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F55 GOSPEL S.A.R.L

SPECTRUM HOUSE
GOSPEL OAK, LONDON NW5 1LP

RATIONALISATION AND PROPOSED INSTALLATION OF AIR-CONDITIONING PLANT

NOISE IMPACT ASSESSMENT

MAY 2021

the journey is the reward

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Project Code:	**24348_WPSpectrumHouse(N)3.9**
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Approved by:	**Paul Gray BSc(Hons), MIOA**
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Spectrum House, Gospel Oak, London NW5 1LP
Rationalisation and Proposed Installation of Air-Conditioning Plant
Noise Impact Assessment

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1 Introduction

1.1 Mayer Brown Ltd have been instructed by F55 Gospel S.a.r.l to undertake a Noise Impact Assessment of plant to be installed at Spectrum House, 32 – 34 Gospel Oak, London NW5 1LP. The proposals include the rationalisation of existing systems (including the retention of some plant); the relocation of some existing units and the installation of new condenser units in a new roof level plant compound.

1.2 This report is structured as follows:

- **Section 2** describes the location of the site and its environs and existing plant installations;
- **Section 3** discusses the rationalisation of plant**;**
- **Section 4** discusses the planning policy context and acoustic design criteria;
- **Section 5** presents manufacturers plant noise level data;
- **Section 6** presents the results of automated noise monitoring to determine typical background noise levels characterising the site;
- **Section 7** discusses the noise impact assessment;
- Conclusions are presented in **Section 8.**

1.3 A glossary of the acoustic terminology used in this report is attached at **Appendix A**.

Suitably Qualified Acoustic Consultant/Engineer

1.4 This report has been prepared by Mayer Brown Limited, a multi-disciplinary practice providing Transport Planning, Infrastructure Design and Environmental Consultancy Services.

1.5 This report has been authored by David Denham (Senior Acoustic Consultant) who holds Membership of the Institute of Acoustics (MIOA), Chartered Institute of Environmental Health (MCIEH) and Institute of Environmental Science (MIEnvSc). The preparation of the report has been supervised, reviewed and approved by Paul Gray (Technical Director). Paul has held corporate membership of the Institute of Acoustics (MIOA) since 1994 and has over thirty year's practical experience in acoustic consultancy.

2 Site Location and Existing Plant Installations

2.1 The location of the site is shown in **Figure 2.1** below.

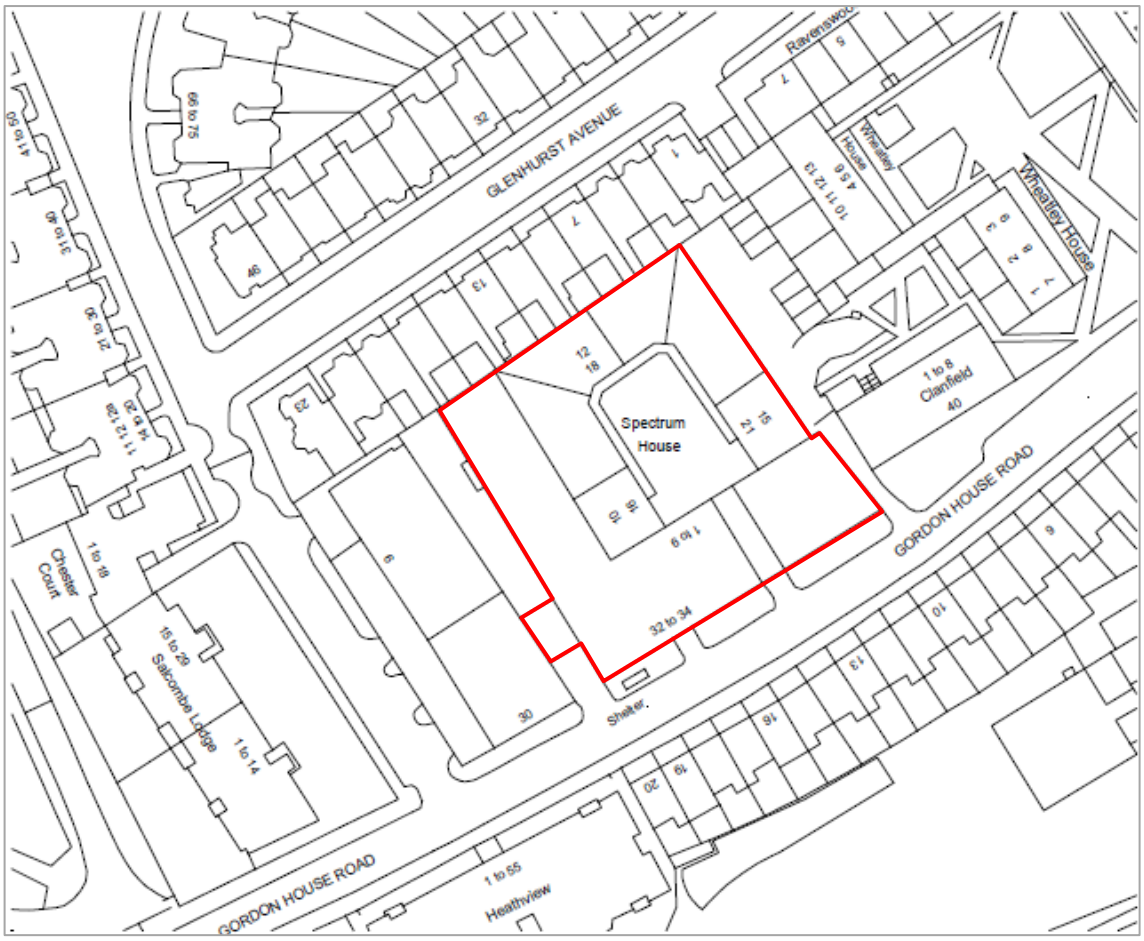

Figure 2.1: Site Location

2.2 The site is located on Gordon House Road and is an occupied three-storey building currently providing office space on a rental basis.

2.3 To the south of the site is Gordon House Road with residential dwellings directly opposite.

2.4 To the east of site is residential accommodation comprising Clanfield and Wheatfield House flats and to the north Glenhurst Avenue with existing two-storey dwellings. There are commercial units, currently occupied by a Kwik-Fit garage, to the immediate western boundary located on Lissenden Road.

2.5 Gospel Oak, London Overground station is located approximately 200m to the south-west of the site.

2.6 Thirty-five condenser units are currently located on the site. They are positioned on the eastern and western elevations and within the courtyard at ground floor level and to the

north, east and west of the building at roof level, as shown in **Figures 2.2** and **2.3** below. Full versions of these drawings and corresponding elevation prepared by Weston Allison Wright architects accompany the application.

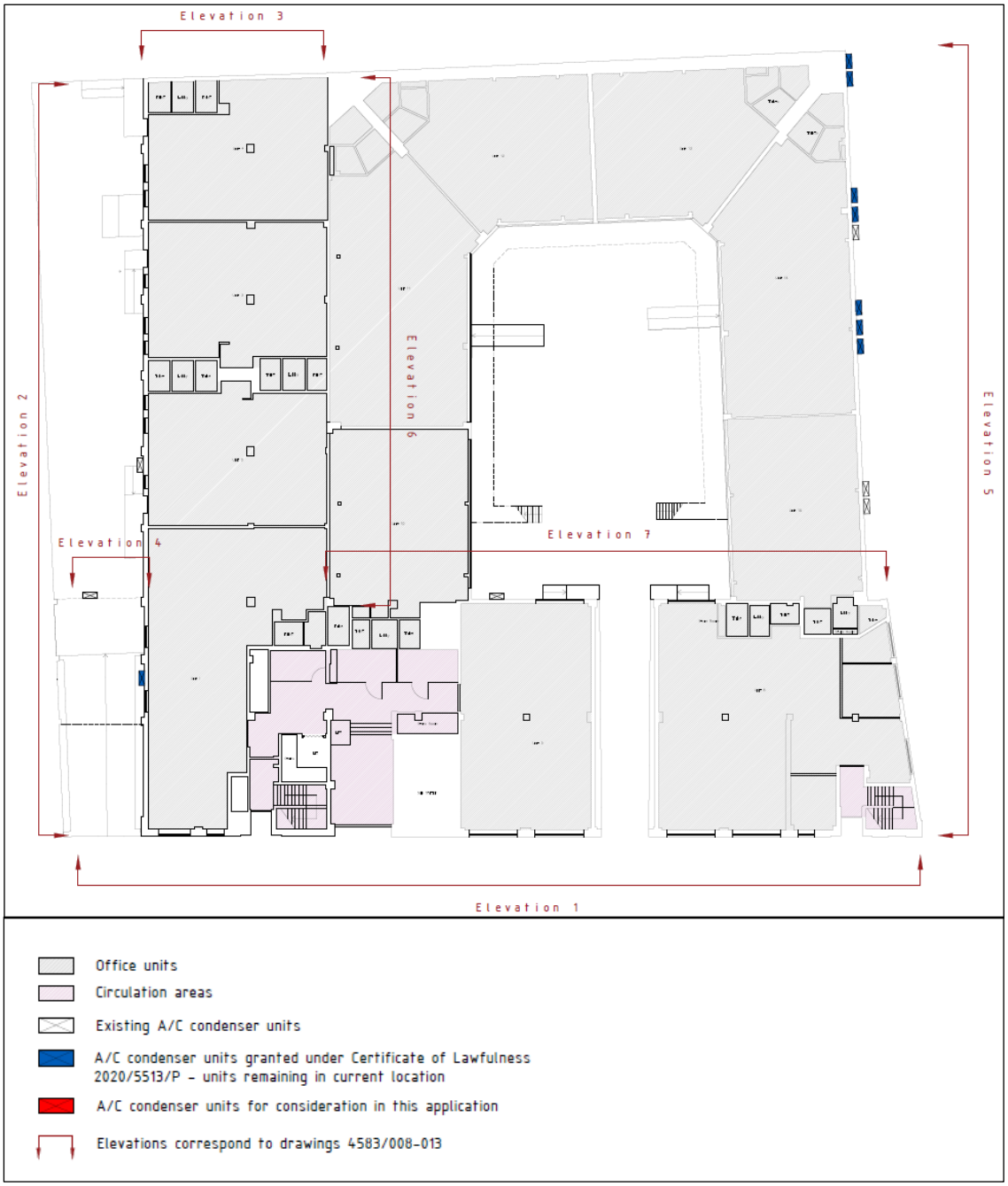

Figure 2.2: Location of Existing Condenser Units – Ground Floor

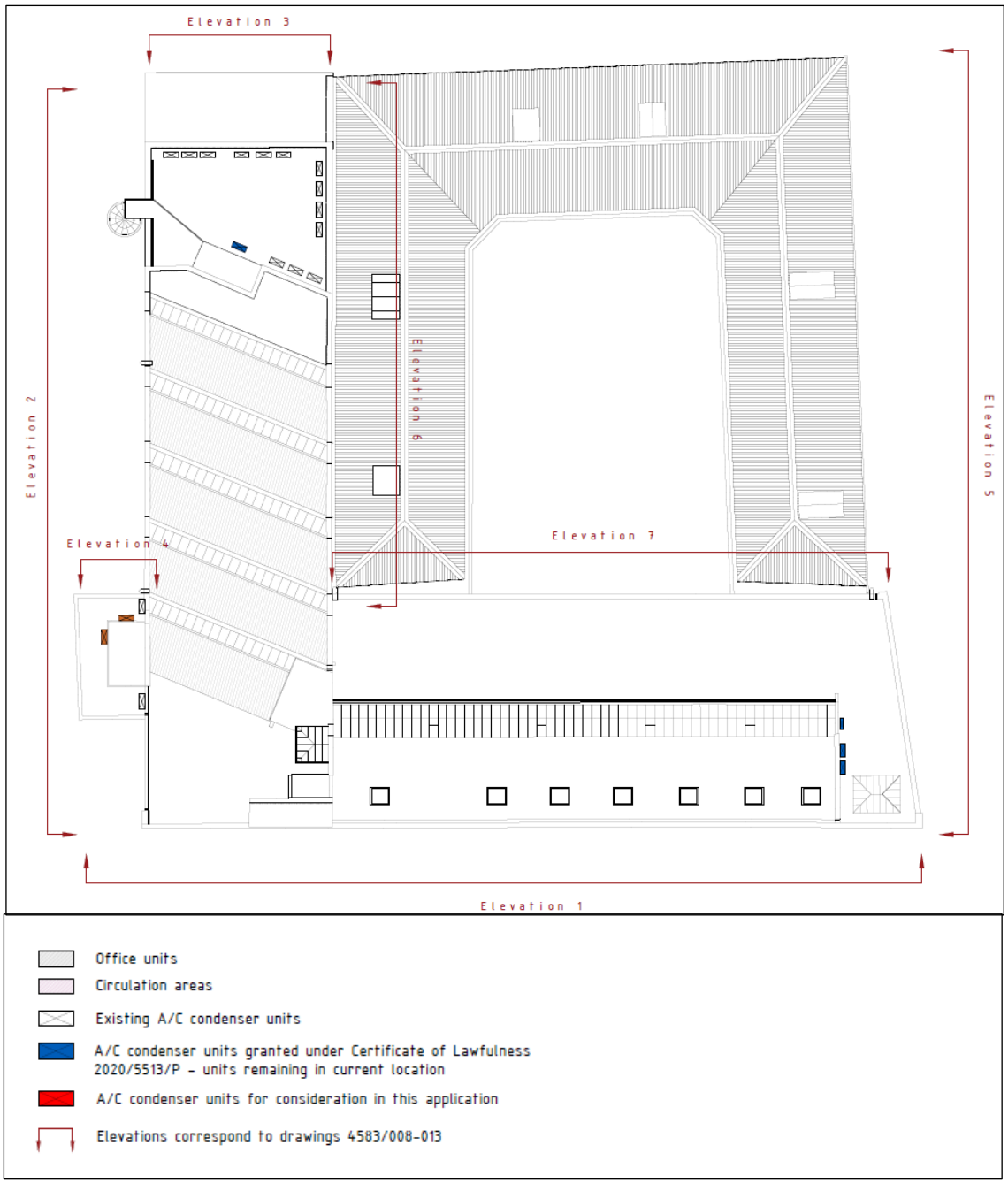

Figure 2.3: Location of Existing Condenser Units – Roof Levels

3 Rationalisation of Plant

3.1 The proposed rationalisation of plant is shown on the drawings accompanying the application prepared by Weston Allison Wright architects and mechanical services strategy prepared by Milieu Consult. The outline principles of plant to be retained, plant to be relocated and installation of new plant is shown in **Figures 3.1** and **3.2** below:

