Proposed Condenser Plant

9 Lincoln's Inn Fields, London WC2A 3BP

soundsolution CONSULTANTS

Noise Impact Assessment

TECHNICAL REPORT

34514-R1

Proposed Condenser Plant

Noise Impact Assessment

Prepared for: Grain and Feed Trade Association, 9 Lincoln's Inn Fields London WC2A 3BP

Site location: 9 Lincoln's Inn Fields, London WC2A 3BP

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soundsolution CONSULTANTS
Cornwall Suite, Dencora Business Centre, Whitehouse Road, Ipswich IP1 5LT
Tel: 01473 464 727 | info@sscmail.co.uk | www.soundsolutionconsultants.co.uk
VAT No. 844 9267 90 | Registration No. 5651834
Registered Address: 2 Lemons Hill, Tattingstone, Ipswich, Suffolk IP9 2NH

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J. Blakeley BSc. (Hons) MIOA Senior Acoustic Consultant		S. Skingle BSc. (Hons) MAES MIOA Principal Acoustic Consultant	
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1 INTRODUCTION

1.1 The development under consideration is located at 9 Lincoln's Inn Fields, London WC2A 3BP (hereinafter, “The Site”). Appendix B provides a site plan highlighting the development site boundary in red.

1.2 The client proposes to install 2 No. condenser units at the rear of the Site on the second-floor flat roof as indicated in the scheme design drawings shown in Appendix C.

1.3 Sound Solution Consultants Ltd (SSC) has been commissioned to undertake a noise impact assessment to determine the level of impact from proposed condenser plant with regard to the nearest noise sensitive receptors (NNSR’s), identified as follows

1.4 This document has been prepared to accompany a planning application to the London Borough of Camden for the proposed scheme. The proposals will be assessed with reference to The Camden Local Plan 2017 and BS 4142.

1.5 The Site forms part of the terrace of commercial buildings on Lincoln’s Inn Fields and is bounded at the rear by Whetstone Park. The immediate area about the development site is of commercial use.

1.6 It is evident that the rear of the development site is dominated by existing building services plant noise associated with surrounding buildings and to a much lesser extent road traffic noise. Appendix C shows photographs illustrating views of the development site during times of site assessment.

1.7 A Glossary of Acoustic Terms can be found in Appendix A that may assist with the terminology used within this report.

2 NOISE CRITERIA

BS 4142:2014+A1:2019 METHODS FOR RATING AND ASSESSING INDUSTRIAL AND COMMERCIAL SOUND

2.1 The British Standard BS 4142:2014+A1:2019 "Methods for Rating and Assessing Industrial and Commercial Sound" applies to the determination of rating levels for industrial/commercial sources of sound emanating from such premises (such as those from industrial and manufacturing processes, fixed installations of mechanical and electrical plant and equipment, mobile plant and vehicles associated with the commercial premises including loading/unloading of goods – does not include vehicles on public roads or railways) as well as ambient, background, residual and specific sound levels.

2.2 The methods described in this British Standard are used for the purposes of assessing existing, proposed, new, modified or additional sources of sound of an industrial/commercial nature where outdoor sound levels are used to assess the likely effects of sound on people who might be inside or outside premises used for residential purposes. The standard is also used for the purposes of investigating complaints however, the determination of noise amounting to a nuisance is beyond the scope of the Standard.

2.3 Certain acoustic features can increase the significance of impact that might be expected from a comparison of the specific sound level to the background sound level where these features are likely to affect perception and response. Where such features are present at the assessment location, a character correction (or penalty) to the specific sound level is made to obtain the rating level. This can be approached from subjective, objective and reference methods.

- Tonality: A correction of 0dB to +6dB for sound ranging from not tonal to prominently tonal.
- Impulsivity: A correction of up to +9dB can be applied for sound that is impulsive.
- Intermittency: A penalty of +3dB can be applied if on/off conditions are readily distinctive within the reference time interval over the period of the greatest amount of on-time.
- Other characteristics: A penalty of +3dB can be applied in the absence of all other defined characteristics, where the specific sound contains a distinctive feature in the residual acoustic environment.

2.4 Character corrections are normally added arithmetically where more than one feature is present, however, if any single feature is dominant to the exclusion of others, then it may be appropriate to reduce the correction or apply a zero correction for the minor characteristics. The rating sound level is equal to the specific sound level if there are no acoustic features present or expected to be present.

2.5 The significance of sound depends upon both the margin by which the rating level exceeds the background sound level and the context in which the sound occurs. An initial estimate of the impact of the specific sound is made by subtracting the measured background sound level from the rating level. The context of the development is important in assessing the impact.

- Typically, the greater this difference, the greater the magnitude of the impact.
- 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 significant adverse impact. Where the rating level does exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

2.6 The scope of the Standard recognises that human response to sound can be subjective and is affected by many factors, both acoustic and non-acoustic. The significance of its impact can depend on various factors such as the exceedance to the background level, its absolute level, time of day and change in environment, as well as local attitudes to the source of sound and character of the neighbourhood.

CAMDEN LOCAL POLICY

2.7 Appendix 3 of The Camden Local Plan 2017 sets out noise criteria with regards to industrial and commercial noise sources:

"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)."

3 ENVIRONMENTAL SURVEY SUMMARY

3.1 An environmental survey was undertaken from Thursday 25th June to Friday 26th June 2020 to quantify sound levels at the development site in accordance with BS 4142. Reasonable measurement conditions were reported generally throughout the noise survey, such that the weather is not expected to have significantly or adversely influenced the levels measured.

3.2 Noise measurements were taken at the location detailed in Appendix C and highlighted on the Site Plan in Appendix B. The data at this location is provided in graphical form in Appendix C, along with a detailed survey record that includes weather conditions and observation of the noise climate about The Site.

BACKGROUND & RESIDUAL SOUND LEVELS

3.3 In line with Section 8.1.4 of BS 4142, the monitoring duration should reflect the range of background noise levels for the period assessed. In practice, there is no single level for background sound as this is a fluctuating parameter, although a representative value of the period should be used. Note this is not either the lowest or mean average value of $L_{A90,\ 15min}$.

