	50.1	53.4	44.0	42.5
		16:15 to 16:30	64.5	50.8	54.2	44.3	
		16:30 to 16:45	62.0	47.8	50.8	42.5	
		16:45 to 17:00	62.4	48.9	51.6	44.1	
		17:00 to 17:15	63.5	49.1	52.2	43.0	41.6
		17:15 to 17:30	68.0	48.0	50.6	41.6	
		17:30 to 17:45	70.0	47.4	49.2	42.8	
		17:45 to 18:00	67.7	48.1	51.0	42.7	
		18:00 to 18:15	64.3	46.9	49.9	41.7	41.5
		18:15 to 18:30	68.1	49.1	50.3	41.5	
		18:30 to 18:45	58.6	45.9	48.0	42.1	
		18:45 to 19:00	61.5	48.0	50.5	43.4	
		19:00 to 19:15	70.2	51.7	53.6	43.7	41.8
		19:15 to 19:30	59.6	46.7	48.7	42.7	
		19:30 to 19:45	64.7	50.0	53.1	43.0	
		19:45 to 20:00	59.9	46.6	49.8	41.8	
		20:00 to 20:15	66.8	47.1	49.7	42.5	42.2
		20:15 to 20:30	66.0	49.1	51.7	42.2	
		20:30 to 20:45	69.8	50.1	53.9	43.0	
		20:45 to 21:00	70.3	50.0	52.3	43.0	
		21:00 to 21:15	65.5	49.3	51.8	42.7	41.4
		21:15 to 21:30	68.9	49.9	52.9	42.5	
		21:30 to 21:45	55.1	45.5	48.1	41.4	
		21:45 to 22:00	63.7	48.8	52.7	41.7	
		22:00 to 22:15	55.4	44.7	47.2	40.7	40.2
		22:15 to 22:30	55.1	43.3	45.5	40.5	
		22:30 to 22:45	57.4	44.2	46.9	40.2	
		22:45 to 23:00	66.2	44.7	47.0	40.6	
		23:00 to 23:15	67.5	48.7	50.2	40.6	39.9
		23:15 to 23:30	55.2	45.2	48.2	41.0	
		23:30 to 23:45	54.3	44.4	47.2	40.4	
		23:45 to 00:00	55.9	44.4	47.3	39.9	

Date	Monitoring Position	Time			Measured Sound Pressure Level, dB				Lowest LA90,T
					LAFmax	LAeq,T	LA10,T	LA90,T	
Monday 13.11.2017	MP1	00:00	to	00:15	57.4	44.3	47.1	39.7	39.7
		00:15	to	00:30	56.7	44.1	46.8	40.2	
		00:30	to	00:45	56.7	42.7	44.5	39.8	
		00:45	to	01:00	59.4	44.0	46.9	39.8	
		01:00	to	01:15	51.8	42.2	44.4	38.8	37.1
		01:15	to	01:30	56.1	43.9	46.8	38.6	
		01:30	to	01:45	54.3	42.4	45.6	38.0	
		01:45	to	02:00	53.8	41.2	44.4	37.1	
		02:00	to	02:15	49.3	40.1	42.9	36.1	35.1
		02:15	to	02:30	48.5	38.8	41.6	35.7	
		02:30	to	02:45	49.6	38.8	41.0	35.4	
		02:45	to	03:00	51.7	40.2	43.7	35.1	
		03:00	to	03:15	52.9	38.6	40.4	34.7	34.5
		03:15	to	03:30	48.3	38.1	40.8	34.7	
		03:30	to	03:45	51.1	38.6	40.6	34.5	
		03:45	to	04:00	49.5	38.5	41.5	35.0	
		04:00	to	04:15	51.2	37.8	40.0	34.4	34.1
		04:15	to	04:30	49.4	37.0	39.0	34.2	
		04:30	to	04:45	50.5	38.2	40.4	35.1	
		04:45	to	05:00	43.3	36.3	38.2	34.1	
		05:00	to	05:15	53.4	38.4	40.3	34.8	34.8
		05:15	to	05:30	56.7	38.5	40.6	35.1	
		05:30	to	05:45	54.7	39.3	41.5	36.0	
		05:45	to	06:00	48.2	40.2	42.9	37.1	
		06:00	to	06:15	55.6	40.6	43.0	37.1	37.1
		06:15	to	06:30	53.6	40.4	42.1	37.6	
		06:30	to	06:45	52.1	41.9	44.9	37.9	
		06:45	to	07:00	61.5	42.0	43.6	39.2	
		07:00	to	07:15	62.9	45.9	49.0	40.0	40.0
		07:15	to	07:30	58.0	45.3	48.3	41.0	
		07:30	to	07:45	62.5	46.5	47.0	41.4	
		07:45	to	08:00	59.6	45.4	47.8	41.9	
		08:00	to	08:15	60.4	45.1	47.6	41.4	41.4
		08:15	to	08:30	61.2	44.9	46.2	42.1	
		08:30	to	08:45	62.6	46.6	49.4	42.3	
		08:45	to	09:00	60.1	46.7	49.5	43.0	
		09:00	to	09:15	63.5	49.5	52.6	44.8	43.2
		09:15	to	09:30	60.1	48.8	51.6	44.8	
		09:30	to	09:45	71.5	49.2	52.0	43.2	
		09:45	to	10:00	61.7	47.6	50.2	43.4	
		10:00	to	10:15	60.9	47.6	50.3	42.6	40.7
		10:15	to	10:30	69.5	50.8	52.5	42.2	
		10:30	to	10:45	63.2	47.2	49.3	41.2	
		10:45	to	11:00	60.7	46.2	49.8	40.7	
		11:00	to	11:15	65.5	48.4	51.4	43.6	39.9
		11:15	to	11:30	66.7	45.8	47.7	39.9	
		11:30	to	11:45	62.2	46.6	49.1	42.7	
		11:45	to	12:00	68.7	50.2	52.5	43.5	