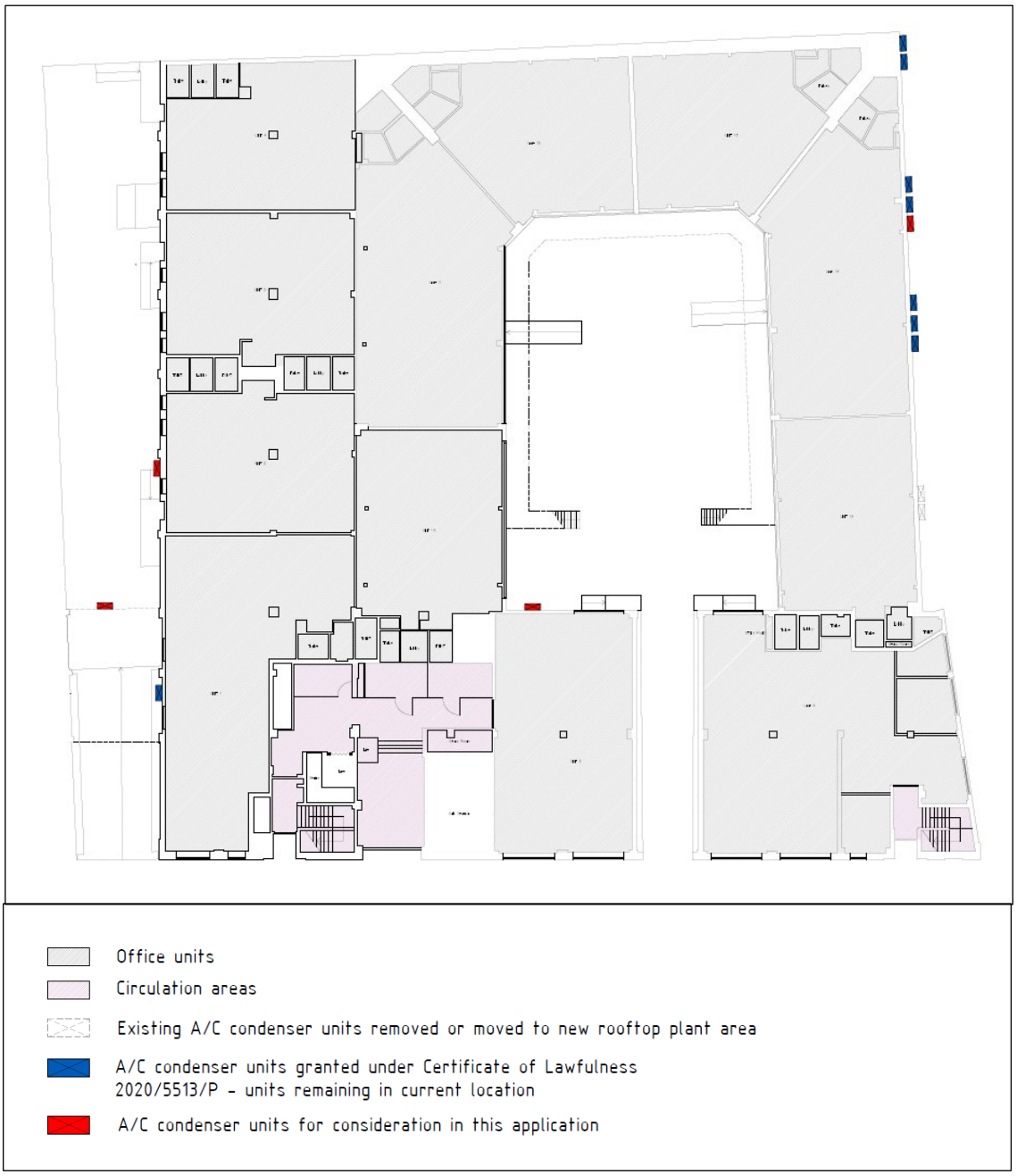

Figure 3.1: Proposed Plant Rationalisation – Ground Floor

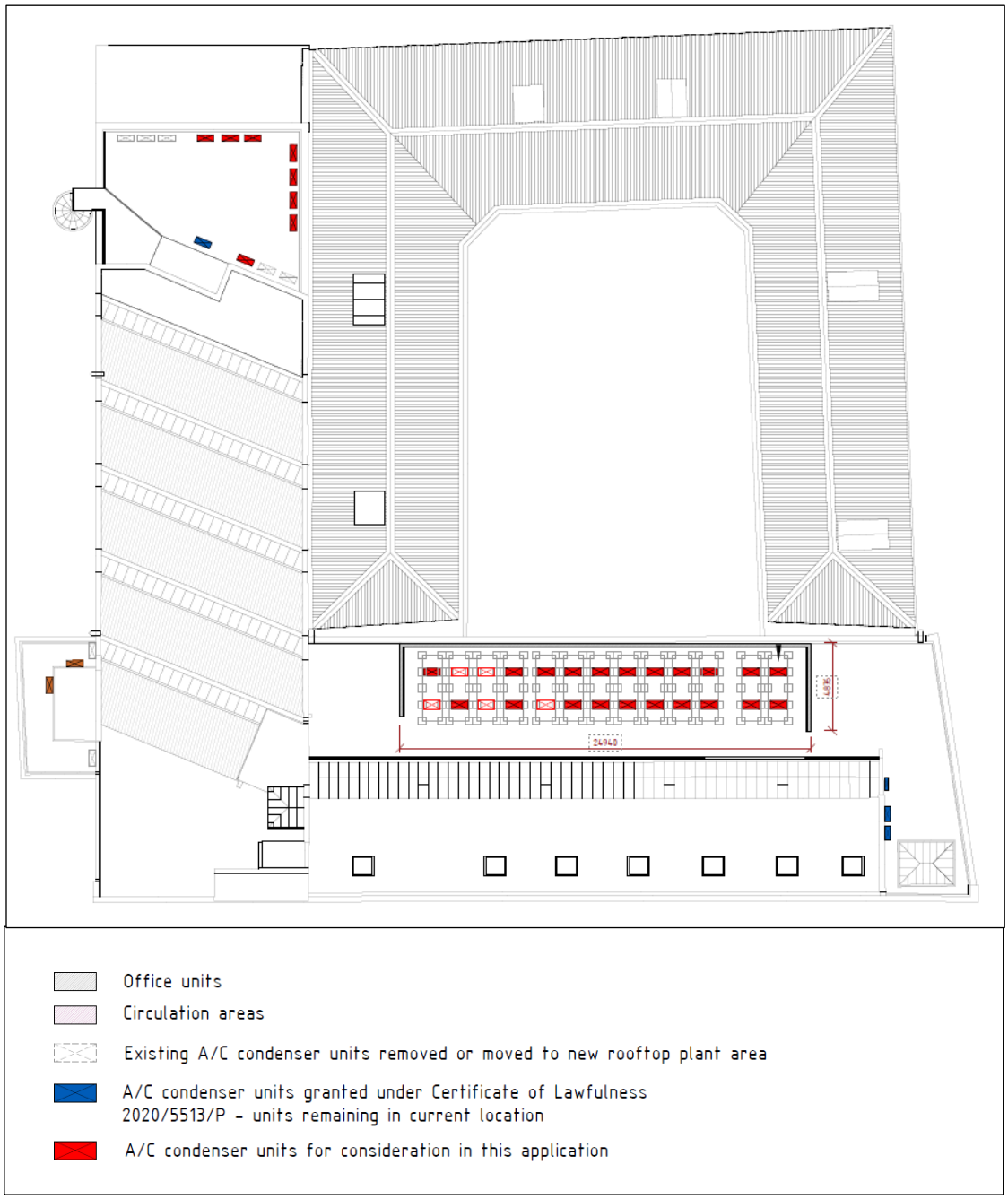

Figure 3.2: Proposed Plant Rationalisation – Roof Levels

3.2 **Tables 3.1, 3.2** and **3.3** overleaf provide a schedule of existing condenser units (including units to be retained/relocated and the new condenser units to be installed in a new roof plant compound);

Reference	Serving Unit	Location	Make	Model
CON 01.01	Unit 1	West Elevation	Mitsubishi	FDC71VNX
CON 20.01	Unit 20	East Elevation	Daikin	RXS35L2V1B
CON 20.02	Unit 20	East Elevation	Fujitsu	AOYG24LALA
CON 20.03	Unit 20	East Elevation	Fujitsu	AOYG24LALA
CON 15.01	Unit 15	East Elevation	Daikin	AZAS100M7V1B
CON 21.01	Unit 21	East Elevation	Fujitsu	AOY30LMAW4
CON U.02	Unknown	West Roof	Daikin	RZASG100M7V1B
CON U.03	Unknown	West Roof	Daikin	AZAS71M2V1B
CON U.04	Unknown	West Roof	Daikin	AZAS71M2V1B
CON 40.01	Unit 40	West Roof	Daikin	AZAS100M7V1B
CON 11.01	Unit 11	West Roof	Daikin	RZASG71M7V1B
CON 11.02	Unit 11	West Roof	Daikin	RZASG71M7V1B
CON 18.02	Unit 18	West Roof	Daikin	AZAS100M7V1B
CON 42.01	Unit 42	West Roof	Daikin	RZASG35A2V1B
CON 35.02	Unit 35	Mews Roof	Daikin	RZQG71L9V1B
CON 35.01	Unit 35	Mews Roof	Daikin	RZQG71L9V1B
CON PBAN.01	PB A/N	East Roof	Daikin	RKS20D3VMB
CON PBAN.02	PB A/N	East Roof	Daikin	RZQG125B9V3B1
CON PBAN.03	PB A/N	East Roof	Daikin	RZQG125B9V3B1

Table 3.1: Schedule of Remaining Existing Condenser Units

Reference	Serving Unit	Location	Make	Model
CON 10.01	Unit 10	New Rooftop	Daikin	Not Recorded
CON 10.02	Unit 10	New Rooftop	Daikin	Not Recorded
CON 45.01	Unit 45	New Rooftop	Daikin	RZASG50A2V1B
CON 43.01	Unit 43	New Rooftop	Daikin	RXM50N2V1B9
CON 48.01	Unit 48	New Rooftop	Daikin	RXM60N2V1B9

Table 3.2: Schedule of Existing Condenser Units To Be Relocated

Reference	Serving Unit	Make	Model
CON PBJL.P1	PBJL	Daikin	RZASG100MV1
CON 02.P1	Unit 2	Daikin	RZAG125MV1
CON 04.P1	Unit 3/4	Panasonic	Mini ECOi Outdoor Unit U-4LE2E5
CON 34.P1	Unit 34	Daikin	RZAG71NV
CON 05.01	Unit 5	Daikin	RZASG140MV1
CON 06.01	Unit 6	Daikin	AZAS100MV1
CON 06.02	Unit 6	Daikin	AZAS100MV1
CON 13.01	Unit 13	Panasonic	Mini ECOi Outdoor Unit U-6LE2E5
CON 14.01	Unit 14	Panasonic	Mini ECOi Outdoor Unit U-6LE2E5
CON 16.01	Unit 16	Daikin	RZASG125MV1
CON 19.01	Unit 19	Panasonic	Mini ECOi Outdoor Unit U-6LE2E5
CON 31.01	Unit 31	Daikin	AZAS100M7V1B
CON 31.02	Unit 31	Daikin	AZAS100M7V1B
CON 31.03	Unit 31	Daikin	AZAS100M7V1B
CON 31.04	Unit 31	Daikin	AZAS125M7V1B
CON 32.01	Unit 32	Daikin	RZASG71MV1
CON 33.01	Unit 33	Daikin	RZASG71MV1
CON 36.01	Unit 36	Daikin	RZAG71NV
CON 37.01	Unit 37	Daikin	RZAG100MV1
CON 38.01	Unit 38	Daikin	RZAG100MV1
CON 44.01	Unit 44	Daikin	RZASG71MV1

Table 3.3: Schedule of New Condenser Units (In Rooftop Plant Area)

4 Planning Policy Context and Acoustic Design Criteria

National Planning Policy Framework, (NPPF, 2019)

4.1 Current governmental guidance for the determination of planning applications is given in the revised "National Planning Policy Framework" (NPPF), published in February 2019.

Paragraph 170 of the NPPF advises:

> *"Planning policies and decisions should contribute to and enhance the natural and local environment by:*
>
> *….. e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability."*

4.2 With specific regard to noise, paragraph 180 of the NPPF states:

> *""Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*
>
> *a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
>
> *b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and*
>
> *c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation."*

4.3 Paragraph 182 of the NPPF draw specific attention to the need to ensure that new development is compatible with existing businesses and community facilities and introduces and "agent of change" principle:

> *"Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on*

new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed."

4.4 With regard to 'adverse' impacts and 'significant adverse' impacts, the NPPF directs the reader to the advice contained in DEFRA's "Noise Policy Statement for England" (NPSE). This Policy Statement introduces the concept of a "Significant Observed Adverse Effect Level" (SOAEL), "Lowest Observed Adverse Effect Level" (LOAEL) and "No Observed Adverse Effect Level" (NOAEL). These are concepts aligned with toxicology outcomes derived from guidance given by the World Health Organisation.

Noise Policy Statement for England

4.5 Whilst the intent of the NPSE in relation to the NPPF is clear, the NPSE does not, at this time, provide any quantitative threshold values for each identified level of "effect". Indeed, the NPSE carefully highlights that:

"It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available."

National Planning Practice Guidance

4.6 The application of national planning is amplified in the governments *"National Planning Practice Guidance"* (NPPG) (July 2019). This seeks to help clarify understanding the perception of noise effects, outcomes and actions that should be taken to align decision making with the NPPF. In line with the NPPF concept of basing decision making on the identification of *"adverse"* or *"significant adverse"* impacts on health and quality of life, the NPPG aligns its guidance with the NPSE.

4.7 The table below summarises this guidance:

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not noticeable	No Effect	No Observed Effect	**No specific measures required**
No Observed Adverse Effect Level (NOAEL)			
Present not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	**No specific measures required**
Lowest Observed Adverse Effect Level (LOAEL)			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	**Mitigate and reduce to a minimum**
Significant Observed Adverse Effect Level (SOAEL)			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	**Avoid**
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress or physiological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	**Prevent**

Table 4.1: PPG Noise Exposure Hierarchy Table

4.8 To assist in quantifying when noise may have a particular effect, Paragraph 015 (Reference ID: 30-015-20190722) of PPG makes reference to a number of '*industry standard'* guidance documents (including BS 8233: 2014 and ProPG Guidance). The paragraph does, however, clarify:

> *"Some of these documents contain numerical criteria. These values are not to be regarded as fixed thresholds and as outcomes that have to be achieved in every circumstance".*

4.9 Other standard and guidance documents can also inform on the potential effects of noise, together with any technical noise standards supporting local planning policies.

Local Planning Policy

4.10 The London Borough of Camden's Local Plan was adopted on 3rd of July 2017.

4.11 Technical guidance accompanying the Local Plan states that in relation to commercial plant that:

> *'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' (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).*

Existing Noise sensitive receptor	*Assessment location*	*Design period*	*LOAEL (Green)*	*LOAEL to SOAEL (Amber)*	*SOAEL (Red)*
Dwellings**	Garden used for main amenity (free field) and Outside living or 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
Dwellings**	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 88dB L_{Amax}	'Rating level' greater than 5dB above background and/or events exceeding 88dBL_{Amax}

**10dB should be increased to 15dB if the noise contains audible tonal elements. (day and night). However, if it can be demonstrated that there is no significant difference in the character of the residual background noise and the specific noise*

from the proposed development then this reduction may not be required. In addition, a frequency analysis (to include, the use of Noise Rating (NR) curves or other criteria curves) for the assessment of tonal or low frequency noise may be required.

***levels given are for dwellings, however, levels are use specific and different levels will apply dependent on the use of the premises.*

The periods in Table C correspond to 0700 hours to 2300 hours for the day and 2300 hours to 0700 hours for the night. The Council will take into account the likely times of occupation for types of development and will be amended according to the times of operation of the establishment under consideration.

There are certain smaller pieces of equipment on commercial premises, such as extract ventilation, air conditioning units and condensers, where achievement of the rating levels (ordinarily determined by a BS:4142 assessment) may not afford the necessary protection. In these cases, the Council will generally also require a NR curve specification of NR35 or below, dependant on the room' (based upon measured or predicted Leq,5mins noise levels in octave bands) 1 metre from the façade of affected premises, where the noise sensitive premise is located in a quiet background area.'

BS 4142: 2014:+A1:2019 "Methods for Rating and Assessing Industrial and Commercial Sound"

4.12 Camden's noise guidance makes specific reference to the assessment methodology of BS 4142: 2014. This Standard was updated in 2019 and the current version of the standard is BS 4142: 2014:+A1:2019.

4.13 As noted earlier, this standard provides a rating and assessment methodology for assessing the potential adverse impact of industrial and commercial noise sources on neighbouring dwellings.

4.14 The assessment procedure initially compares the ***'Rating Level'*** of the source with the '***Background Noise Level'*** when the source is not present.

4.15 The ***'****Rating*** Level' (L_{Ar}) referred to is the specific noise level of the noise source under investigation (in terms of the L_{Aeq} noise index), to which corrections are applied if the noise has certain audible characteristics. The following corrections (based on a subjective assessment of noise source characteristics is given:

Character Correction				
Feature / Perception	**Tonality**	**Impulsivity**	**Intermittency**	**Other acoustic characteristics**
Just Perceptible	+2dB	+3dB	When the specific sound has identifiable On/Off conditions that are readily distinctive. +3dB	+3dB
Clearly Perceptible	+4dB	+6dB		
Highly Perceptible	+6dB	+9dB		

Table 4.2: BS4142 Character Correction for Rating Level Calculation

4.16 The *'Background Noise Level'* (L_{A90}) represents the noise level that is exceeded for 90% of the stated measurement period. For assessment purposes, the background noise level needs to be determined without the noise source under investigation operating.

4.17 The time of operation needs to be taken into account. During the day (normally taken to be 07.00 to 23.00 hours) a one-hour measurement period is considered appropriate. During the night (normally taken to be 23.00 – 07.00 hours) a 15-minute time period is normally used.

4.18 The following guidance is then offered based on the outcome of this initial assessment:

- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

4.19 As noted in section 4, national planning policy directs that adverse noise impacts should be mitigated and reduced to a minimum and that *"significant"* noise impacts should be avoided. If the guidance of BS 4142:2014 + A1: 2019 is aligned with these objective, it can be concluded that:

- A *"significant"* noise impact (i.e. sound above a SOAEL) is likely where the rating level ($L_{Ar,T}$) of noise is 10dB or more above the background noise level ($L_{A90,T}$); and

- A *"low"* noise impact (i.e. sound above a LOAEL) is likely where the rating level does not exceed the background level.

4.20 A note accompanying the guidance of BS 4142: 2014 + A1: 2019 states:

> *"Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact."*

4.21 The initial estimate of the impact should then be modified to account for its context. Such considerations include:

- The absolute level of the sound - the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low. Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.

- Where residual sound levels are very high, the residual sound might itself result in adverse impacts or significant adverse impacts, and the margin by which the rating level exceeds the background might simply be an indication of the extent to which the specific sound source is likely to make those impacts worse.

- The character and level of the residual sound compared to the character and level of the specific sound.

- The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.