From the commentary of BS 4142, it is recognised that in using the background sound level in the method for rating and assessing industrial and commercial sound, the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods. A representative level should account for the range of background sound levels and not automatically assumed to be the lowest or most commonly occurring value.

3.4 The background sound level data in this section are summarised from raw data in Appendix C and has been established in accordance with the assessment methodology of BS 4142. The snapshots of environmental sound are taken to be representative of the underlying noise climate without the proposed plant in operation and are used to evaluate the environmental noise impact for the development. The representative background and residual sound levels highlighted in the table below are used within the BS 4142 numerical assessment table.

Measurement Data		Free-Field Sound Pressure Level, dB re. 20µPa				
Date	Time HH:MM	Background Sound Level dB $L_{A90,\ 15\ min}$		Residual Sound Level dB $L_{Aeq,\ T}$		
		Range	Rep.	15-min Range	Period*	Rep.**
Position 1: 2nd floor rear flat roof	07:00 – 23:00	50 – 57	51	51 – 62	55	54
	23:00 – 07:00	50 – 51	50	50 – 56	51	51

** Period averages have been provided as dB LAeq, T values where T is 16-hour day or 8-hour night. These values may be compared against external noise health limits for context.*

*** Representative values are those occurring at the time of representative background sound provided as dB LAeq, T values where T is 1-hour day or 15-min night. These values may be compared against the specific sound level for context.*

Table 1 – Background sound level ($L_{A90,\ T}$) and Residual sound level ($L_{Aeq,\ T}$) summary at development site.

3.5 An additional 5-minute attended measurement was taken at 1 m from the second-floor rear façade; the measured level was noted as 56 dB $L_{A90,\,T}$ and dominated by existing plant. This is comparable to the baseline level measured at Position 1 dominated by existing plant sources after correcting for free field conditions and therefore the representative background sound levels highlighted in Table 1 above are deemed valid and will be used for assessment.

ACKNOWLEDGEMENT OF SURVEYING LIMITATIONS

3.6 It has been openly acknowledged that the surveyed information in this report was recorded during late June 2020, during the COVID-19 pandemic. At the time of the survey the Government guidance[1] of 11th May 2020 is 'staying alert and safe'; original lockdown measures are eased albeit transportation may not be operating at 'normal' capacity.

3.7 Following the Governments' original advice on the pandemic, The Association of Noise Consultants (ANC) and the Institute of Acoustics (IOA) published *Joint Guidance on the Impact of COVID-19 on the Practicality and Reliability of Baseline Sound Level Surveying and the Provision of Sound & Noise Impact Assessments* on the 24th March 2020. The latest version of this publication is Version 4, dated 21st April 2020, as available[2] at the time of writing.

3.8 The joint ANC / IOA guidance sets out changes in working practices in the production of acoustic assessments, to minimise uncertainties when determining baseline conditions, in a clear and transparent way. The guidance advocates that alternative methods of characterising baseline conditions may be used, so that the outcome is representative, and the conclusions drawn are technically robust as possible.

3.9 The recent COVID-19 outbreak presents complications in obtaining representative baseline sound levels primarily because typical road, air and rail transport usages have been reduced. By nature of conditions at the time of site assessment, it has been assumed that the baseline survey may underpredict 'usual' conditions that would otherwise occur during other times of the year when typical transportation flows are in place prior to lockdown being started.

3.10 SSC carried out a previous survey at the site for a similar planning application (SSC report reference 22562 R1) and comparisons can be drawn to give confidence in the recent survey data collected. The following table summarised the survey data collected at the same site - the rear of 9 Lincoln Inn's Fields - on the third storey flat roof, during the period 7th – 10th August 2015. The background sound levels were dominated by existing plant emissions. The survey data is given in Appendix C and summarised below.

[1] https://www.gov.uk/government/publications/staying-alert-and-safe-social-distancing/staying-alert-and-safe-social-distancing

[2] https://www.ioa.org.uk/news/joint-guidance-impact-covid-19-practicality-and-reliability-baseline-sound-level-surveying-1

Measurement Data (2015)		Free-Field Sound Pressure Level, dB re. 20µPa	
Date	Time HH:MM	Background Sound Level dB $L_{A90,\ 15\ min}$	
		Range	Representative
Position 1: 3rd floor rear flat roof	07:00 – 23:00	53 – 57	54
	23:00 – 07:00	53 – 57	54

Table 2 – Background sound level ($L_{A90,\ T}$) summary at development site (SSC ref 22562 R1, 2015).

3.11 It can be seen from the background sound levels summarised above and the time-history data provided in Appendix C that the 2015 data is comparable to the recent survey, albeit the 2015 survey levels are marginally higher. It can be seen that the background sound levels are dominated by existing plant emissions in both surveys.

3.12 In summary of the referenced applications in this section, it has been demonstrated that despite a marginal decrease in the residual sound at the time of site measurements, these have been considered robust as directly comparable with a former survey at the Site which was describes an approved development application.

3.13 Ultimately, where the background sound levels may be disputed to be marginally higher in 'normal' environmental conditions, it should be realised that this assessment therefore forms a 'worst-case' in relation to plant assessed against background sound levels dominated by existing plant emissions.

4 NOISE IMPACT ASSESSMENT

4.1 The proposed condenser unit locations are highlighted in the scheme design in Appendix D along with manufacturers' sound data.

- Condenser 1 – 5MXM-M / 5MXM90M2V1B
- Condenser 2 – 5MXM-M / 5MXM90M2V1B

4.2 The nearest noise sensitive receptors (NNSR's) are identified as follows, the locations are highlighted in Appendix C.

- Daytime – rear office windows of 10 Lincoln Fields Inn, approx. 5 m to nearest proposed condenser unit.
- Night-time – rear windows of Rosewood Hotel, approx. 13 m.

BS 4142 ASSESSMENT

4.3 Camden local policy requires the assessment methodology of *British Standard 4142:2014 +A1:2019 'Methods for rating and assessing industrial and commercial sound'* with stipulated numerical noise emissions limits described in Section 2.19.

4.4 Specific sound levels for the proposed condenser plant have been calculated to the nearest noise sensitive receptor locations as shown in Appendix E. A worst-case assumption has been made for continuous 24-hour operation of the condenser units. A numerical BS 4142 assessment is provided below.