Appendix 2

Site Plan



ACP

Appendix 3

Plant Calculation - RPA

INTAKE (plant open to plantroom)	Parameters	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	Overall dBA
Plant sound power level, dB		80	76	74	71	70	65	59	52	
Correction for number of units	2	3	3	3	3	3	3	3	3	
Loss		0	0	0	0	0	0	0	0	
Plantroom reverberant correctio	L,m 1.4 W,m 2.7 H,m 2.5 RT 0.5	1	1	1	1	1	1	1	1	
Calculated plantroom rev noise le		84	80	78	75	74	69	63	56	
Measured plantroom rev noise le		0	0	0	0	0	0	0	0	
Total plantroom rev noise level		**84**	**80**	**78**	**75**	**74**	**69**	**63**	**56**	
Intake Plenum Loss		3	3	3	3	3	3	3	3	
Intake opening surface area	m2 2.4	4	4	4	4	4	4	4	4	
Intake opening directivity	angle 90 m2 2.4	1	0	-2	-8	-14	-14	-14	-14	
In to out correction		-6	-6	-6	-6	-6	-6	-6	-6	
Distance correction	m 10	-31	-31	-31	-31	-31	-31	-31	-31	
Loss	Loss on intake side of system	6	6	6	6	6	6	6	6	
Addition		0	0	0	0	0	1	0	0	
Unattenuated intake noise level		**43**	**38**	**34**	**25**	**18**	**14**	**7**	**0**	**29**
Attenuator Insertion Loss	%FA 0 L,mm user 3	10	14	17	21	28	26	20	16	
Attenuated intake noise level		**33**	**24**	**17**	**4**	**-10**	**-12**	**-13**	**-16**	**13**
Discharge (plant ducted to discharge)		**63Hz**	**125Hz**	**250Hz**	**500Hz**	**1kHz**	**2kHz**	**4kHz**	**8kHz**	**Overall dBA**
Plant sound power level, dB		80	76	74	71	70	65	59	52	
Reverberant level via discharge	2 of each unit open to plantroom 1	78	74	72	69	68	63	57	50	
Total sound power at discharge		82	78	76	73	72	67	61	54	
Correction for number of units	2	3	3	3	3	3	3	3	3	
End reflection loss	m2 2.4	2	1	0	0	0	0	0	0	
Discharge opening directivity	angle 90 m2 2.4	1	0	-2	-8	-14	-14	-14	-14	
Distance correction	m 10	-31	-31	-31	-31	-31	-31	-31	-31	
Loss		0	0	0	0	0	0	0	0	
Addition		0	0	0	0	0	0	0	0	
Unattenuated discharge noise lev		**53**	**49**	**46**	**37**	**30**	**25**	**19**	**12**	**41**
Attenuator insertion loss	%FA 0 L,mm user 4	14	18	28	39	37	35	25	16	
Attenuated discharge noise level		**39**	**31**	**18**	**-2**	**-7**	**-10**	**-6**	**-4**	**18**
	TOTAL UNATTENUATED	**54**	**50**	**47**	**38**	**31**	**26**	**20**	**13**	**41**
	TOTAL ATTENUATED	**40**	**32**	**21**	**5**	**-5**	**-8**	**-5**	**-3**	**19**