5 Plant Noise Levels

5.1 In order to assess the acceptability of noise emissions from the existing and proposed plant, the specific noise levels of the plant installations have been calculated in general accordance with paragraph 7.3.6 of BS 4142, based on manufacturer's noise data (where this is available). The specific model numbers of a limited numbers of existing condenser units are not known. Noise emissions for these units have therefore been estimated based on comparative noise data for a similar size of condenser units from the same manufacturer.

5.2 The noise data used in the calculations is summarised in **Table 5.1** below.

Reference	Make Model	Sound Pressure Level at 1m, dB re 20µPa								
		Octave Band Centre Frequency, Hz								"A"
		63	125	250	500	1k	2k	4k	8k	
CON 01.01	Mitsubishi FDC71VNX	35	39	41	48	46	44	40	35	51
CON 20.01	Daikin RXS35L2V1B	43	45	46	42	39	32	27	19	48
CON 20.02	Fujitsu AOYG24LALA	52	49	51	49	47	41	42	20	50
CON 20.03	Fujitsu AOYG24LALA	52	49	51	49	47	41	42	20	50
CON 15.01	Daikin AZAS100M7V1B	58	57	53	51	47	42	37	32	53
CON 21.01	Fujitsu AOY30LMAW4	50	47	49	47	45	39	40	18	48
CON U.02	Daikin RZASG100M7V1B	58	57	53	51	47	42	37	32	53
CON U.03	Daikin AZAS71M2V1B	52	46	41	45	41	35	35	23	46
CON U.04	Daikin AZAS71M2V1B	52	46	41	45	41	35	35	23	46
CON 40.01	Daikin AZAS100M7V1B	58	57	53	51	47	42	37	32	58
CON 11.01	Daikin RZASG71M7V1B	51	46	41	45	41	35	35	23	47
CON 11.02	Daikin RZASG71M7V1B	51	46	41	45	41	35	35	23	47
CON 18.02	Daikin AZAS100M7V1B	58	57	53	51	47	42	37	32	53
CON 42.01	Daikin RZAG35A2V1B	52	52	50	47	41	37	28	26	48
CON 35.02	Daikin RZQG71L9V1B	49	51	49	46	43	38	33	28	48
CON 35.01	Daikin RZQG71L9V1B	49	51	49	46	43	38	33	28	48
CON PBAN.01	Daikin RKS20D3VMB	46	45	43	39	38	30	23	18	46
CON PBAN.02	Daikin RZQG125B9V3B1	58	53	51	49	44	43	40	29	51
CON PBAN.03	Daikin RZQG125B9V3B1	58	53	51	49	44	43	40	29	51

Reference	Make Model	Sound Pressure Level at 1m, dB re 20µPa								
		Octave Band Centre Frequency, Hz								"A"
		63	125	250	500	1k	2k	4k	8k	
CON 10.01	Daikin (not known – data is assumed)	(58)	(53)	(51)	(49)	(44)	(43)	(40)	(29)	(51)
CON 10.02	Daikin (not known – data is assumed)	(58)	(53)	(51)	(49)	(44)	(43)	(40)	(29)	(51)
CON 45.01	Daikin RZASG50A2V1B	47	53	51	47	43	37	31	23	49
CON 43.01	Daikin RXM50N2V1B9	49	50	47	44	42	38	31	22	48
CON 48.01	Daikin RXM60N2V1B9	46	52	48	47	45	38	33	27	48
CON PBJL.P1	Daikin RZASG100MV1	58	57	53	51	47	42	37	32	57
CON 02.P1	Daikin RZAG125MV1	56	52	47	41	44	40	33	27	50
CON 04.P1	Panasonic Mini ECOi Outdoor Unit U-4LE2E5	(53)	(56)	(52)	(53)	(47)	(42)	(39)	(34)	52
CON 34.P1	Daikin RZAG71NV	53	51	46	45	39	35	29	23	46
CON 05.01	Daikin RZASG140MV1	59	53	52	50	46	41	35	29	51
CON 06.01	Daikin AZAS100MV1	58	57	53	51	47	42	37	32	53
CON 06.02	Daikin AZAS100MV1	58	57	53	51	47	42	37	32	53
CON 13.01	Panasonic Mini ECOi Outdoor Unit U-6LE2E5	(55)	(58)	(54)	(55)	(49)	(44)	(41)	(36)	54
CON 14.01	Panasonic Mini ECOi Outdoor Unit U-6LE2E5	(55)	(58)	(54)	(55)	(49)	(44)	(41)	(36)	54
CON 16.01	Daikin RZASG125MV1	56	56	52	53	47	43	38	34	53
CON 19.01	Panasonic Mini ECOi Outdoor Unit U-6LE2E5	(55)	(58)	(54)	(55)	(49)	(44)	(41)	(36)	54
CON 31.01	Daikin AZAS100M7V1B	58	57	53	51	47	42	37	32	53
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CON 31.03	Daikin AZAS100M7V1B	58	57	53	51	47	42	37	32	53
CON 31.04	Daikin AZAS125M7V1B	56	56	52	53	47	42	39	34	53
CON 32.01	Daikin RZASG71MV1	53	52	47	45	40	35	29	23	51
CON 33.01	Daikin RZASG71MV1	53	52	47	45	40	35	29	23	51
CON 36.01	Daikin RZAG71NV	53	52	47	45	40	35	29	23	51
CON 37.01	Daikin RZAG100MV1	52	49	45	44	45	34	28	23	48
CON 38.01	Daikin RZAG100MV1	52	49	45	44	45	34	28	23	48
CON 44.01	Daikin RZASG71MV1	53	52	47	45	40	35	29	23	51
Note: Data taken from manufacturer's datasheets where available. Assumed data shown in brackets.										

Table 5.1: Noise Data Used On Calculations

6 Background Noise Levels

6.1 An environmental noise survey of the site has been undertaken to determine existing background noise levels.

6.2 Noise levels were monitored at two locations, as shown in **Figure 6.1** below and described in **Table 6.1** overleaf.

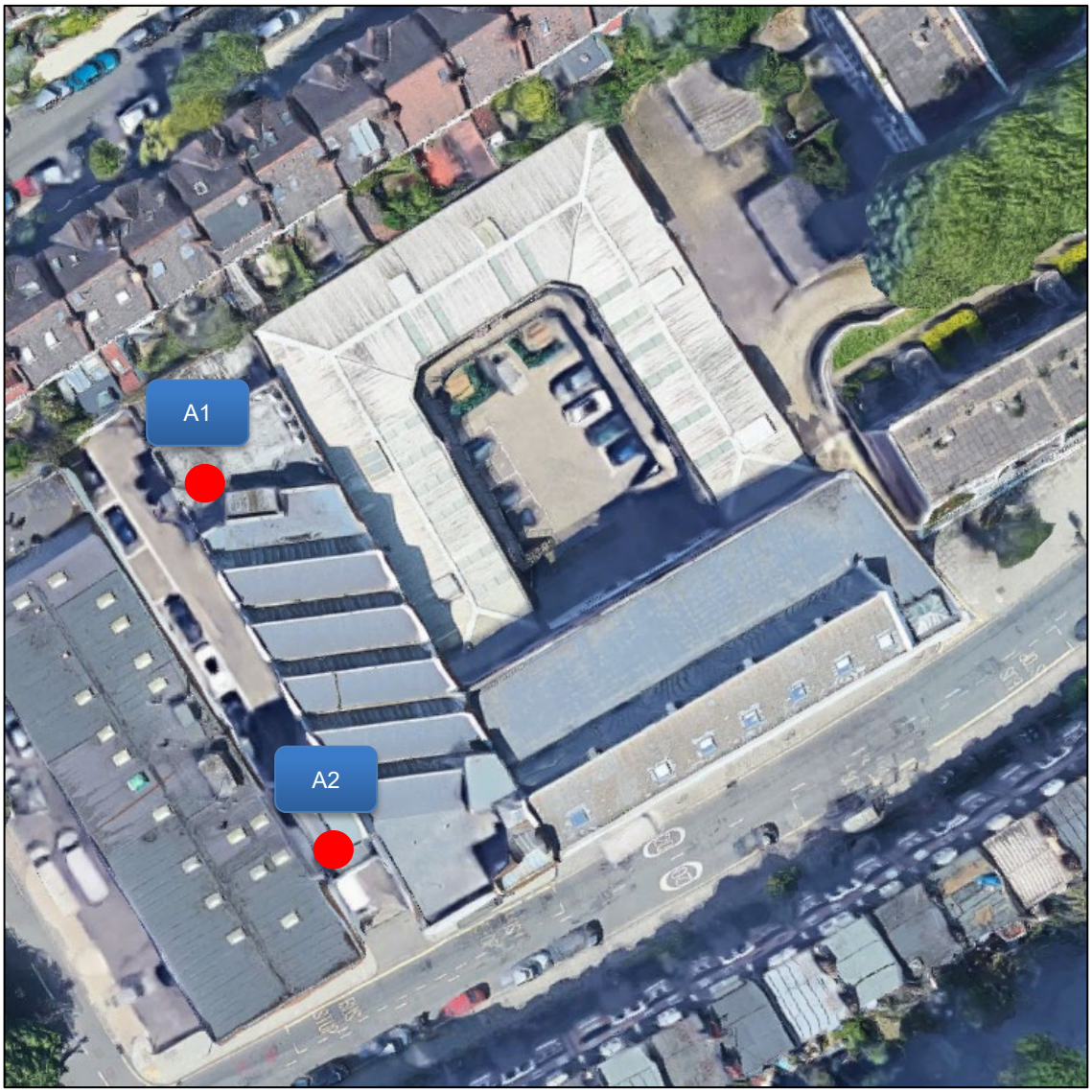


Figure 6.1: Noise Measurement Locations

Monitoring Location	Description
A1	Located at roof level, overlooking the mews to the west and with a line of site to the first-floor windows of the nearest dwellings on Glenhurst Avenue. The measurement microphone was attached to railings and positioned approximately 1.5m from the top of the roof in broadly free-field conditions.
A2	Located at roof level on the western boundary of Spectrum House overlooking Gordon House Road to the west and with a line of sight view to the third floor of flats along Gordon House Road and Lissenden Road. The measurement microphone was attached to railings and positioned approximately 1.5m from the top of the roof in broadly free-field conditions.

Table 6.1: Measurement Instrumentation

6.3 The following measurement instrumentation was used for the survey:

Position	Description	Make	Model	S/No.	Calibration
A1	Sound Level Analyser	Svantek	SVAN971	72535	23/04/2018
	Microphone	ACO Pacific	7052E	68260	
	Preamplifier	Svantek	SV18	72235	
	Outdoor Microphone Kit	Svantek	SA271U	--	n/a
A2	Sound Level Analyser	Svantek	SVAN971	55550	04/06/2018
	Microphone	ACO Pacific	7052E	63684	
	Preamplifier	Svantek	SV18	57249	
	Outdoor Microphone Kit	Svantek	SA271U	--	n/a
A1 & A2	Calibrator	Rion	NC-74	34651766	12/07/2019

Table 6.2: Measurement Instrumentation

Survey Procedure

6.4 The measurements at Position A1 were carried out over a 7-day period between 20 September 2019 to Thursday the 26 September 2019[1]. The measurements are deemed representative of the typical background noise levels at the rear of properties on Glenhurst Avenue and Wheatland House due to their position, screened from road traffic noise

6.5 The additional automated survey carried out at Position A2 covered a notional 5 day period between 13 March to 17 March 2020 and is deemed representative of background

[1] This work was undertaken by Mayer Brown Limited in relation to a previous planning project at Spectrum House.

noise levels at Clanfield flats due to the measurement position being a similar distance to Gordon House Road to the south.

6.6 The automated sound level analysers at both locations were configured to measure the L_{A90}, L_{Aeq}, L_{A10} and $L_{Amax,fast}$ noise indices over consecutive 15 minute time periods. The equipment was also configured to log at a higher (1 second) resolution to assist with the discrimination of noise events, in addition to audio recordings to assist with source identification.

6.7 The sound level analysers were calibrated prior to the survey and the calibration checked on completion. No drift in calibration was observed for either analyser.

Measurement Results

6.8 Measured noise levels are presented in **Figures 6.2** and 6**.3** below. Higher resolution copies of these time history profiles are presented in **Appendix B.**

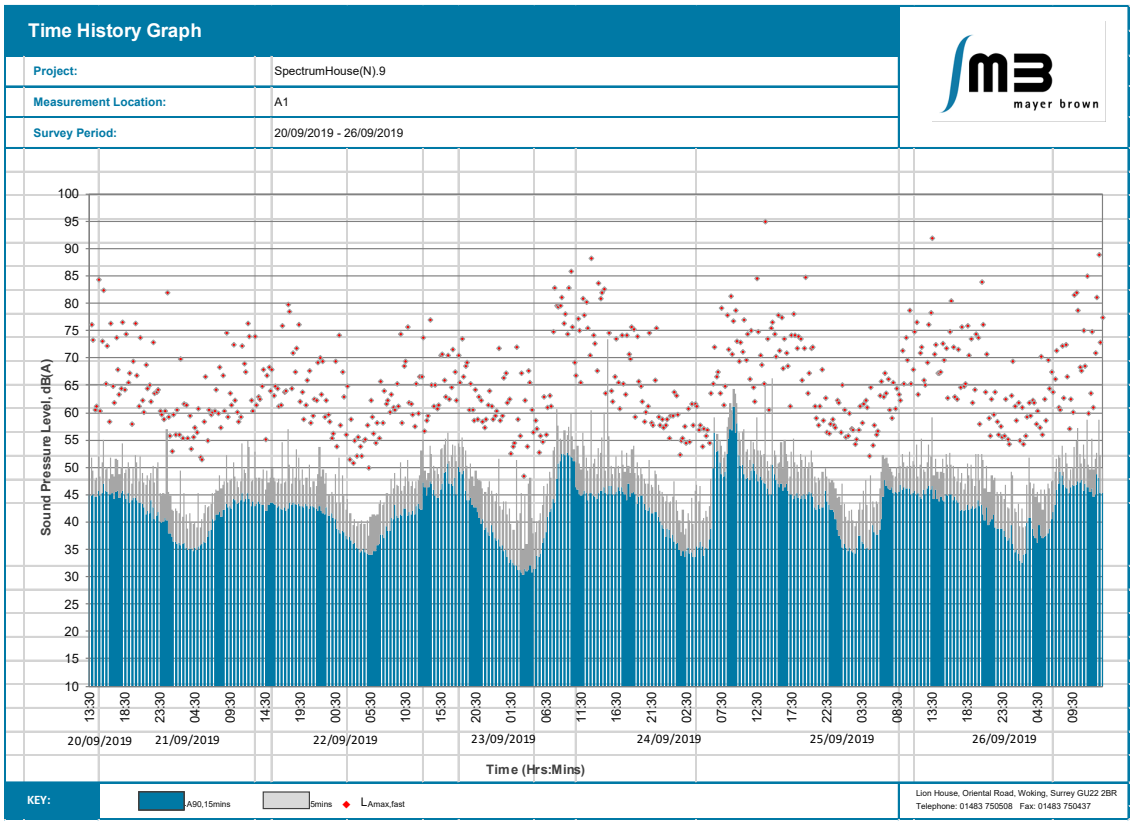


Figure 6.2: Time History Profile - A1

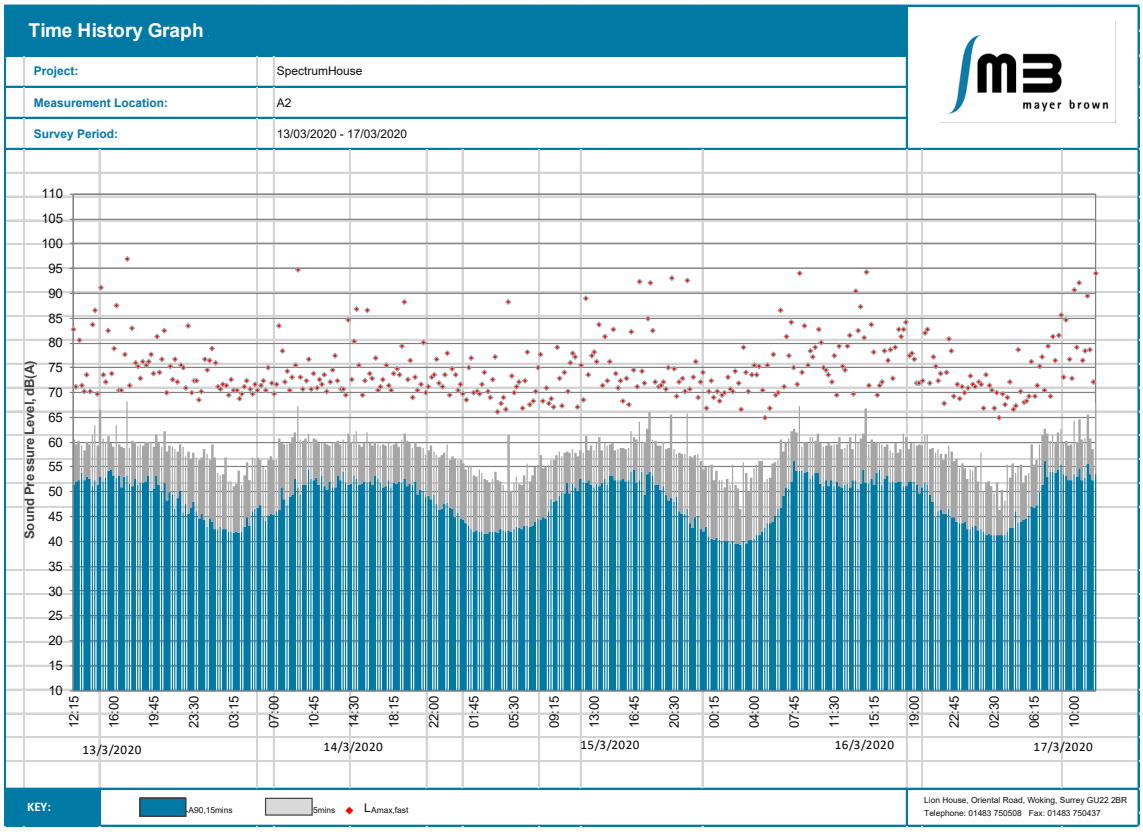


Figure 6.3: Time History Profile – A2

Weather

6.9 Whilst weather conditions during the automated surveys were not actively measured, observations at the time of site attendances and publicly available historic online data indicates that weather conditions were typically characterised as set out in **Tables 6.3** and **6.4** below:

2019	Temp. (°C)	Humidity (%)	Wind Speed (km/h)	Wind Direction	Pressure (hPa)		Rainfall (mm)
September	Avg.	Avg.	Avg.		Max	Min	total
20	14	96	12	SW	1031	1020	0.0
21	17	82	12	E	1020	1007	0.0
22	17	89	10	SSE	1008	1003	1.6
23	16	92	17	SSW	1013	1008	0.8
24	17	95	15	SSW	1008	1000	0.4
25	17	94	16	SW	1005	998	0.2
26	17	94	18	SW	1006	1002	0.2

Table 6.3: Weather – September 2019 Survey

2020	Temp. (°C)	Humidity (%)	Wind Speed (km/h)	Wind Direction	Pressure (hPa)		Rainfall (mm)
March	Avg.	Avg.	Avg.		Max	Min	total
13	8	72	18	WSW	1020	1013	0.0
14	10	82	18	SSW	1019	1012	3.1
15	10	83	22	SSW	1015	1007	1.1
16	8	74	10	W	1027	1014	0.0
17	10	81	21	SW	1029	1026	0.0

Table 6.4: Weather – March 2020 Survey

Data Analysis

6.10 It is understood that all plant will only be operational between 08.00am – 18.00 hours only. The measurement data during these operational hours has been statistically analysed to determine "typical" background (L_{A90}) noise levels. The results of this analysis are presented in **Figure 6.4** and **Figure 6.5** below.

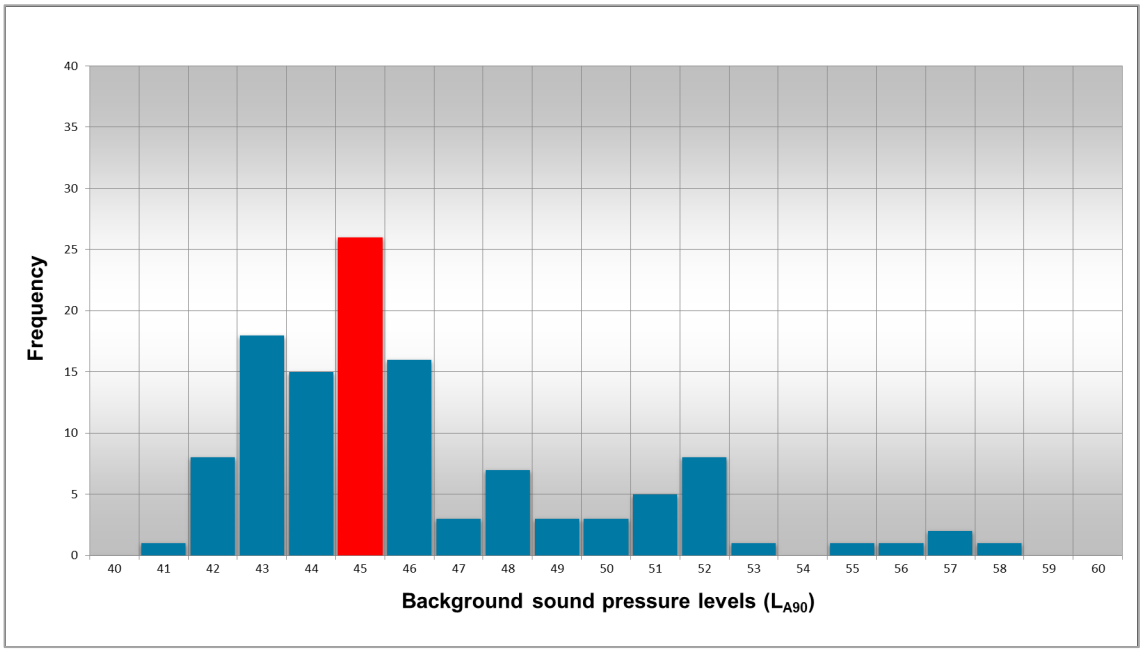


Figure 6.4: Position A1 - L_{A90} Statistical Analysis – Daytime

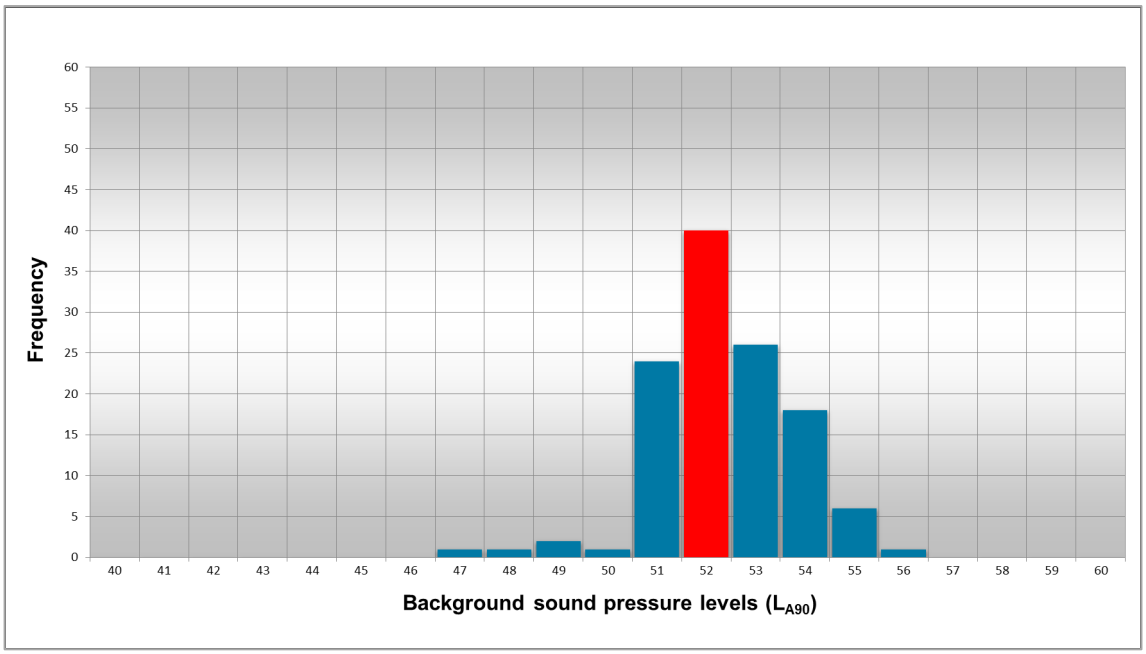


Figure 6.5: Position A2 - L_{A90} Statistical Analysis – Daytime

6.11 From the analysis shown, it can be seen that the typical L_{A90} is taken to be **45dB** at position A1 and **52dB** at position A2, within the vicinity of the nearest noise sensitive receptors to the north and east respectively.

7 Noise Impact Assessment

Noise Sensitive Receptors

7.1 For noise impact assessment purposes, the nearest noise sensitive receptors have been identified and are as shown in **Figure 7.1** and are described in **Table 7.1** below.

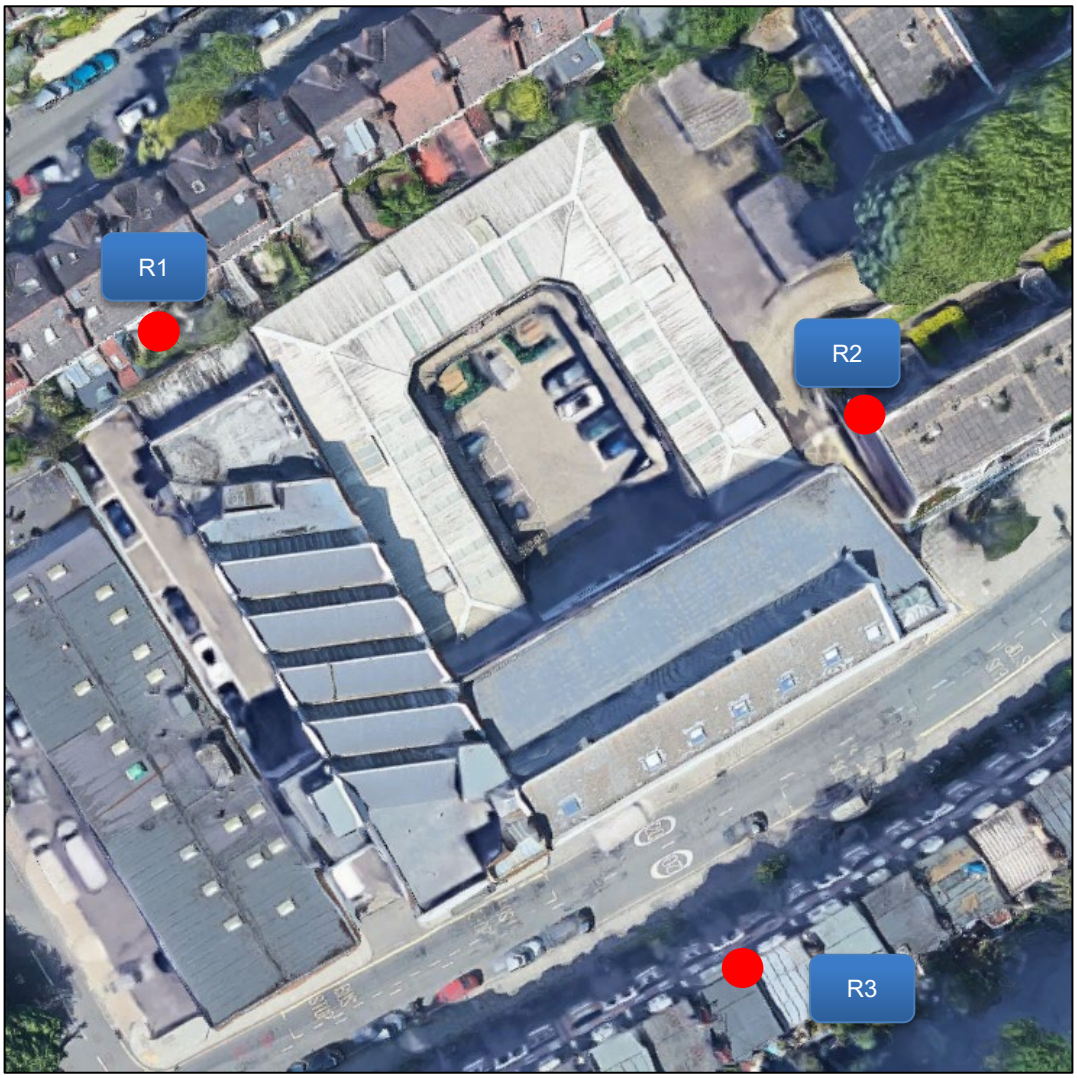


Figure 7.1: Location of Noise Sensitive Receptors

Ref.	Location
R1	Houses on Glenhurst Avenue – southern elevation
R2	Flats at Clanfield, Gordon House Road – northern elevation
R3	Houses on Gordon House Road – northern elevation

Table 7.1: Description of Noise Sensitive Receptors

Proposed Noise Limits

7.2 As noted earlier, Camden Council requires that the rating level of plant noise is controlled to a level at least 10dB below the typical background noise level. It follows that, based on the results of the noise monitoring, the following plant noise emission limits should be targeted.

Ref.	Location	$L_{Ar, T,1hour}$ dB
R1	Houses on Glenhurst Avenue – southern elevation	35
R2	Flats at Clanfield, Gordon House Road – northern elevation	
R3	Houses on Gordon House Road – northern elevation	42

Table 7.2: Recommended Plant Noise Emission Limits

7.3 The above values should be met at 1m from the window or any adjoining property and should represent the total cumulative value (i.e. noise emission from all plant operating at the same time).

Noise Calculations

7.4 Calculations have been undertaken in general accordance with "*ISO:9613- 2:1996 – The attenuation of sound during propagation outdoors: Part 2 General Method of Calculation"* and are based on manufacturers technical datasheets, aerial photography and general site observations regarding building heights and other features that may influence noise propagation.

7.5 The calculations are made for the *"most exposed"* uppermost window of the affected property and do not therefore make allowance for boundary screening that may be afforded to garden areas.

7.6 Corrections have been applied to account for directivity of the noise source relative to the receiver, where these are *'off axis'*.

7.7 To ensure a robust assessment, the calculations assume that all plant will operate simultaneously and continuously.

7.8 Predicted noise levels are summarised in **Table 7.3** overleaf:

Ref.	Location	Predicted Noise Level, $L_{Aeq,1hour}$ dB
R1	Houses on Glenhurst Avenue – southern elevation	35
R2	Flats at Clanfield, Gordon House Road – northern elevation	34
R3	Houses on Gordon House Road – northern elevation	24

Table 7.3: Predicted Noise Levels

7.9 Summary calculations supporting the above are attached at **Appendix C**.

London Borough of Camden Local Policy Requirements

7.10 As noted earlier, the technical guidance supporting the London Borough of Camden's adopted Local Plan recommends that plant noise emissions are controlled to a level set 10dB below the typical background level.

7.11 **Table 7.4** below assesses the predicted noise levels in terms of this recommendation:

Receptor Location	Rated Noise Level, $L_{Ar,T}$	LB Camden Assessment Criterion, dB	Difference between Rated Level and Assessment Criterion	Compliant Yes/No
R1	35	35	0	**Yes**
R2	34	35	-1	**Yes**
R3	24	42	-18	**Yes**

Table 7.4: Comparison with LB Camden Plant Noise Criteria

7.12 The predicted noise levels have also been tested in the context of the additional guidance given by Camden in relation to small items of plant (such as air-conditioning units) and which recommends that noise emissions do not exceed a "Noise Rating" level of NR35.

7.13 **Table 7.5** below assess the predicted noise levels in terms of this recommendation:

	Octave Band Centre Frequency (Hz)								NR
	63	125	250	500	1000	2000	4000	8000	
NR 35	63	52	45	39	35	32	30	28	35
R1	40	38	35	33	29	24	20	14	29
R2	38	36	34	32	29	23	22	12	29
R3	28	27	24	23	18	13	10	4	23

Table 7.5: Noise Rating Assessment

7.14 The above Tables confirm that noise emissions from the plant should comply fully with the London Borough of Camden's standard noise control recommendations.

BS4142:2014+A1:2019 Assessment

7.15 As noted earlier, the London Borough of Camden's technical guidance makes reference to BS 4142: 2014+A1: 2019: *"Method for Rating and Assessing Industrial and Commercial Sound".* If this guidance is aligned with that of the NPPF, NPPG and NPSE leads, the potential effect of plant noise emissions can be assessed in line with the following significance categorisation:

Difference Between Rating Level ($L_{Ar,T}$) and Typical Background Level ($L_{A90,15mins}$)	Effect
Less than -10	No observed effect
Between -10 and zero	No observed adverse effect
Between zero and +10	Observed adverse effect
More than +10	Significant observed adverse effect

Table 7.6: BS 4142 Noise Assessment

7.16 Table 7.5 below provide a summary assessment in line with the principles of BS 4142:

Location	Predicted Noise Level, L_{Aeq}	Character correction, dB	Rated Noise Level, $L_{Ar,,1hour}$	Background Noise Level, L_{A90}	Difference between Rated and Background Noise Level, dB	Assessment Outcome
R1	35	0	35	45	**-10**	*"No observed effect"*
R2	35	0	35	45	**-11**	*"No observed effect"*
R3	22	0	22	52	**-28**	*"No observed effect"*

Table 7.7: BS 4142 Noise Assessment

7.17 The assessments presented above adopt a time period of 1 hour (assuming plant will operate during daytime hours only). No acoustic character corrections have been applied to the predictions as noise from plant of this nature is typically broadband i.e. it contains no dominant tones. It is assumed that the plant will be in continuous in operation therefore no on-time correction has been applied. It is also assumed that all plant will be operating simultaneously at full capacity (and thus represents an absolute worst-case scenario).