BS 4142 Assessment			
Result	**Day 07:00 - 23:00**	**Night 23:00 - 07:00**	**Commentary**
Residual sound level, dB $L_{Aeq,T}$	54	51	Taken from measurements at Position 1 and estimated from histogram in Appendix D.
Background sound level, dB $L_{A90,T}$	51	50	Estimated from histogram in Appendix D and result in Table 1; deemed to be representative of the background sound level at the rear of the site.
Reference time interval	1-hour	15-minute	Assessment periods for day and night.
On-time correction, dB	0	0	The sound sources are assessed as being continuous.
Acoustic character correction, dB	0	0	No acoustic character associated with the sound source.

BS 4142 Assessment			
Result	**Day 07:00 - 23:00**	**Night 23:00 - 07:00**	**Commentary**
Specific Sound Level, dB $L_{Aeq,T}$	40	33	Calculated cumulative specific sound level at the receptor locations (calculations shown in Appendix E).
Rating level, dB $L_{Ar,Tr}$	40	33	The rating level is equal to the specific sound level plus acoustic feature corrections.
Excess of rating level over background sound level	**-11**	**-17**	**Meets Camden local policy requirements**.
Assessment indicates likely indication of: *depending on context	Low impact*	Low impact*	The context is new condenser plant at a commercial premise in a residual acoustic environment that is dominated by existing plant noise emissions at a level significantly higher than that of the proposal.
Uncertainty of the assessment	Insignificant	Insignificant	The excess of the background sound level over the rating level is large and in this instance the uncertainty of the measurement does not have any significance to the outcome of the assessment.

Table 3 – Numerical assessment of proposed condenser plant noise impact, in accordance with BS 4142.

4.5 Table 3 above shows that the cumulative noise impact in terms of rating levels at the nearest noise sensitive receptor locations for the day and night-time periods are -11 and -17 dB below the representative background sound level, respectively. It is therefore shown that based on the proposed scheme design, the London Borough of Camden local policy requirements can be met without noise mitigation.

5 CONCLUSIONS

5.1 A noise survey has been carried out at The Site and a noise impact assessment for the proposed condenser plant has been carried out using the methodology given in British Standard BS 4142.

5.2 Previous survey data taken by SSC at the Site (from 2015) have been referenced considering the current pandemic; the recent survey data reported has been deemed robust and the assessment based on 'worst-case'.

5.3 Emission from the proposed condenser plant have been calculated based on manufacturer's sound data for the proposed units. Rating levels have been predicted at the nearest noise sensitive receptor locations for assumed continuous day and night-time operation as worst-case.

5.4 The BS 4142 numerical assessment in Section 4 shows that The London Borough of Camden local policy criteria can be met without noise mitigation measures, based on the proposed scheme design.

Appendix A: Glossary of Acoustic Terms

'A' weighting dB(A): Correction applied to the frequency range of a noise in order to approximate the response of the human ear. Noise measurements are often A-weighted using an electronic filter in the sound level meter.

Attenuation: Sound reduction, measured in decibels (dB).

Ambient Sound: The totally encompassing sound in a given situation at a given time usually composed of sound from many sources near and far. Note: The ambient sound comprises the residual sound and the specific sound when present.

Background sound level: A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels.

Calibration: A check of the function of a sound level meter by comparing the meter reading with a known sound pressure level.

Decibel (dB): The unit of sound level and noise exposure measurement. The range of audible sound pressures is approximately 0 dB to 140 dB.

Frequency (Hz): The pitch of the sound, measured in Hertz.

LAeq,T: The A-weighted equivalent continuous sound pressure level during a period. It is the sound level of a notionally steady sound having the same energy as a fluctuating sound over a specified measurement period, T.

Octave-bands: A division of the frequency range into recognised bands.

Rating level, LAr,Tr: The specific sound level plus any adjustment for the character of the sound.

Residual sound: Ambient sound remaining in the absence of the specific sound or that it is supressed as not to contribute to the ambient sound level.

Residual sound level, Lr or Leq,T: The equivalent continuous A-weighted sound pressure level of the residual sound at the assessment location over a given reference time interval, T.

Sound pressure level (SPL): The basic measure of sound, expressed in decibels, usually measured with an appropriate frequency weighting (e.g. the A-weighted SPL in dB(A)).

Sound power level (Lw): The sound energy radiated per unit time by a sound source measured in watts (W). Sound power can be weighted (e.g. A-weighted) and is not influenced by environmental or physical factors such as weather or distance.

Specific sound: Sound source being assessed.

Specific sound level, Ls or Leq,T: The equivalent continuous A-weighted sound pressure level at the assessment position produced by the specific noise source over a given reference time interval, T.