ACP

Plant Calculation - RPB

INTAKE (plant open to plantroom)		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	Overall dBA
Plant sound power level, dB		80	76	74	71	70	65	59	52	
Correction for number of units	2	3	3	3	3	3	3	3	3	
Loss		0	0	0	0	0	0	0	0	
Plantroom reverberant correctio	L,m 1.4 W,m 2.7 H,m 2.5 RT 0.5	1	1	1	1	1	1	1	1	
Calculated plantroom rev noise le		84	80	78	75	74	69	63	56	
Measured plantroom rev noise le		0	0	0	0	0	0	0	0	
Total plantroom rev noise level		**84**	**80**	**78**	**75**	**74**	**69**	**63**	**56**	
Intake Plenum Loss		3	3	3	3	3	3	3	3	
Intake opening surface area	m2 2.4	4	4	4	4	4	4	4	4	
Intake opening directivity	angle 0 m2 2.4	5	6	7	8	9	9	9	9	
In to out correction		-6	-6	-6	-6	-6	-6	-6	-6	
Distance correction	m 40	-43	-43	-43	-43	-43	-43	-43	-43	
Loss	Loss on intake side of system	6	6	6	6	6	6	6	6	
Addition		0	0	0	0	0	1	0	0	
Unattenuated intake noise level		**35**	**32**	**31**	**29**	**29**	**25**	**18**	**11**	**33**
Attenuator Insertion Loss	%FA 0 L,mm user 3	10	14	17	21	28	26	20	16	
Attenuated intake noise level		**25**	**18**	**14**	**8**	**1**	**-1**	**-2**	**-5**	**11**
Discharge (plant ducted to discharge)		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	Overall dBA
Plant sound power level, dB		80	76	74	71	70	65	59	52	
Reverberant level via discharge	2 of each unit open to plantroom 1	78	74	72	69	68	63	57	50	
Total sound power at discharge		82	78	76	73	72	67	61	54	
Correction for number of units	2	3	3	3	3	3	3	3	3	
End reflection loss	m2 2.4	2	1	0	0	0	0	0	0	
Discharge opening directivity	angle 0 m2 2.4	5	6	7	8	9	9	9	9	
Distance correction	m 40	-43	-43	-43	-43	-43	-43	-43	-43	
Loss		0	0	0	0	0	0	0	0	
Addition		0	0	0	0	0	0	0	0	
Unattenuated discharge noise lev		**45**	**43**	**43**	**41**	**41**	**36**	**30**	**23**	**45**
Attenuator insertion loss	%FA 0 L,mm user 4	14	18	28	39	37	35	25	16	
Attenuated discharge noise level		**31**	**25**	**15**	**2**	**4**	**1**	**5**	**7**	**15**
	TOTAL UNATTENUATED	**46**	**44**	**43**	**41**	**41**	**37**	**30**	**23**	**45**
	TOTAL ATTENUATED	**32**	**26**	**18**	**9**	**6**	**3**	**6**	**7**	**16**

ACP

Plant Calculation - RPC

INTAKE (plant open to plantroom)		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	Overall dBA
Plant sound power level, dB		80	76	74	71	70	65	59	52	
Correction for number of units	2	3	3	3	3	3	3	3	3	
Loss		0	0	0	0	0	0	0	0	
Plantroom reverberant correctio	L,m 1.4 W,m 2.7 H,m 2.5 RT 0.5	1	1	1	1	1	1	1	1	
Calculated plantroom rev noise le		84	80	78	75	74	69	63	56	
Measured plantroom rev noise le		0	0	0	0	0	0	0	0	
Total plantroom rev noise level		**84**	**80**	**78**	**75**	**74**	**69**	**63**	**56**	
Intake Plenum Loss		3	3	3	3	3	3	3	3	
Intake opening surface area	m2 2.4	4	4	4	4	4	4	4	4	
Intake opening directivity	angle 45 m2 2.4	3	3	3	3	3	3	3	3	
In to out correction		-6	-6	-6	-6	-6	-6	-6	-6	
Distance correction	m 45	-44	-44	-44	-44	-44	-44	-44	-44	
Loss	Loss on intake side of system	6	6	6	6	6	6	6	6	
Addition		0	0	0	0	0	1	0	0	
Unattenuated intake noise level		**32**	**28**	**26**	**23**	**22**	**18**	**11**	**4**	**26**
Attenuator Insertion Loss	%FA 0 L,mm user 3	10	14	17	21	28	26	20	16	
Attenuated intake noise level		**22**	**14**	**9**	**2**	**-6**	**-8**	**-9**	**-12**	**5**
Discharge (plant ducted to discharge)		63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	Overall dBA
Plant sound power level, dB		80	76	74	71	70	65	59	52	
Reverberant level via discharge	2 of each unit open to plantroom 1	78	74	72	69	68	63	57	50	
Total sound power at discharge		82	78	76	73	72	67	61	54	
Correction for number of units	2	3	3	3	3	3	3	3	3	
End reflection loss	m2 2.4	2	1	0	0	0	0	0	0	
Discharge opening directivity	angle 45 m2 2.4	3	3	3	3	3	3	3	3	
Distance correction	m 45	-44	-44	-44	-44	-44	-44	-44	-44	
Loss		0	0	0	0	0	0	0	0	
Addition		0	0	0	0	0	0	0	0	
Unattenuated discharge noise lev		**42**	**39**	**38**	**35**	**34**	**29**	**23**	**16**	**38**
Attenuator insertion loss	%FA 0 L,mm user 4	14	18	28	39	37	35	25	16	
Attenuated discharge noise level		**28**	**21**	**10**	**-4**	**-3**	**-6**	**-2**	**0**	**10**
TOTAL UNATTENUATED		**43**	**40**	**38**	**35**	**34**	**30**	**23**	**16**	**39**
TOTAL ATTENUATED		**29**	**22**	**13**	**3**	**-1**	**-4**	**-1**	**0**	**11**