7.18 The above table concludes that noise levels at all receptor locations should have *"no observed effect"*.

Non-Residential Receptor

7.19 As noted earlier the proposed rooftop plant area is located adjacent to existing north light roof glazing, as shown in **Figure 6.1** below;

Figure 7.2: Location of Office Accommodation at Mezzanine Level

7.20 Calculations have also been undertaken to assess noise levels incident on these windows. Predicted noise level are presented in **Table 7.7** below. Summary calculations are attached at **Appendix C**.

Octave Band Centre Frequency (Hz)								
63	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	**dB(A)**
53	52	48	47	43	37	33	28	48

Table 7.8: Predicted Noise Levels @1m – Office Elevation

7.21 Guidance on appropriate internal noise levels for specific types of building is presented in BS 8233: *"Guidance on Sound Insulation and Noise Reduction for Buildings".* In order to assist in providing acoustic privacy in open plan office areas, Table 2 of BS 8233: 2014 recommends that a sound level of 45-50dB $L_{Aeq,T}$ should be provided, as reproduced below:

Objective	Typical situations	Design range $L_{Aeq,T}$ dB
Typical noise levels for acoustic privacy in shared spaces	Restaurant	40 – 55
	Open plan office	45 – 50
	Night club, public house	40 – 45
	Ballroom, banqueting hall	35 – 40
	Living room	35 – 40

NOTE See Noise control in building services [28] and BS EN ISO 3382.

Table 7.9: BS 8233 Design Recommendation for Open Plan Offices

7.22 Table 6 of the standard recommends that in order to provide acceptable noise levels for *"study and work requiring concentration"*, internal noise levels in staff/meeting and training rooms should be controlled to a level of around 35-45dB $L_{Aeq,T}$, whilst an internal level of 35-40dB $L_{Aeq,T}$ would be appropriate for an executive office.

7.23 Section 7.7.6 of BS 8233: 2014 directly deals with office accommodation and makes direct reference to the British Council For Offices *"Guide to Specification"* (2009). This guide was updated in 2019. Relevant guidance is summarised in the following section.

7.24 The BCO Guide recommends the following external noise intrusion criteria for offices:

Area	Performance
Open plan offices	NR 40 ($L_{eq,T}$)
Speculative offices	NR38 ($L_{eq,T}$)
Cellular offices / meeting rooms	NR 35 ($L_{eq,T}$)

Table 7.10: BCO Noise Intrusion Guideline Values

7.25 The above guidance is specified in terms of Noise Rating (NR) levels. These rating levels are defined in Annex B of BS 8233: 2014. This Annex also notes that whilst NR values cannot be directly converted to a dB(A) level, the following approximate relation can be reasonably applied:

$$dB(A) = NR + 6$$

7.26 Based on the above, it can be seen that noise intrusion from external sources into offices should be acceptably reduced when controlled to internal levels of around 46 dB $L_{Aeq,T}$ for open plan offices, and 41 dB $L_{Aeq,T}$ for cellular offices/meetings room.

7.27 In order to align with national planning policy objectives, it is considered that these internal levels provide appropriate benchmark guidance on a *"Lowest Observed Adverse Effect Level"* (LOAEL) for internal noise levels within office accommodation.

7.28 With the openable lights to the adjoining fenestration are open, noise intrusion into the existing office accommodation should be reduced to around 33dB $L_{Aeq,T}$[2]. It follows that plant noise intrusion into the adjoining office space should be acceptably controlled in the context of BS 8233 and BCO guidance.

7.29 Notwithstanding the above conclusion, it is considered material to note that the office space is served by air-conditioning which would negate the requirement to open windows, particularly during the summer months. It is anticipated that the (closed) single glazed windows would provide a sound reduction of around 25dB(A). It can therefore be comfortably concluded that with windows closed, noise intrusion into the offices would be significantly lower than BS 8233/BCO guidance.

Summary

7.30 Plant noise emissions to neighbouring dwellings are calculated to comply with the London Borough of Camden's "standard" noise control policy requirements. This includes assessing the overall magnitude of predicted noise against the existing background noise levels and also the absolute level of noise relative to a reference "Noise Rating" curve of NR35.

7.31 Noise levels have also been assessed in general accordance with the principles of BS 4142: 2014 + A1: 2019, which concludes that plant noise emissions should have *"no observed effect"* on neighbouring dwellings.

7.32 Consideration has also been given to potential noise break-in to the office accommodation which has north light glazing overlooking the proposed roof plant compound. This assessment concludes that noise intrusion into the office space should be acceptably controlled in line with the guidance of BS 8233: 2014 / the BCO, even when areas of openable roof light of open (albeit that this is not required to provide thermal control to the units, given that they also benefit from the air conditioning accommodated within the plant compound).

7.33 As highlighted earlier, the above conclusions are reached on the basis of an absolute "worst case" assumption, i.e. all plant will operate at full capacity simultaneously.

7.34 In light of the above, it is concluded that noise emissions at all receptor locations are acceptably controlled.

[2] Assuming an outside to inside reduction of 15dB(A) for an open window

8 Conclusions

8.1 An environmental noise survey has been undertaken to determine existing background noise levels characterising the site.

8.2 Based on these measurement data, acoustic design targets for proposed plant rationalisation have been determined, in accordance with the technical guidance supporting the London Borough of Camden's adopted Local Plan.

8.3 Information regarding proposed plant selections for new plant (including manufacturer's noise data) and details showing the proposed disposition of plant are provided.

8.4 Calculations have been undertaken to assess noise emission to neighbouring noise sensitive receptors (dwellings) and existing office accommodation adjacent to the proposed new roof plant compound.

8.5 It is concluded that plant noise emissions to neighbouring dwellings comply fully with the London Borough of Camden's "standard" noise control policy requirements. This includes an assessment of the overall magnitude of predicted noise against the existing background noise levels and also the absolute level of noise relative to a reference "Noise Rating" curve.

8.6 Noise levels have also been assessed in general accordance with the principles of BS 4142: 2014 + A1: 2019. This concludes that plant noise emissions should have *"no observed effect"* on neighbouring dwellings.

8.7 Consideration has also been given to potential noise break-in to the office accommodation which has north light glazing overlooking the proposed roof plant compound. This assessment concludes that noise intrusion into the office space should be acceptably controlled in line with the guidance of BS 8233: 2014 / the BCO, even when areas of openable roof light are open (albeit that this is not required to provide thermal control to the units given that they also benefit from the air conditioning accommodated within the plant compound).

8.8 In light of the above, it is concluded that the proposed rationalisation of the plant complies fully with national, city-wide and local noise related planning policy objectives.

APPENDIX A: Glossary of Acoustic Terminology

GLOSSARY OF ACOUSTIC TERMINOLOGY

General

A vibrating surface or turbulent fluid flow will cause pressure fluctuations in the surrounding air. These pressure fluctuations are perceived by the human ear as “sound”.

Measurement Units

The human ear can detect sound pressures as low as about 20 µPa, and can tolerate (for short periods) sound pressures as high as 200 Pa, an amplitude range of 10 million times. To take account of this huge amplitude range, sound pressure levels (often written in “acoustic shorthand” as SPL or Lp) are quantified using a logarithmic scale, the decibel (dB) scale. This is based on a reference pressure of 20µPa, thus a sound pressure of 20µPa would equate to 0dB and a pressure of 200Pa would equate to 140dB.

Frequency (Pitch) Characteristics

The sound received at any particular location is not solely influenced by the sound pressure level, the frequency characteristics (pitch) of the noise is also an important factor. Noise audible to a human (with “normal” hearing), typically covers the frequency range 20 Hertz to 20,000 Hertz. Hertz (Hz) are defined as the number of times the sound pressure fluctuates in one second. “Low” pitched sounds fluctuate less times per second than “high” pitched sounds. Whilst humans are capable of detecting a wide range of frequencies, the ear is not equally sensitive to all frequencies – the ear is most sensitive at frequencies towards the middle of the audible range and less sensitive to the lower and higher frequencies.

To take account of this frequency response, sound pressure fluctuations are normally quantified by applying a frequency-weighting network or filter which simulates the frequency response of the ear. In essence, this means that more significance is given to the frequencies at which the ear is most sensitive and less significance to those at which the ear is less sensitive. Noise measurements relating to human reaction are generally made using an “A-weighting” network. These measurements are reported as A-weighted decibels or dB(A). The A-weighted sound pressure level is written in “acoustic shorthand” as L_A.

Variation of Sound with Time

It will be appreciated that the sound pressure level of most noise sources will fluctuate with time. In order to take account of the way in which the human ear perceives noise, it is normal for the sound pressure level to be quantified using a time weighting network, to mimic the speed of response of the human ear. The standardised setting for most types of noise is a “Fast” time weighting.

The manner in which sound fluctuates with time can also influence the subjective manner in which noise is perceived. Noise can be continuous (showing no significant variation with time as in the case of a fan), intermittent (i.e. the noise is transient in it’s nature, such as a train pass-by) or impulsive (i.e. there is a sudden build up of noise - this can range from “clanking” types sounds as might be experienced next to railway goods yard or a high energy discharge such as an explosion)

Measurement of Sound

Sound pressure levels are measured using equipment comprising a pressure-sensitive microphone, associated amplifier, frequency weighting network, time weighted network and output indicator. In its simplest form this is a small hand-held instrument called a sound level meter. More sophisticated instrumentation (a sound level analyser) is also available which allows the real-time output of the frequency characteristics of the sound to be quantified.

Comparison of Sound Levels

To put the significance of noise measurement into context, the following Table presents the A-weighted sound pressure level of some typical sources:

Sound Pressure Level, dB(A)	Typical Noise Source . Activity
160	Saturn Rocket Taking Off
140	Military Jet Taking Off at 30m
100	Nightclub
90	Heavy goods vehicle driving past at 7m
80	Busy urban road
70	Domestic vacuum cleaner at 3m
60	Busy office environment
55	Normal speech at 1m
40	Whispered conversation at 2m
30	Bedroom at night (BS 8233: 1999)
20	Remote country location
0	Threshold of hearing – a very eery silence

Addition of Sound Levels

It is important to note that the use of a logarithmic scale to describe noise does not allow normal arithmetic addition. This means that two noise sources each generating a level of, say, 60dB(A) will not generate a combined sound level of 120dB(A). The values must be added logarithmically, which would actually yield a combined sound level of 63dB(A) in this example.

Subjective Perception of Sound Levels Changes

With regard to the human perception of sound level changes, the human ear:

- Cannot generally perceive a sound level difference of less than 3dB(A)
- Will perceive a sound level difference of 4-5dB(A) as “noticeable”
- Will perceive a sound level difference of 10dB(A) as a doubling (or halving) of loudness.

Acoustic Terminology

As stated previously, most sources of noise will fluctuate with time. In order to characterize such noise, it is therefore normal to represent the noise climate using a variety of noise parameters and statistical indices. The most commonly adopted noise parameters are described below:

$L_{Aeq,T}$ This is the equivalent continuous A-weighted sound level measured over a specified time period "T". This is the notional continuous sound level which, over the time T, contains the same amount of energy as the actual fluctuating sound being measured. This parameter is widely accepted as being the most appropriate noise descriptor for most environmental noise and the effects of noise on humans.

$L_{Amax,fast}$ This is maximum A-weighted sound pressure measured with a fast frequency response recorded during the stated measurement period. It is typically used to characterise the highest sound level caused during a noise event.

$L_{A90,T}$ This is the A-weighted sound pressure level exceeded for 90% of the specified time period "T". It is normally used to describe the underlying background noise level of an environment since it inherently excludes the effects of transient noise sources.

Noise Rating (NR) Level

When describing noise from building services installations, it is common to express noise levels in terms of a Noise Rating (NR) Level. The NR level is determined by plotting the measured frequency spectrum of a noise against a series of reference curves, which roughly approximate to equal loudness values. This method permits higher sound levels at low frequencies corresponding to the sensitivity of the human ear. The NR level is defined as the value of the highest curve "touched" by the plotted frequency spectrum. For typical sources of building services noise, the overall A-weighted sound level is numerically around 5-6dB higher than the NR level of the noise.

Airborne Sound Insulation Measurement Parameters

The ability of a building element to reduce airborne noise can be described by a number of different parameters relevant to both laboratory and on-site performance evaluation. In general, the higher these values, the better the resistance of the construction to the transmission of airborne sound. The most commonly used parameters include:

R_w The **"Weighted Sound Reduction Index"** (R_w) is a single value measure of the intrinsic sound reduction capabilities of a construction, as measured in an acoustic laboratory. Measurement values are determined in accordance with the BS EN ISO 10140 series of standards and weighted in accordance with BS EN ISO 717-1: 2013.

R'_w The **"Weighted Apparent Sound Reduction Index"** (R'_w) is a single value measure of the apparent sound reduction capabilities of a construction, when installed on-site (which will normally be some way lower than the laboratory value due to less favourable installation conditions, the quality of workmanship, etc.). Measurement values are determined in accordance with the BS EN ISO 10140 series of standards and weighted in accordance with BS EN ISO 717-1: 2013. In practice, the R'_w of a construction can only be reliably determined if "direct" sound transfer through the partition can confidently be taken as the dominant noise transfer path (i.e. there is no "flanking" sound transmission.

D_w The **"Weighted Sound Level Difference"** (D_w) is a single value measure of the on-site sound reduction between two rooms. This value inherently includes "direct" sound transmission through any separating construction and "flanking" transmission through other building elements. Measurement values are determined in accordance with BS EN ISO 140-4: 1998 (for Building Regulations compliance purposes) or BS EN ISO 16283-1: 2014 and weighted in accordance with BS EN ISO 717-1: 2013.

$D_{n,fw}$ The "**Weighted Normalised Flanking Level Difference**" ($D_{nf,w}$) is a single figure measure of the sound reduction between two rooms solely due to sound transmission through a specified flanking path. This parameter is frequently used to provide an indication of the sound reduction capabilities of suspended ceiling and raised access floor constructions where there is common void between adjacent rooms or as a measure of sound that may be transmitted between rooms through external curtain walling. Measurements are undertaken in accordance with BS EN ISO 10848-2: 2017 and weighted in accordance with BS EN ISO 717-1: 2013.

Impact Sound Insulation Measurement Parameters

Some building elements also have the potential to generate "impact" noise, for example due to human "footfall" on floor structures, or the impact of rainfall on lightweight roofing components. A variety of parameters are again available to define the amount of noise likely to be generated. In general, the lower these values, the less sound the construction will generate as a result of impacts. Typical measurements parameters include:

$L_{nT,w}$ The "**Standardised Impact Sound Pressure Level**" is a "single number" rating describing the intrinsic impact sound insulation capabilities of a construction (such as a floor system) as measured in an acoustics laboratory. Values are determined in a vertical sound transmission suite by locating a "tapping machine" in the upper room of the suite and measuring the amount of sound radiated by the floor in the room below. Measurement values are determined in accordance with the BS EN ISO 10140 series of standards and weighted in accordance with BS EN ISO 717-2: 2013.

$L_{nf,w}$ The "**Normalised Flanking Impact Sound Pressure Level**" is a "single number" rating describing the amount of flanking sound that would be transmitted to an adjoining space (separated by a partition) due to impacts on the test sample. It is, for example, used to indicate the amount of noise that may be generated due to footfall noise on a raised access floor system. Values are determined in a horizontal sound transmission suite by locating a "tapping machine" one side of a separating partition built off the test sample and measuring the amount of noise radiated by the floor in the adjoining space on the other side of the partition. Measurement values are determined in accordance with BS EN ISO 10848-2: 2017 and weighted in accordance with BS EN ISO 717-2: 2013.

Room Acoustic Measurements

T The "**Reverberation Time**" (T) of a room is defined as the time taken for the sound energy produced by a source Time (RT)to decay by 60 dB after the source has been switched off. The reverberation time of a space can be calculated by considering the volume of the room and the areas and sound absorption qualities of room surface finishes. Small, "soft" rooms tend to give low reverberation times, whilst large, "hard" rooms tend to give long reverberation times.