Appendix B: Site Plan Highlighting Sound Measurement Locations

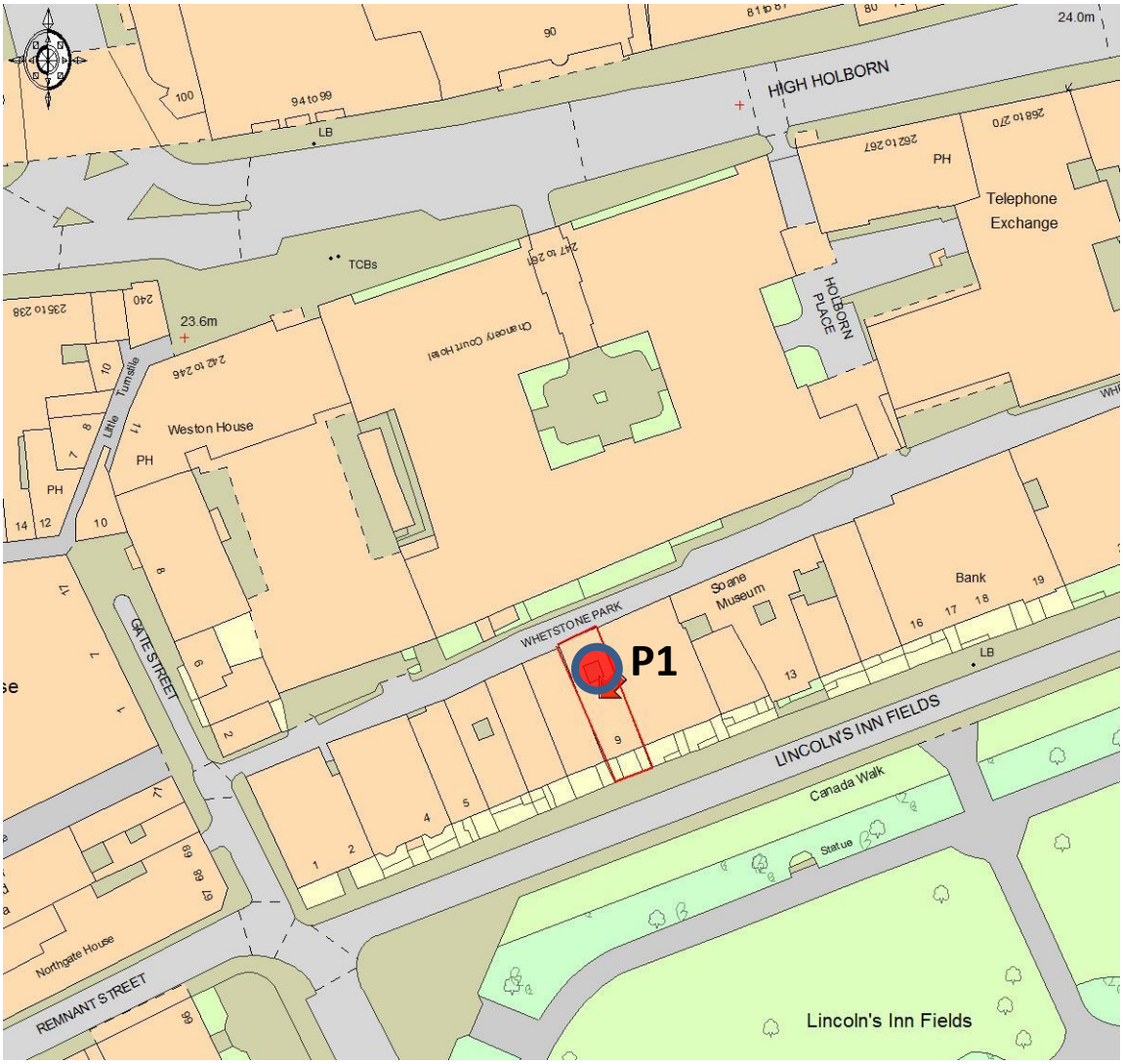


Figure B1 – Location Plan, illustrating the noise measurement positions (rear flat roof, free-field).

Appendix C: Environmental Noise Survey Record & Data

The equipment used during the survey consisted of the following precision monitoring equipment and accessories which conform to BS EN 61672-1:2003 (Class 1) for sound level meters and BS EN 60942 (Class 1) for sound calibrators. All equipment listed in the Table below has traceable calibration history valid during the relevant times of the site assessment; no greater than two years for sound level meters and one year for sound calibrators.

Position No.	Manufacturer	Model No.	Description	Serial No.	Calibration Due Date
1	Larson Davis	LxT	3rd Octave Band Sound Meter	5851	14/05/21
1	Larson Davis	PRMLxT1L	Microphone pre-amplifier	55752	14/05/21
1	Larson Davis	337B02	½" Electret microphone	313910	06/05/21
1	Larson Davis	CAL200	Sound Level Calibrator	13691	21/01/21

Table C1 – Sound monitoring equipment.

The calibration of the sound level meter was checked using the handheld calibrator CAL200 at its verified reference level and frequency, 114 dB at 1kHz, before any measurements were taken. Validation checks at the end of the survey demonstrated acceptable drift across all parts of the study, across the sound level measurement equipment used, of ≤ 0.10 dB. Interval noise data was recorded at the measurement locations at 15-minute and 1-minute periods, time synchronised to GMT.

Weather conditions at the times of site attendance are reported in the Table below.

Weather conditions	Start	Finish	Additional comments
Wind velocity	< 2 m/s Average < 2 m/s Gust	< 2 m/s Average <2 m/s Gust	Weather conditions deemed fully conducive to sound surveying works
Wind direction	-	-	
Cloud cover/rain	Dry, clear	Dry, 15% cover	
Temperature	29°C	29°C	
Humidity	36 %	44 %	

Table C2 – Recorded weather conditions.

The acoustic environment was noted to be dominated by plant noise emissions associated with surrounding premises. This included adjacent roof mounted condensers associated with 10 Lincoln's Inn Fields and ventilation louvres associated with hotel/ commercial buildings opposite to the rear on Whetstone Park. The existing condenser unit associated with the Site was observed to be 'just audible' and operating intermittently, where other plant sources about the site were dominant.

A brief description of the measurement positions is provided below:

Position 1) A microphone was placed at first floor roof level, at the rear of the Site at 3.5 m from the rear façade. This measurement position is used to evaluate sound levels from environmental and mechanical services noise sources incident on the rear of the site.

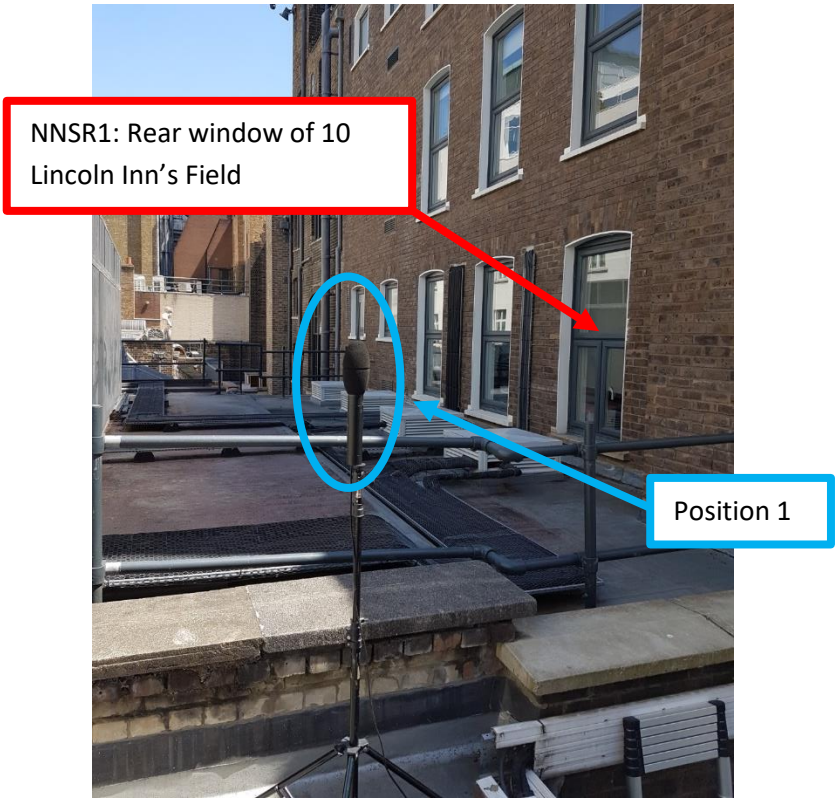


Figure C1 – Photo showing measurement Position 1, rear of Site, 2nd floor flat roof.

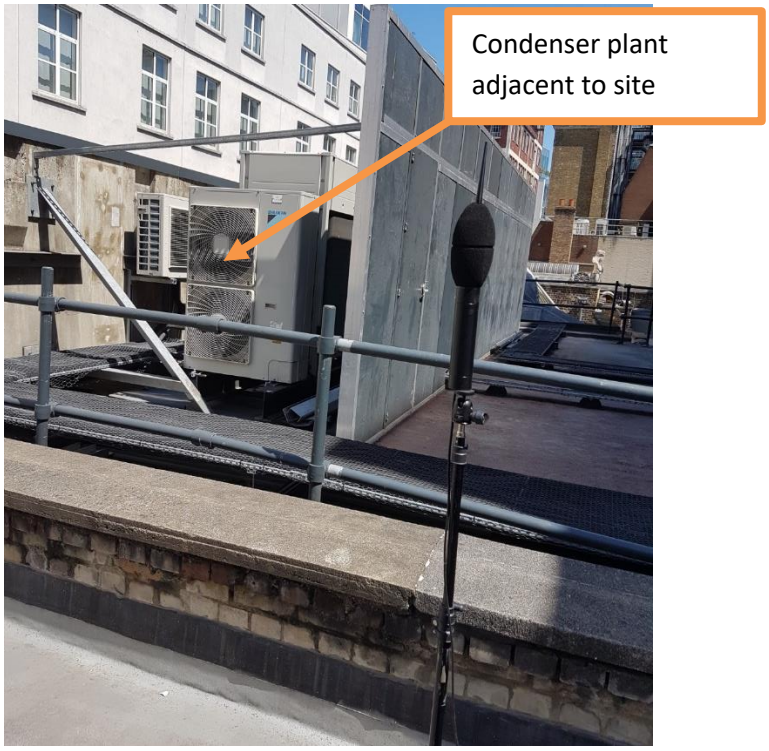
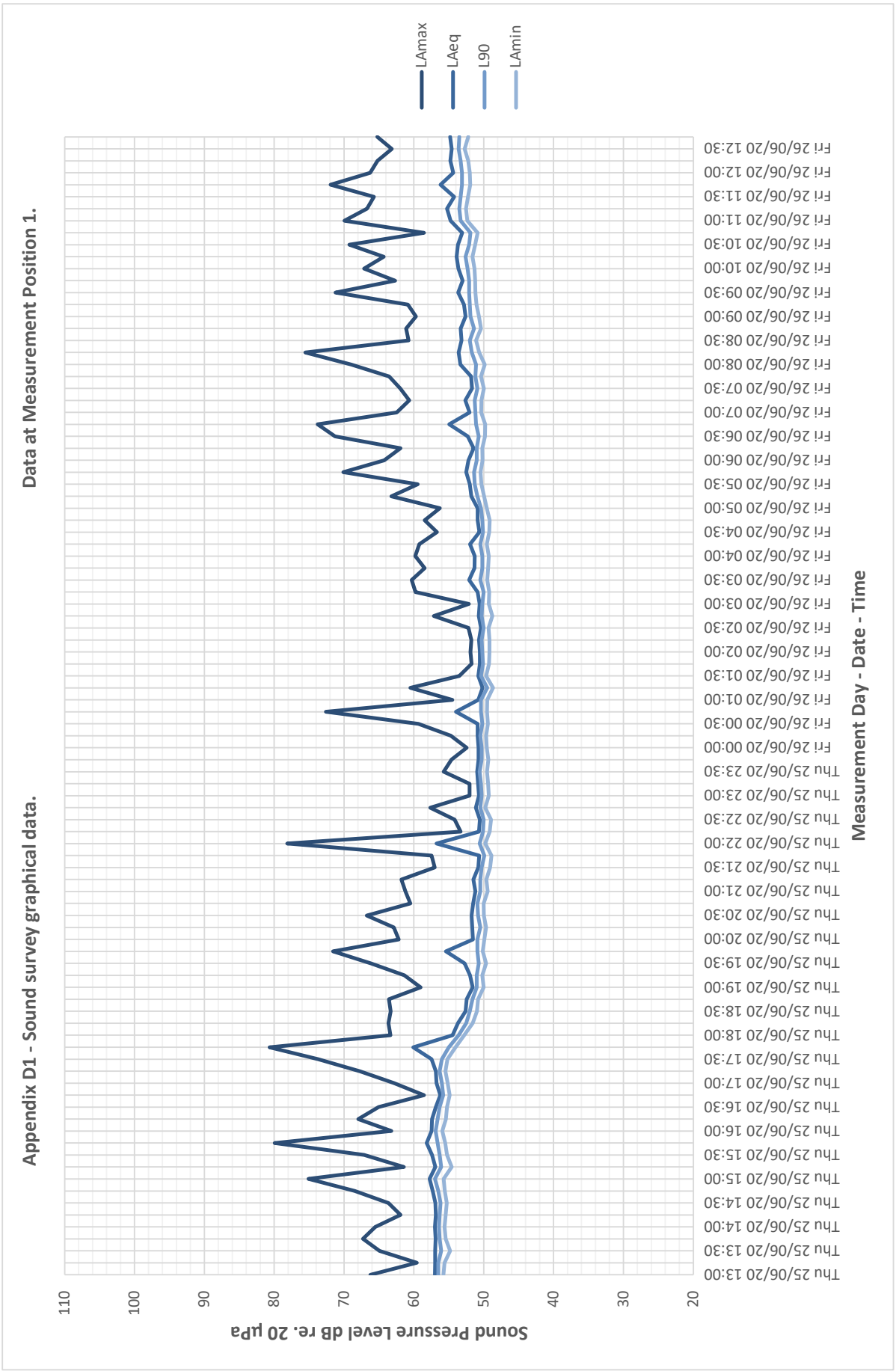


Figure C2 – Photo showing measurement Position 1 relative to adjacent condenser plant.