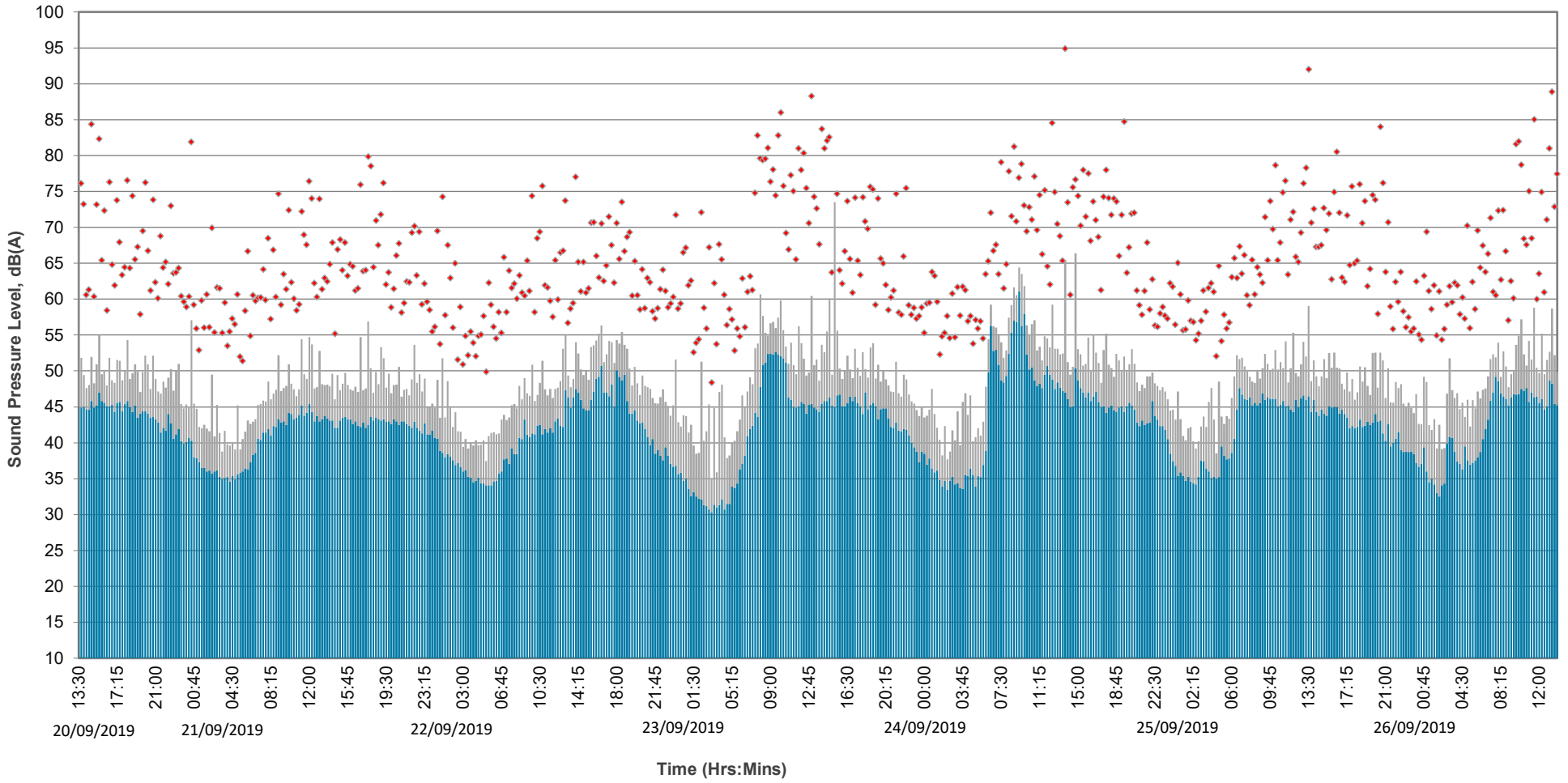
α_p The "**Practical Acoustic Absorption Coefficient**" (α_p) is a measure of how much sound energy is absorbed by a building element at a particular frequency, as measured in accordance with BS EN ISO 354: 2003.

α_w The "**Weighted Absorption Coefficient**" (α_w) is a single figure measure of the overall sound absorption capabilities of a building element determined in accordance with BS EN ISO 11654: 1997.

APPENDIX B: Noise Monitoring Results

Time History Graph A1

Project:	Spectrum House, Gospel Oak, London
Measurement Location:	A1
Survey Period:	20/09/2019 - 26/09/2019

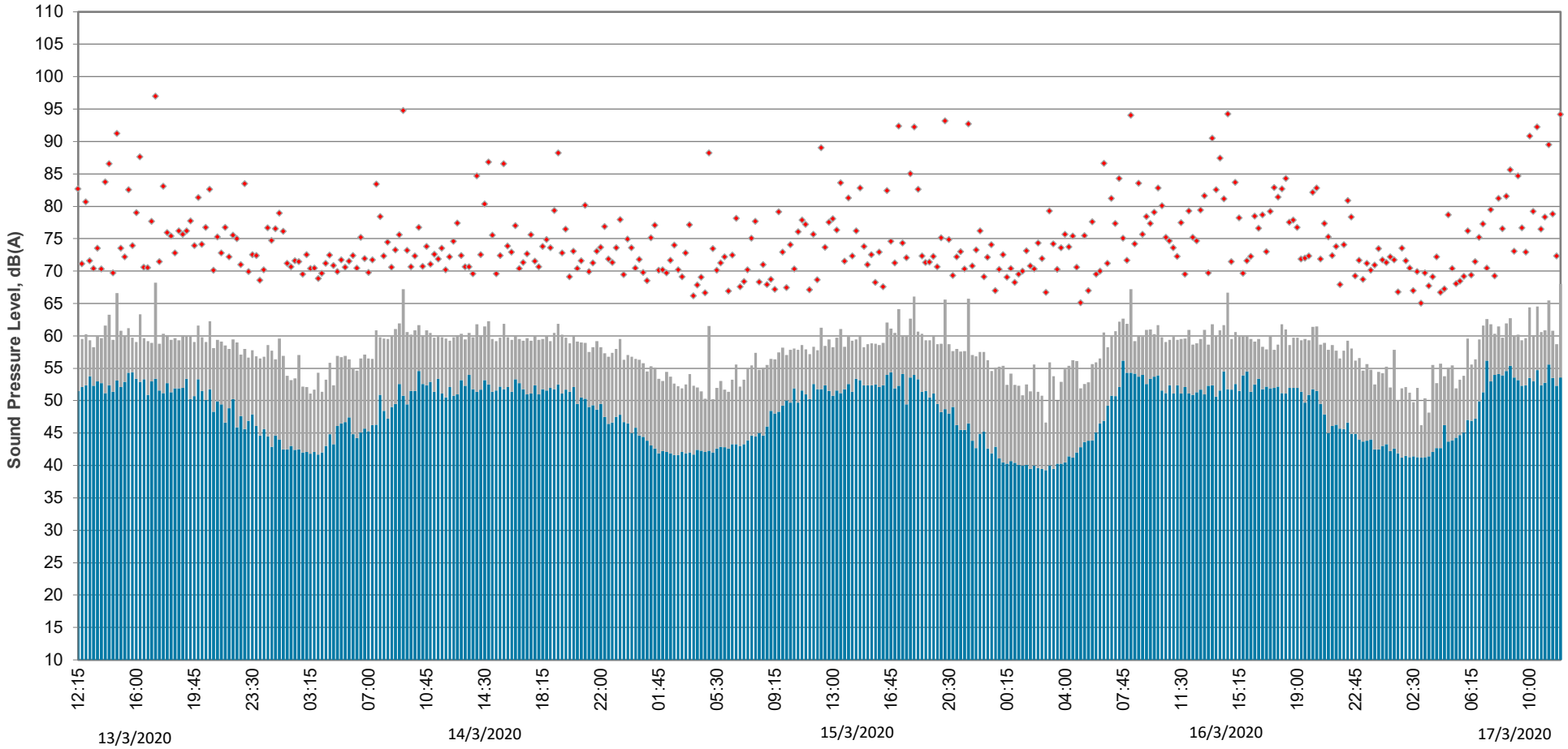


KEY: $L_{A90,15mins}$ $L_{Aeq,15mins}$ $L_{Amax,fast}$

Lion House, Oriental Road, Woking, Surrey GU22 2BR
Telephone: 01483 750508 Fax: 01483 750437

Time History Graph A2

Project:	Spectrum House, Gospel Oak, London
Measurement Location:	A2
Survey Period:	13/03/2020 - 17/03/2020



KEY: $L_{A90,15mins}$ $L_{Aeq,15mins}$ $L_{Amax,fast}$

Lion House, Oriental Road, Woking, Surrey GU22 2BR
Telephone: 01483 750508 Fax: 01483 750437

APPENDIX D: Calculation Sheets CS1 – CS4

APPENDIX C: Calculations

CALCULATION SHEET	CS1	RECEPTOR	R1
PROJECT	Spectrum House		

CON 01.01 - Mitsubishi FDC71VNX	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	35	39	41	48	46	44	40	35
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 49m)	34	34	34	34	34	34	34	34
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	5	5	5	5	5	5	5	5
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	-6	-2	0	7	5	3	-1	-6
Component Noise Level	10 dB(A)							

CON 20.01 - Daikin RXS35L2V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	43	45	46	42	39	32	27	19
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 45m)	33	33	33	33	33	33	33	33
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	20	20	20	20	20	20	20	20
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	-15	-13	-12	-16	-19	-26	-31	-39
Component Noise Level	-14 dB(A)							

CON 20.02 - Fujitsu AOYG24LALA	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	52	49	51	49	47	41	42	20
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 46m)	33	33	33	33	33	33	33	33
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	20	20	20	20	20	20	20	20
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	-6	-9	-7	-9	-11	-17	-16	-38
Component Noise Level	-7 dB(A)							

CON 20.03 - Fujitsu AOYG24LALA	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	52	49	51	49	47	41	42	20
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 48m)	34	34	34	34	34	34	34	34
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	20	20	20	20	20	20	20	20
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	-7	-10	-8	-10	-12	-18	-17	-39
Component Noise Level	-7 dB(A)							

CON 15.01 - Daikin AZAS100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 56m)	35	35	35	35	35	35	35	35
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	20	20	20	20	20	20	20	20
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	-2	-3	-7	-9	-13	-18	-23	-28
Component Noise Level	-7 dB(A)							

CON 21.01 - Fujitsu AOY30LMAW4	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	50	47	49	47	45	39	40	18
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 56m)	35	35	35	35	35	35	35	35
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	20	20	20	20	20	20	20	20
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	-10	-13	-11	-13	-15	-21	-20	-42
Component Noise Level	-10 dB(A)							

CALCULATION SHEET	CS1	RECEPTOR	R1
PROJECT	Spectrum House		

CON U.02 - Daikin RZASG100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 11.5m)	21	21	21	21	21	21	21	21
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	32	31	27	25	21	16	11	6
Component Noise Level	26 dB(A)							

CON U.03 - Daikin AZASG100M2V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	52	46	41	45	41	35	35	23
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 11.5m)	21	21	21	21	21	21	21	21
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	26	20	15	19	15	9	9	-3
Component Noise Level	20 dB(A)							

CON U.04 - Daikin AZAS71M2V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	52	46	41	45	41	35	35	23
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 12m)	22	22	22	22	22	22	22	22
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	25	19	14	18	14	8	8	-4
Component Noise Level	19 dB(A)							

CON 40.01 - Daikin AZAS100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 13m)	22	22	22	22	22	22	22	22
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	34	33	29	27	23	18	13	8
Component Noise Level	28 dB(A)							

CON 11.01 - Daikin RZASG71M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	51	46	41	45	41	35	35	23
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 14m)	23	23	23	23	23	23	23	23
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	26	21	16	20	16	10	10	-2
Component Noise Level	21 dB(A)							

CON 11.02 - Daikin RZASG71M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	51	46	41	45	41	35	35	23
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 15.5m)	24	24	24	24	24	24	24	24
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	25	20	15	19	15	9	9	-3
Component Noise Level	20 dB(A)							

CALCULATION SHEET	CS1	RECEPTOR	R1
PROJECT	Spectrum House		

CON 18.01 - Daikin RZASG71M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 17m)	25	25	25	25	25	25	25	25
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	31	30	26	24	20	15	10	5
Component Noise Level	26 dB(A)							

CON 42.01 - Daikin AZAS100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	52	52	50	47	41	37	28	26
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 19m)	26	26	26	26	26	26	26	26
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	26	26	24	21	15	11	2	0
Component Noise Level	22 dB(A)							

CON 35.02 - Daikin RZQG71L9V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	49	51	49	46	43	38	33	28
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 43m)	33	33	33	33	33	33	33	33
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	16	18	16	13	10	5	0	-5
Component Noise Level	15 dB(A)							

CON 35.01 - Daikin RZQG71L9V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	49	51	49	46	43	38	33	28
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 43m)	33	33	33	33	33	33	33	33
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	14	16	14	11	8	3	-2	-7
Component Noise Level	13 dB(A)							

CON PBAN.01 - Daikin RKS20D3VMB	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	46	45	43	39	38	30	23	18
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 65m)	36	36	36	36	36	36	36	36
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	-2	-3	-5	-9	-10	-18	-25	-30
Component Noise Level	-6 dB(A)							

CON PBAN.02 - Daikin RZQG125B9V3B1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	53	51	49	44	43	40	29
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 65m)	36	36	36	36	36	36	36	36
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	15	15	15	15	15	15	15	15
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	5	0	-2	-4	-9	-10	-13	-24
Component Noise Level	-2 dB(A)							

CALCULATION SHEET	CS1	RECEPTOR	R1
PROJECT	Spectrum House		

CON PBAN.03 - Daikin RZQG125B9V3B1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	53	51	49	44	43	40	29
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 66m)	36	36	36	36	36	36	36	36
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	20	20	20	20	20	20	20	20
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	0	-5	-7	-9	-14	-15	-18	-29
Component Noise Level	-7 dB(A)							

CON 10.01 - Daikin (Assumed)	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	53	51	49	44	43	40	29
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 45m)	33	33	33	33	33	33	33	33
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	20	15	13	11	6	5	2	-9
Component Noise Level	13 dB(A)							

CON 10.02 - Daikin (Assumed)	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	53	51	49	44	43	40	29
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 46m)	33	33	33	33	33	33	33	33
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	20	15	13	11	6	5	2	-9
Component Noise Level	13 dB(A)							

CON 45.01 - Daikin RZASG50A2V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	47	53	51	47	43	37	31	23
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 47m)	33	33	33	33	33	33	33	33
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	9	15	13	9	5	-1	-7	-15
Component Noise Level	10 dB(A)							

CON 43.01 - Daikin RXM50N2V1B9	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	49	50	47	44	42	38	31	22
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 46m)	33	33	33	33	33	33	33	33
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	14	15	12	9	7	3	-4	-13
Component Noise Level	11 dB(A)							

CON 48.01 - Daikin RXM50N2V1B9	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	46	52	48	47	45	38	33	27
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 48m)	34	34	34	34	34	34	34	34
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	12	18	14	13	11	4	-1	-7
Component Noise Level	15 dB(A)							

CALCULATION SHEET	CS1	RECEPTOR	R1
PROJECT	Spectrum House		

CON PBJL.P1 - Daikin RZASG100MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 48m)	34	34	34	34	34	34	34	34
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	24	23	19	17	13	8	3	-2
Component Noise Level	19 dB(A)							

CON 02.P1 - Daikin RZAG125MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	56	52	47	41	44	40	33	27
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 49m)	34	34	34	34	34	34	34	34
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	22	18	13	7	10	6	-1	-7
Component Noise Level	14 dB(A)							

CON 04.P1 - Panansonic Mini ECOi Outdoor Unit U-4LE2E5	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	56	52	53	47	42	39	34
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 47m)	33	33	33	33	33	33	33	33
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	15	18	14	15	9	4	1	-4
Component Noise Level	15 dB(A)							

CON 34.P1 - Daikin RZAG71NV	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	51	46	45	39	35	29	23
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 48m)	34	34	34	34	34	34	34	34
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	19	17	12	11	5	1	-5	-11
Component Noise Level	12 dB(A)							

CON 05.01 - Daikin RZASG140MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	59	53	52	50	46	41	35	29
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 58m)	35	35	35	35	35	35	35	35
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	24	18	17	15	11	6	0	-6
Component Noise Level	16 dB(A)							

CON 06.01 - Daikin AZAS100MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 55m)	35	35	35	35	35	35	35	35
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	23	22	18	16	12	7	2	-3
Component Noise Level	18 dB(A)							

CALCULATION SHEET	CS1	RECEPTOR	R1
PROJECT	Spectrum House		

CON 06.02 - Daikin AZAS100MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 56m)	35	35	35	35	35	35	35	35
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	23	22	18	16	12	7	2	-3
Component Noise Level	18 dB(A)							

CON 13.01 - Panasonic Mini ECOi Outdoor Unit U-6LE2E5	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level	55	58	54	55	49	44	41	36
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 56m)	35	35	35	35	35	35	35	35
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	15	18	14	15	9	4	1	-4
Component Noise Level	15 dB(A)							

CON 14.01 - Panasonic Mini ECOi Outdoor Unit U-6LE2E5	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level	55	58	54	55	49	44	41	36
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 54m)	35	35	35	35	35	35	35	35
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	15	18	14	15	9	4	1	-4
Component Noise Level	16 dB(A)							

CON 16.01 - Daikin RZASG125MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level	56	56	52	53	47	43	38	34
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 48m)	34	34	34	34	34	34	34	34
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	17	17	13	14	8	4	-1	-5
Component Noise Level	15 dB(A)							