Figure C3 – Photo from vantage point of rear second floor flat roof of the Site, showing hotel with basement plant louvres which were clearly audible.

Figure C4 – Photo showing existing condenser unit associated with the Site, noted as 'just audible' at 1 m with other surrounding plant dominant.


Appendix D1 - Sound survey graphical data.
Data at Measurement Position 1.
LAmax
LAeq
L90
LAmin
Sound Pressure Level dB re. 20 µPa
110
100
90
80
70
60
50
40
30
20
Measurement Day - Date - Time
Thu 25/06/20 13:00
Thu 25/06/20 13:30
Thu 25/06/20 14:00
Thu 25/06/20 14:30
Thu 25/06/20 15:00
Thu 25/06/20 15:30
Thu 25/06/20 16:00
Thu 25/06/20 16:30
Thu 25/06/20 17:00
Thu 25/06/20 17:30
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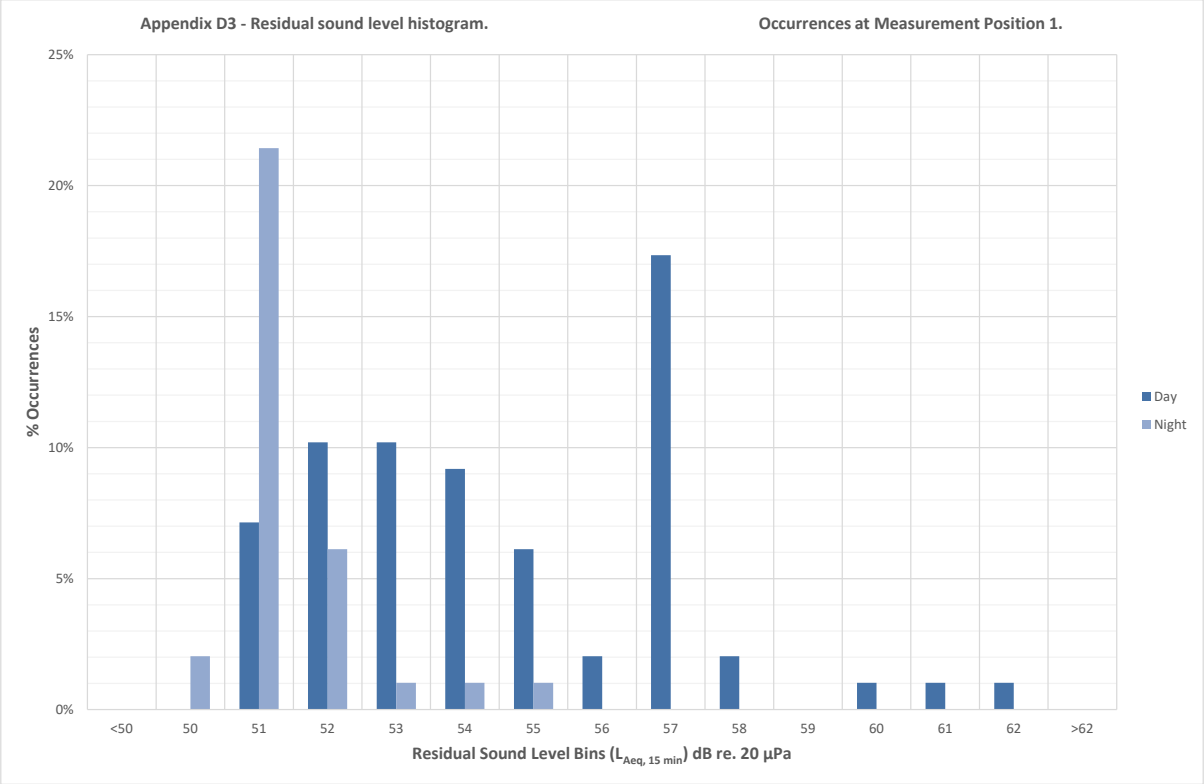
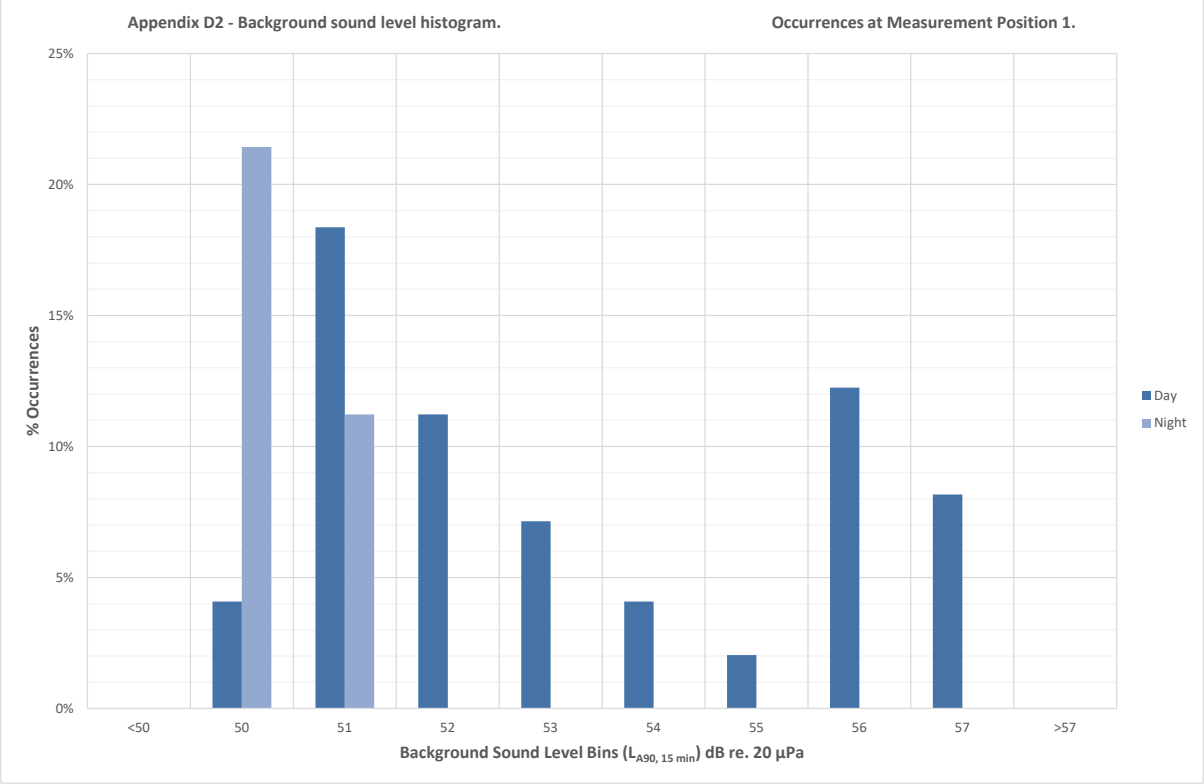
Fri 26/06/20 12:30


Appendix D3 - Residual sound level histogram.
Occurrences at Measurement Position 1.
% Occurrences
25%
20%
15%
10%
5%
0%
<50
50
51
52
53
54
55
56
57
58
59
60
61
62
>62
Residual Sound Level Bins ($L_{Aeq, 15\ min}$) dB re. 20 µPa
Day
Night


Appendix D2 - Background sound level histogram.
Occurrences at Measurement Position 1.
% Occurrences
25%
20%
15%
10%
5%
0%
<50
50
51
52
53
54
55
56
57
>57
Background Sound Level Bins ($L_{A90, 15\ min}$) dB re. 20 µPa
Day
Night

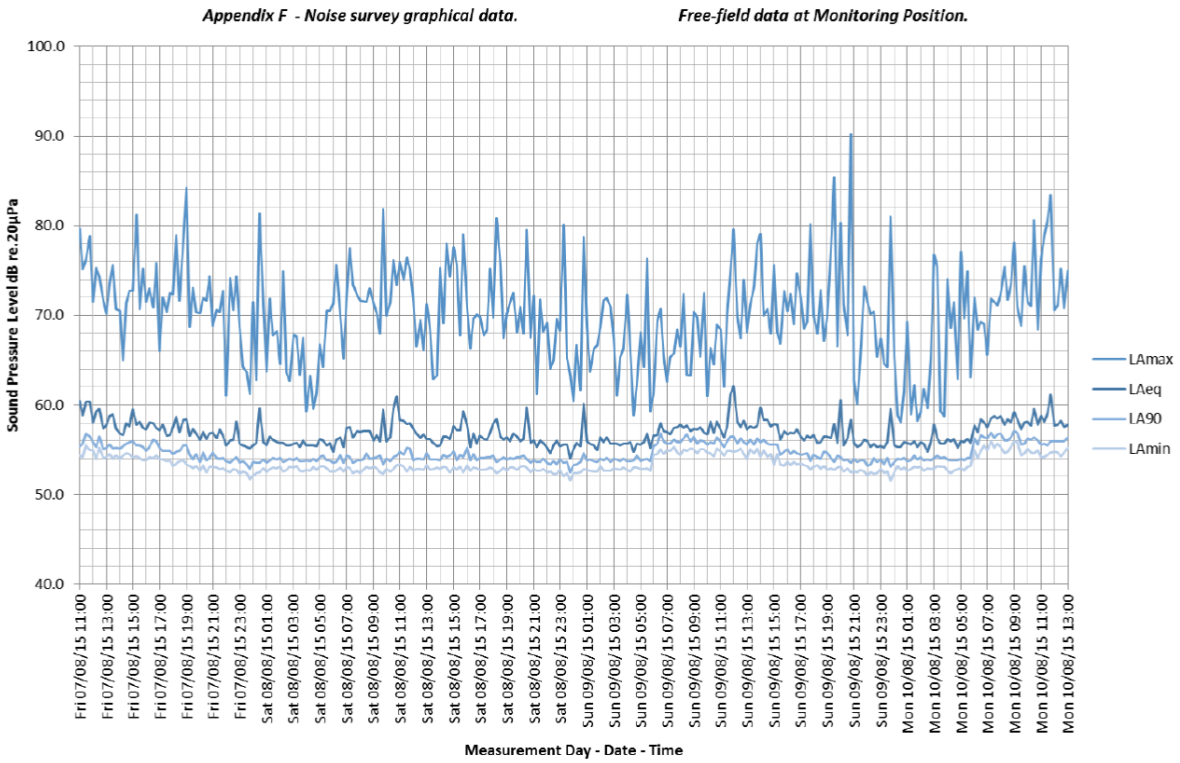


Figure C5 – Reference survey data from site taken in 2015, SSC report ref 22562 R1.

Figure C6 – Measurement position from site taken in 2015, SSC report ref 22562 R1.