CON 19.01 - Panasonic Mini ECOi Outdoor Unit U-6LE2E5	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level	55	58	54	55	49	44	41	36
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 54m)	35	35	35	35	35	35	35	35
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	15	18	14	15	9	4	1	-4
Component Noise Level	16 dB(A)							

CON 31.01 - Daikin AZAS100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 50)	34	34	34	34	34	34	34	34
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	19	18	14	12	8	3	-2	-7
Component Noise Level	14 dB(A)							

CALCULATION SHEET	CS1	RECEPTOR	R1
PROJECT	Spectrum House		

CON 31.02 - Daikin AZAS100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 51m)	34	34	34	34	34	34	34	34
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	19	18	14	12	8	3	-2	-7
Component Noise Level	13 dB(A)							

CON 31.03 - Daikin AZAS100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance =51m)	34	34	34	34	34	34	34	34
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	19	18	14	12	8	3	-2	-7
Component Noise Level	13 dB(A)							

CON 31.04 - Daikin AZAS125M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	56	56	52	53	47	42	39	34
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 52m)	34	34	34	34	34	34	34	34
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	17	17	13	14	8	3	0	-5
Component Noise Level	14 dB(A)							

CON 32.01 - Daikin RZASG71MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	52	7	45	40	35	29	23
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 52m)	34	34	34	34	34	34	34	34
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	19	18	-27	11	6	1	-5	-11
Component Noise Level	11 dB(A)							

CON 33.01 - Daikin RZASG71MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	52	47	45	40	35	29	23
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 53m)	34	34	34	34	34	34	34	34
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	19	18	13	11	6	1	-5	-11
Component Noise Level	12 dB(A)							

CON 36.01 - Daikin RZAG71NV	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	52	47	45	40	35	29	23
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 52m)	34	34	34	34	34	34	34	34
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	19	18	13	11	6	1	-5	-11
Component Noise Level	12 dB(A)							

CALCULATION SHEET	CS1	RECEPTOR	R1
PROJECT	Spectrum House		

CON 37.01 - Daikin RZAG100MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	52	49	45	44	45	34	28	23
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 54m)	35	35	35	35	35	35	35	35
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	17	14	10	9	10	-1	-7	-12
Component Noise Level	13 dB(A)							

CON 38.01 - Daikin RZAG100MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	52	49	45	44	45	34	28	23
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 53m)	34	34	34	34	34	34	34	34
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	18	15	11	10	11	0	-6	-11
Component Noise Level	13 dB(A)							

CON 44.01 - Daikin RZASG71MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	52	47	45	40	35	29	23
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 50m)	40	34	34	34	34	34	34	34
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	8	13	8	6	1	-4	-10	-16
Component Noise Level	7 dB(A)							

	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Octave Band Noise Levels	40	38	35	33	29	24	20	14
TOTAL NOISE LEVEL	35 dB(A)							

CALCULATION SHEET	CS2	RECEPTOR	R2
PROJECT	Spectrum House		

CON 01.01 - Mitsubishi FDC71VNX	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	35	39	41	48	46	44	40	35
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 63m)	36	36	36	36	36	36	36	36
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	-6	-2	0	7	5	3	-1	-6
Component Noise Level	10 dB(A)							

CON 20.01 - Daikin RXS35L2V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	43	45	46	42	39	32	27	19
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 27m)	29	29	29	29	29	29	29	29
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	12	14	15	11	8	1	-4	-12
Component Noise Level	13 dB(A)							

CON 20.02 - Fujitsu AOYG24LALA	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	52	49	51	49	47	41	42	20
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance =25m)	28	28	28	28	28	28	28	28
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	22	19	21	19	17	11	12	-10
Component Noise Level	22 dB(A)							

CON 20.03 - Fujitsu AOYG24LALA	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	52	49	51	49	47	41	42	20
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 17m)	25	25	25	25	25	25	25	25
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	25	22	24	22	20	14	15	-7
Component Noise Level	25 dB(A)							

CON 15.01 - Daikin AZAS100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 11m)	21	21	21	21	21	21	21	21
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	35	34	30	28	24	19	14	9
Component Noise Level	30 dB(A)							

CON 21.01 - Fujitsu AOY30LMAW4	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	50	47	49	47	45	39	40	18
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 11m)	21	21	21	21	21	21	21	21
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	27	24	26	24	22	16	17	-5
Component Noise Level	27 dB(A)							

CALCULATION SHEET	CS2	RECEPTOR	R2
PROJECT	Spectrum House		

CON U.02 - Daikin RZASG100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 57m)	35	35	35	35	35	35	35	35
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	21	20	16	14	10	5	0	-5
Component Noise Level	15 dB(A)							

CON U.03 - Daikin AZASG100M2V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	52	46	41	45	41	35	35	23
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 56m)	35	35	35	35	35	35	35	35
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	15	9	4	8	4	-2	-2	-14
Component Noise Level	9 dB(A)							

CON U.04 - Daikin AZAS71M2V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	52	46	41	45	41	35	35	23
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 55m)	35	35	35	35	35	35	35	35
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	15	9	4	8	4	-2	-2	-14
Component Noise Level	9 dB(A)							

CON 40.01 - Daikin AZAS100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 53m)	34	34	34	34	34	34	34	34
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	19	18	14	12	8	3	-2	-7
Component Noise Level	13 dB(A)							

CON 11.01 - Daikin RZASG71M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	51	46	41	45	41	35	35	23
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 52m)	34	34	34	34	34	34	34	34
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	12	7	2	6	2	-4	-4	-16
Component Noise Level	7 dB(A)							

CON 11.02 - Daikin RZASG71M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	51	46	41	45	41	35	35	23
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 51m)	34	34	34	34	34	34	34	34
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	12	7	2	6	2	-4	-4	-16
Component Noise Level	7 dB(A)							

CALCULATION SHEET	CS2	RECEPTOR	R2
PROJECT	Spectrum House		

CON 18.01 - Daikin RZASG71M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 51m)	34	34	34	34	34	34	34	34
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	19	18	14	12	8	3	-2	-7
Component Noise Level	13 dB(A)							

CON 42.01 - Daikin AZAS100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	52	52	50	47	41	37	28	26
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 52m)	34	34	34	34	34	34	34	34
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	5	5	5	5	5	5	5	5
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	11	11	9	6	0	-4	-13	-15
Component Noise Level	7 dB(A)							

CON 35.02 - Daikin RZQG71L9V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	49	51	49	46	43	38	33	28
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 61m)	36	36	36	36	36	36	36	36
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	1	3	1	-2	-5	-10	-15	-20
Component Noise Level	0 dB(A)							

CON 35.01 - Daikin RZQG71L9V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	49	51	49	46	43	38	33	28
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 61m)	36	36	36	36	36	36	36	36
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	20	20	20	20	20	20	20	20
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	-12	-10	-12	-15	-18	-23	-28	-33
Component Noise Level	-13 dB(A)							

CON PBAN.01 - Daikin RKS20D3VMB	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	46	45	43	39	38	30	23	18
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 13m)	22	22	22	22	22	22	22	22
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	15	15	15	15	15	15	15	15
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	7	6	4	0	-1	-9	-16	-21
Component Noise Level	3 dB(A)							

CON PBAN.02 - Daikin RZQG125B9V3B1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	53	51	49	44	43	40	29
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 15m)	24	24	24	24	24	24	24	24
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	15	15	15	15	15	15	15	15
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	17	12	10	8	3	2	-1	-12
Component Noise Level	10 dB(A)							

CALCULATION SHEET	CS2	RECEPTOR	R2
PROJECT	Spectrum House		

CON PBAN.03 - Daikin RZQG125B9V3B1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	53	51	49	44	43	40	29
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 15m)	24	24	24	24	24	24	24	24
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	15	15	15	15	15	15	15	15
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	17	12	10	8	3	2	-1	-12
Component Noise Level	10 dB(A)							

CON 10.01 - Daikin (Assumed)	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	53	51	49	44	43	40	29
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 32m)	30	30	30	30	30	30	30	30
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	16	11	9	7	2	1	-2	-13
Component Noise Level	9 dB(A)							

CON 10.02 - Daikin (Assumed)	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	53	51	49	44	43	40	29
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 32m)	30	30	30	30	30	30	30	30
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	16	11	9	7	2	1	-2	-13
Component Noise Level	9 dB(A)							

CON 45.01 - Daikin RZASG50A2V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	47	53	51	47	43	37	31	23
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 26m)	28	28	28	28	28	28	28	28
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	7	13	11	7	3	-3	-9	-17
Component Noise Level	8 dB(A)							

CON 43.01 - Daikin RXM50N2V1B9	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	49	50	47	44	42	38	31	22
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 32m)	30	30	30	30	30	30	30	30
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	4	5	2	-1	-3	-7	-14	-23
Component Noise Level	2 dB(A)							

CON 48.01 - Daikin RXM50N2V1B9	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	46	52	48	47	45	38	33	27
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 32m)	30	30	30	30	30	30	30	30
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	4	10	6	5	3	-4	-9	-15
Component Noise Level	7 dB(A)							

CALCULATION SHEET	CS2	RECEPTOR	R2
PROJECT	Spectrum House		

CON PBJL.P1 - Daikin RZASG100MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 29m)	29	29	29	29	29	29	29	29
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	17	16	12	10	6	1	-4	-9
Component Noise Level	11 dB(A)							

CON 02.P1 - Daikin RZAG125MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	56	52	47	41	44	40	33	27
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 56m)	35	35	35	35	35	35	35	35
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	20	20	20	20	20	20	20	20
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	-4	-8	-13	-19	-16	-20	-27	-33
Component Noise Level	-12 dB(A)							

CON 04.P1 - Panansonic Mini ECOi Outdoor Unit U-4LE2E5	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	56	52	53	47	42	39	34
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 30m)	30	30	30	30	30	30	30	30
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	11	14	10	11	5	0	-3	-8
Component Noise Level	12 dB(A)							

CON 34.P1 - Daikin RZAG71NV	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	51	46	45	39	35	29	23
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 35m)	31	31	31	31	31	31	31	31
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	10	8	3	2	-4	-8	-14	-20
Component Noise Level	3 dB(A)							

CON 05.01 - Daikin RZASG140MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	59	53	52	50	46	41	35	29
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 19m)	26	26	26	26	26	26	26	26
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	21	15	14	12	8	3	-3	-9
Component Noise Level	14 dB(A)							

CON 06.01 - Daikin AZAS100MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 21m)	26	26	26	26	26	26	26	26
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	20	19	15	13	9	4	-1	-6
Component Noise Level	14 dB(A)							

CALCULATION SHEET	CS2	RECEPTOR	R2
PROJECT	Spectrum House		

CON 06.02 - Daikin AZAS100MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 20m)	26	26	26	26	26	26	26	26
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	20	19	15	13	9	4	-1	-6
Component Noise Level	15 dB(A)							

CON 13.01 - Panasonic Mini ECOi Outdoor Unit U-6LE2E5	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level	55	58	54	55	49	44	41	36
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 18m)	25	25	25	25	25	25	25	25
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	18	21	17	18	12	7	4	-1
Component Noise Level	18 dB(A)							

CON 14.01 - Panasonic Mini ECOi Outdoor Unit U-6LE2E5	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level	55	58	54	55	49	44	41	36
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 19m)	26	26	26	26	26	26	26	26
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	17	20	16	17	11	6	3	-2
Component Noise Level	18 dB(A)							

CON 16.01 - Daikin RZASG125MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level	56	56	52	53	47	43	38	34
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 29m)	29	29	29	29	29	29	29	29
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	15	15	11	12	6	2	-3	-7
Component Noise Level	12 dB(A)							

CON 19.01 - Panasonic Mini ECOi Outdoor Unit U-6LE2E5	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level	55	58	54	55	49	44	41	36
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 20m)	26	26	26	26	26	26	26	26
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	17	20	16	17	11	6	3	-2
Component Noise Level	17 dB(A)							

CON 31.01 - Daikin AZAS100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 27m)	29	29	29	29	29	29	29	29
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	17	16	12	10	6	1	-4	-9
Component Noise Level	12 dB(A)							

CALCULATION SHEET	CS2	RECEPTOR	R2
PROJECT	Spectrum House		

CON 31.02 - Daikin AZAS100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 26m)	28	28	28	28	28	28	28	28
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	18	17	13	11	7	2	-3	-8
Component Noise Level	12 dB(A)							

CON 31.03 - Daikin AZAS100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance =25m)	28	28	28	28	28	28	28	28
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	18	17	13	11	7	2	-3	-8
Component Noise Level	13 dB(A)							

CON 31.04 - Daikin AZAS125M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	56	56	52	53	47	42	39	34
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 24m)	28	28	28	28	28	28	28	28
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	16	16	12	13	7	2	-1	-6
Component Noise Level	14 dB(A)							

CON 32.01 - Daikin RZASG71MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	52	47	45	40	35	29	23
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 30m)	30	30	30	30	30	30	30	30
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	11	10	5	3	-2	-7	-13	-19
Component Noise Level	5 dB(A)							

CON 33.01 - Daikin RZASG71MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	52	47	45	40	35	29	23
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 29m)	29	29	29	29	29	29	29	29
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	12	11	6	4	-1	-6	-12	-18
Component Noise Level	5 dB(A)							

CON 36.01 - Daikin RZAG71NV	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	52	47	45	40	35	29	23
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 31m)	30	30	30	30	30	30	30	30
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	11	10	5	3	-2	-7	-13	-19
Component Noise Level	4 dB(A)							

CALCULATION SHEET	CS2	RECEPTOR	R2
PROJECT	Spectrum House		

CON 37.01 - Daikin RZAG100MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	52	49	45	44	45	34	28	23
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 28m)	29	29	29	29	29	29	29	29
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	11	8	4	3	4	-7	-13	-18
Component Noise Level	6 dB(A)							

CON 38.01 - Daikin RZAG100MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	52	49	45	44	45	34	28	23
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 29m)	29	29	29	29	29	29	29	29
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	11	8	4	3	4	-7	-13	-18
Component Noise Level	6 dB(A)							

CON 44.01 - Daikin RZASG71MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	52	47	45	40	35	29	23
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 29m)	29	29	29	29	29	29	29	29
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	12	11	6	4	-1	-6	-12	-18
Component Noise Level	5 dB(A)							

	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Octave Band Noise Levels	38	36	34	32	29	23	22	12
TOTAL NOISE LEVEL	34 dB(A)							

CALCULATION SHEET	CS3	RECEPTOR	R3
PROJECT	Spectrum House		

CON 01.01 - Mitsubishi FDC71VNX	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	35	39	41	48	46	44	40	35
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 40m)	32	32	32	32	32	32	32	32
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	15	15	15	15	15	15	15	15
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	-14	-10	-8	-1	-3	-5	-9	-14
Component Noise Level	2 dB(A)							

CON 20.01 - Daikin RXS35L2V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	43	45	46	42	39	32	27	19
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 72m)	37	37	37	37	37	37	37	37
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	20	20	20	20	20	20	20	20
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	-19	-17	-16	-20	-23	-30	-35	-43
Component Noise Level	-18 dB(A)							

CON 20.02 - Fujitsu AOYG24LALA	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	52	49	51	49	47	41	42	20
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 70m)	37	37	37	37	37	37	37	37
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	20	20	20	20	20	20	20	20
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	-10	-13	-11	-13	-15	-21	-20	-42
Component Noise Level	-11 dB(A)							

CON 20.03 - Fujitsu AOYG24LALA	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	52	49	51	49	47	41	42	20
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 64m)	36	36	36	36	36	36	36	36
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	20	20	20	20	20	20	20	20
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	-9	-12	-10	-12	-14	-20	-19	-41
Component Noise Level	-10 dB(A)							

CON 15.01 - Daikin AZAS100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 56m)	35	35	35	35	35	35	35	35
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	20	20	20	20	20	20	20	20
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	-2	-3	-7	-9	-13	-18	-23	-28
Component Noise Level	-7 dB(A)							

CON 21.01 - Fujitsu AOY30LMAW4	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	50	47	49	47	45	39	40	18
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 56m)	35	35	35	35	35	35	35	35
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	20	20	20	20	20	20	20	20
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	-10	-13	-11	-13	-15	-21	-20	-42
Component Noise Level	-10 dB(A)							

CALCULATION SHEET	CS3	RECEPTOR	R3
PROJECT	Spectrum House		

CON U.02 - Daikin RZASG100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 62m)	36	36	36	36	36	36	36	36
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	15	15	15	15	15	15	15	15
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	7	6	2	0	-4	-9	-14	-19
Component Noise Level	2 dB(A)							

CON U.03 - Daikin AZASG100M2V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	52	46	41	45	41	35	35	23
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 62m)	36	36	36	36	36	36	36	36
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	15	15	15	15	15	15	15	15
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	1	-5	-10	-6	-10	-16	-16	-28
Component Noise Level	-5 dB(A)							

CON U.04 - Daikin AZAS71M2V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	52	46	41	45	41	35	35	23
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 62m)	36	36	36	36	36	36	36	36
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	15	15	15	15	15	15	15	15
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	1	-5	-10	-6	-10	-16	-16	-28
Component Noise Level	-5 dB(A)							

CON 40.01 - Daikin AZAS100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 62m)	36	36	36	36	36	36	36	36
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	15	15	15	15	15	15	15	15
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	5	4	0	-2	-6	-11	-16	-21
Component Noise Level	0 dB(A)							

CON 11.01 - Daikin RZASG71M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	51	46	41	45	41	35	35	23
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 61m)	36	36	36	36	36	36	36	36
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	15	15	15	15	15	15	15	15
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	-2	-7	-12	-8	-12	-18	-18	-30
Component Noise Level	-7 dB(A)							

CON 11.02 - Daikin RZASG71M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	51	46	41	45	41	35	35	23
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 59m)	35	35	35	35	35	35	35	35
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	15	15	15	15	15	15	15	15
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	-1	-6	-11	-7	-11	-17	-17	-29
Component Noise Level	-6 dB(A)							

CALCULATION SHEET	CS3	RECEPTOR	R3
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CON 18.01 - Daikin RZASG71M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 54m)	35	35	35	35	35	35	35	35
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	15	15	15	15	15	15	15	15
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	3	2	-2	-4	-8	-13	-18	-23
Component Noise Level	-2 dB(A)							

CON 42.01 - Daikin AZAS100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	52	52	50	47	41	37	28	26
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 55m)	35	35	35	35	35	35	35	35
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	15	15	15	15	15	15	15	15
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	-3	-3	-5	-8	-14	-18	-27	-29
Component Noise Level	-7 dB(A)							

CON 35.02 - Daikin RZQG71L9V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	49	51	49	46	43	38	33	28
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 35m)	31	31	31	31	31	31	31	31
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	3	5	3	0	-3	-8	-13	-18
Component Noise Level	2 dB(A)							

CON 35.01 - Daikin RZQG71L9V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	49	51	49	46	43	38	33	28
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 32m)	30	30	30	30	30	30	30	30
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	5	5	5	5	5	5	5	5
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	12	14	12	9	6	1	-4	-9
Component Noise Level	11 dB(A)							

CON PBAN.01 - Daikin RKS20D3VMB	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	46	45	43	39	38	30	23	18
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 45m)	33	33	33	33	33	33	33	33
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	-2	-3	-5	-9	-10	-18	-25	-30
Component Noise Level	-6 dB(A)							

CON PBAN.02 - Daikin RZQG125B9V3B1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	53	51	49	44	43	40	29
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 44m)	33	33	33	33	33	33	33	33
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	10	5	3	1	-4	-5	-8	-19
Component Noise Level	3 dB(A)							

CALCULATION SHEET	CS3	RECEPTOR	R3
PROJECT	Spectrum House		

CON PBAN.03 - Daikin RZQG125B9V3B1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	53	51	49	44	43	40	29
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 44m)	33	33	33	33	33	33	33	33
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	10	5	3	1	-4	-5	-8	-19
Component Noise Level	3 dB(A)							

CON 10.01 - Daikin (Assumed)	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	53	51	49	44	43	40	29
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 33m)	30	30	30	30	30	30	30	30
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	18	13	11	9	4	3	0	-11
Component Noise Level	11 dB(A)							

CON 10.02 - Daikin (Assumed)	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	53	51	49	44	43	40	29
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 33m)	30	30	30	30	30	30	30	30
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	18	13	11	9	4	3	0	-11
Component Noise Level	11 dB(A)							

CON 45.01 - Daikin RZASG50A2V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	47	53	51	47	43	37	31	23
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 33m)	30	30	30	30	30	30	30	30
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	7	13	11	7	3	-3	-9	-17
Component Noise Level	8 dB(A)							

CON 43.01 - Daikin RXM50N2V1B9	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	49	50	47	44	42	38	31	22
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 31m)	30	30	30	30	30	30	30	30
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	7	8	5	2	0	-4	-11	-20
Component Noise Level	5 dB(A)							

CON 48.01 - Daikin RXM50N2V1B9	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	46	52	48	47	45	38	33	27
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 30m)	30	30	30	30	30	30	30	30
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	1	7	3	2	0	-7	-12	-18
Component Noise Level	4 dB(A)							

CALCULATION SHEET	CS3	RECEPTOR	R3
PROJECT	Spectrum House		

CON PBJL.P1 - Daikin RZASG100MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 30m)	30	30	30	30	30	30	30	30
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	13	12	8	6	2	-3	-8	-13
Component Noise Level	8 dB(A)							

CON 02.P1 - Daikin RZAG125MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	56	52	47	41	44	40	33	27
Directivity Correction, D_c	2	2	2	2	2	2	2	2
Geometric Divergence, A_{div} (Distance = 38m)	32	32	32	32	32	32	32	32
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	15	15	15	15	15	15	15	15
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	7	3	-2	-8	-5	-9	-16	-22
Component Noise Level	-1 dB(A)							

CON 04.P1 - Panansonic Mini ECOi Outdoor Unit U-4LE2E5	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	56	52	53	47	42	39	34
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 33m)	30	30	30	30	30	30	30	30
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	13	16	12	13	7	2	-1	-6
Component Noise Level	13 dB(A)							

CON 34.P1 - Daikin RZAG71NV	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	51	46	45	39	35	29	23
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 30m)	30	30	30	30	30	30	30	30
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	8	6	1	0	-6	-10	-16	-22
Component Noise Level	1 dB(A)							

CON 05.01 - Daikin RZASG140MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	59	53	52	50	46	41	35	29
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 40m)	32	32	32	32	32	32	32	32
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	12	6	5	3	-1	-6	-12	-18
Component Noise Level	4 dB(A)							

CON 06.01 - Daikin AZAS100MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 36m)	31	31	31	31	31	31	31	31
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	12	11	7	5	1	-4	-9	-14
Component Noise Level	6 dB(A)							

CALCULATION SHEET	CS3	RECEPTOR	R3
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CON 06.02 - Daikin AZAS100MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 38m)	32	32	32	32	32	32	32	32
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	11	10	6	4	0	-5	-10	-15
Component Noise Level	6 dB(A)							

CON 13.01 - Panasonic Mini ECOi Outdoor Unit U-6LE2E5	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level	55	58	54	55	49	44	41	36
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 42m)	32	32	32	32	32	32	32	32
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	13	16	12	13	7	2	-1	-6
Component Noise Level	13 dB(A)							

CON 14.01 - Panasonic Mini ECOi Outdoor Unit U-6LE2E5	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level	55	58	54	55	49	44	41	36
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 41m)	32	32	32	32	32	32	32	32
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	13	16	12	13	7	2	-1	-6
Component Noise Level	13 dB(A)							

CON 16.01 - Daikin RZASG125MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level	56	56	52	53	47	43	38	34
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 35m)	31	31	31	31	31	31	31	31
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	15	15	11	12	6	2	-3	-7
Component Noise Level	12 dB(A)							

CON 19.01 - Panasonic Mini ECOi Outdoor Unit U-6LE2E5	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level	55	58	54	55	49	44	41	36
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 40m)	32	32	32	32	32	32	32	32
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	13	16	12	13	7	2	-1	-6
Component Noise Level	13 dB(A)							

CON 31.01 - Daikin AZAS100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 36m)	31	31	31	31	31	31	31	31
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	17	16	12	10	6	1	-4	-9
Component Noise Level	11 dB(A)							

CALCULATION SHEET	CS3	RECEPTOR	R3
PROJECT	Spectrum House		

CON 31.02 - Daikin AZAS100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 36m)	31	31	31	31	31	31	31	31
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	17	16	12	10	6	1	-4	-9
Component Noise Level	11 dB(A)							

CON 31.03 - Daikin AZAS100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 37m)	31	31	31	31	31	31	31	31
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	17	16	12	10	6	1	-4	-9
Component Noise Level	11 dB(A)							

CON 31.04 - Daikin AZAS125M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	56	56	52	53	47	42	39	34
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 38m)	32	32	32	32	32	32	32	32
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	14	14	10	11	5	0	-3	-8
Component Noise Level	12 dB(A)							

CON 32.01 - Daikin RZASG71MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	52	4	45	40	35	29	23
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 33m)	30	30	30	30	30	30	30	30
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	8	7	-41	0	-5	-10	-16	-22
Component Noise Level	0 dB(A)							

CON 33.01 - Daikin RZASG71MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	52	47	45	40	35	29	23
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 34m)	31	31	31	31	31	31	31	31
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	7	6	1	-1	-6	-11	-17	-23
Component Noise Level	1 dB(A)							

CON 36.01 - Daikin RZAG71NV	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	52	47	45	40	35	29	23
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 32m)	30	30	30	30	30	30	30	30
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	8	7	2	0	-5	-10	-16	-22
Component Noise Level	1 dB(A)							

CALCULATION SHEET	CS3	RECEPTOR	R3
PROJECT	Spectrum House		

CON 37.01 - Daikin RZAG100MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	52	49	45	44	45	34	28	23
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 35m)	31	31	31	31	31	31	31	31
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	6	3	-1	-2	-1	-12	-18	-23
Component Noise Level	1 dB(A)							

CON 38.01 - Daikin RZAG100MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	52	49	45	44	45	34	28	23
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 34m)	31	31	31	31	31	31	31	12
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	6	3	-1	-2	-1	-12	-18	-4
Component Noise Level	3 dB(A)							

CON 44.01 - Daikin RZASG71MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	52	47	45	40	35	29	23
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 35m)	31	31	31	31	31	31	31	31
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	10	10	10	10	10	10	10	10
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	12	11	6	4	-1	-6	-12	-18
Component Noise Level	5 dB(A)							

	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Octave Band Noise Levels	28	27	24	23	18	13	10	4
TOTAL NOISE LEVEL	24 dB(A)							

CALCULATION SHEET	CS4	RECEPTOR	R4 (Offices)
PROJECT	Spectrum House		

CON 10.01 - Daikin (Assumed)	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	53	51	49	44	43	40	29
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 11.1m)	21	21	21	21	21	21	21	21
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	37	32	30	28	23	22	19	8
Component Noise Level	30 dB(A)							

CON 10.02 - Daikin (Assumed)	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	53	51	49	44	43	40	29
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 9.8m)	20	20	20	20	20	20	20	20
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	38	33	31	29	24	23	20	9
Component Noise Level	31 dB(A)							

CON 45.01 - Daikin RZASG50A2V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	47	53	51	47	43	37	31	23
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 7.5m)	18	18	18	18	18	18	18	18
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	29	35	33	29	25	19	13	5
Component Noise Level	31 dB(A)							

CON 43.01 - Daikin RXM50N2V1B9	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	49	50	47	44	42	38	31	22
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 11.8m)	21	21	21	21	21	21	21	21
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	28	29	26	23	21	17	10	1
Component Noise Level	25 dB(A)							

CON 48.01 - Daikin RXM50N2V1B9	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	46	52	48	47	45	38	33	27
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 10.2m)	20	20	20	20	20	20	20	20
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	26	32	28	27	25	18	13	7
Component Noise Level	29 dB(A)							

CON PBJL.P1 - Daikin RZASG100MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 7.4m)	17	17	17	17	17	17	17	17
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	41	40	36	34	30	25	20	15
Component Noise Level	35 dB(A)							

CALCULATION SHEET	CS4	RECEPTOR	R4 (Offices)
PROJECT	Spectrum House		

CON 04.P1 - Panansonic Mini ECOi Outdoor Unit U-4LE2E5	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	56	52	53	47	42	39	34
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 8.6m)	19	19	19	19	19	19	19	19
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	34	37	33	34	28	23	20	15
Component Noise Level	35 dB(A)							

CON 34.P1 - Daikin RZAG71NV	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	51	46	45	39	35	29	23
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 11.8m)	21	21	21	21	21	21	21	21
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	32	30	25	24	18	14	8	2
Component Noise Level	24 dB(A)							

CON 05.01 - Daikin RZASG140MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	59	53	52	50	46	41	35	29
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 10.5m)	20	20	20	20	20	20	20	20
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	39	33	32	30	26	21	15	9
Component Noise Level	31 dB(A)							

CON 06.01 - Daikin AZAS100MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 7.7m)	18	18	18	18	18	18	18	18
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	40	39	35	33	29	24	19	14
Component Noise Level	35 dB(A)							

CON 06.02 - Daikin AZAS100MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 9.1m)	19	19	19	19	19	19	19	19
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	39	38	34	32	28	23	18	13
Component Noise Level	33 dB(A)							

CON 13.01 - Panasonic Mini ECOi Outdoor Unit U-6LE2E5	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level	55	58	54	55	49	44	41	36
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 11.3m)	21	21	21	21	21	21	21	21
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	34	37	33	34	28	23	20	15
Component Noise Level	34 dB(A)							

CALCULATION SHEET	CS4	RECEPTOR	R4 (Offices)
PROJECT	Spectrum House		

CON 14.01 - Panasonic Mini ECOi Outdoor Unit U-6LE2E5	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level	55	58	54	55	49	44	41	36
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 9.9m)	20	20	20	20	20	20	20	20
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	35	38	34	35	29	24	21	16
Component Noise Level	35 dB(A)							

CON 16.01 - Daikin RZASG125MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level	56	56	52	53	47	43	38	34
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 6.6m)	16	16	16	16	16	16	16	16
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	40	40	36	37	31	27	22	18
Component Noise Level	37 dB(A)							

CON 19.01 - Panasonic Mini ECOi Outdoor Unit U-6LE2E5	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level	55	58	54	55	49	44	41	36
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 8.8m)	19	19	19	19	19	19	19	19
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	36	39	35	36	30	25	22	17
Component Noise Level	36 dB(A)							

CON 31.01 - Daikin AZAS100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 5.5m)	15	15	15	15	15	15	15	15
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	43	42	38	36	32	27	22	17
Component Noise Level	38 dB(A)							

CON 31.02 - Daikin AZAS100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 5.5m)	15	15	15	15	15	15	15	15
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	43	42	38	36	32	27	22	17
Component Noise Level	38 dB(A)							

CON 31.03 - Daikin AZAS100M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	58	57	53	51	47	42	37	32
Directivity Correction, D_c	5	5	5	5	5	5	5	5
Geometric Divergence, A_{div} (Distance = 6.0m)	16	16	16	16	16	16	16	16
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	37	36	32	30	26	21	16	11
Component Noise Level	32 dB(A)							

CALCULATION SHEET	CS4	RECEPTOR	R4 (Offices)
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CON 31.04 - Daikin AZAS125M7V1B	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	56	56	52	53	47	42	39	34
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 6.7m)	17	17	17	17	17	17	17	17
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	39	39	35	36	30	25	22	17
Component Noise Level	37 dB(A)							

CON 32.01 - Daikin RZASG71MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	52	7	45	40	35	29	23
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 4.1m)	12	12	12	12	12	12	12	12
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	41	40	-5	33	28	23	17	11
Component Noise Level	33 dB(A)							

CON 33.01 - Daikin RZASG71MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	52	47	45	40	35	29	23
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 3.5m)	11	11	11	11	11	11	11	11
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	42	41	36	34	29	24	18	12
Component Noise Level	35 dB(A)							

CON 36.01 - Daikin RZAG71NV	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	52	47	45	40	35	29	23
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 5.0m)	14	14	14	14	14	14	14	14
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	39	38	33	31	26	21	15	9
Component Noise Level	32 dB(A)							

CON 37.01 - Daikin RZAG100MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	52	49	45	44	45	34	28	23
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 4.2m)	12	12	12	12	12	12	12	12
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	40	37	33	32	33	22	16	11
Component Noise Level	35 dB(A)							

CON 38.01 - Daikin RZAG100MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	52	49	45	44	45	34	28	23
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 3.6m)	11	11	11	11	11	11	11	11
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	41	38	34	33	34	23	17	12
Component Noise Level	36 dB(A)							

CALCULATION SHEET	CS4	RECEPTOR	R4 (Offices)
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CON 44.01 - Daikin RZASG71MV1	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Source Noise Level, Lp @ 1m	53	52	47	45	40	35	29	23
Directivity Correction, D_c	0	0	0	0	0	0	0	0
Geometric Divergence, A_{div} (Distance = 5.9m)	15	15	15	15	15	15	15	15
Atmospheric Absorption, A_{atm}	0	0	0	0	0	0	0	0
Ground Attenuation, A_{gr}	0	0	0	0	0	0	0	0
Barrier Attenuation, A_{bar}	0	0	0	0	0	0	0	0
Miscellaneous Attenuation, A_{misc}	0	0	0	0	0	0	0	0
Reflections	0	0	0	0	0	0	0	0
Lp Condenser Unit	38	37	32	30	25	20	14	8
Component Noise Level	31 dB(A)							

	Octave Band Sound Level							
	63Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz
Octave Band Noise Levels	53	52	48	47	43	37	33	28
TOTAL NOISE LEVEL	48 dB(A)							