Appendix D: Scheme Design

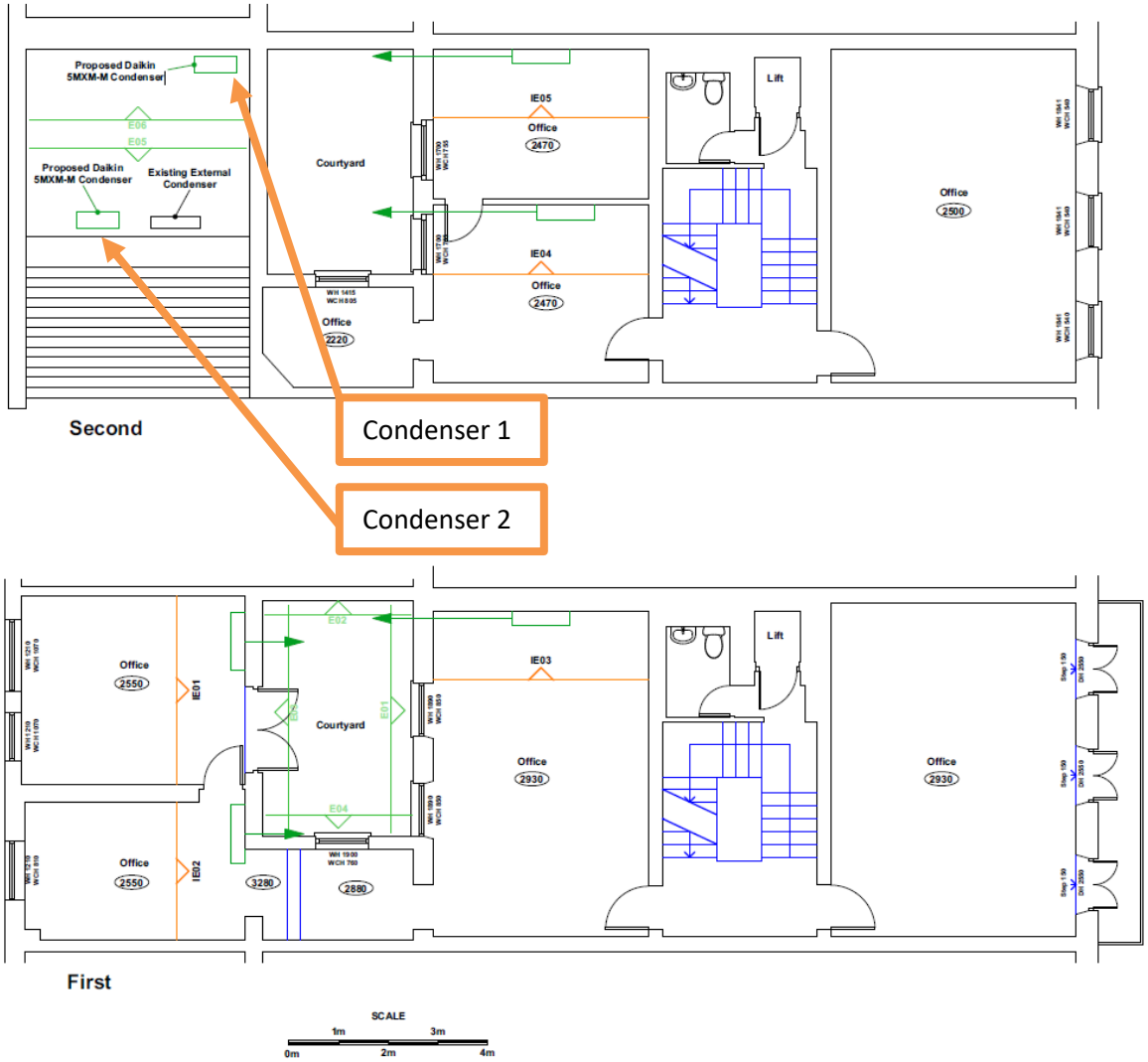


Figure D1 – Proposed condenser plant plans.

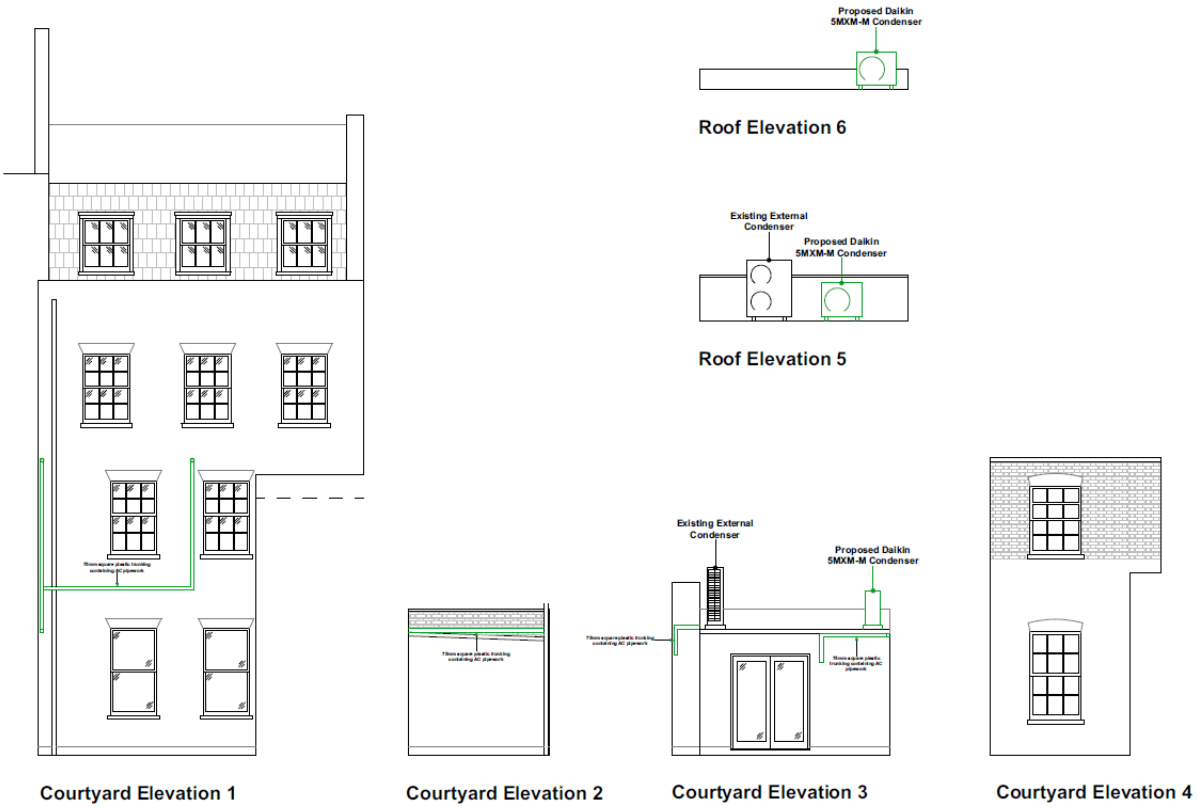


Figure D1 – Proposed condenser plant courtyard and roof elevations.

10 Sound data

10 - 1 Sound Pressure Spectrum

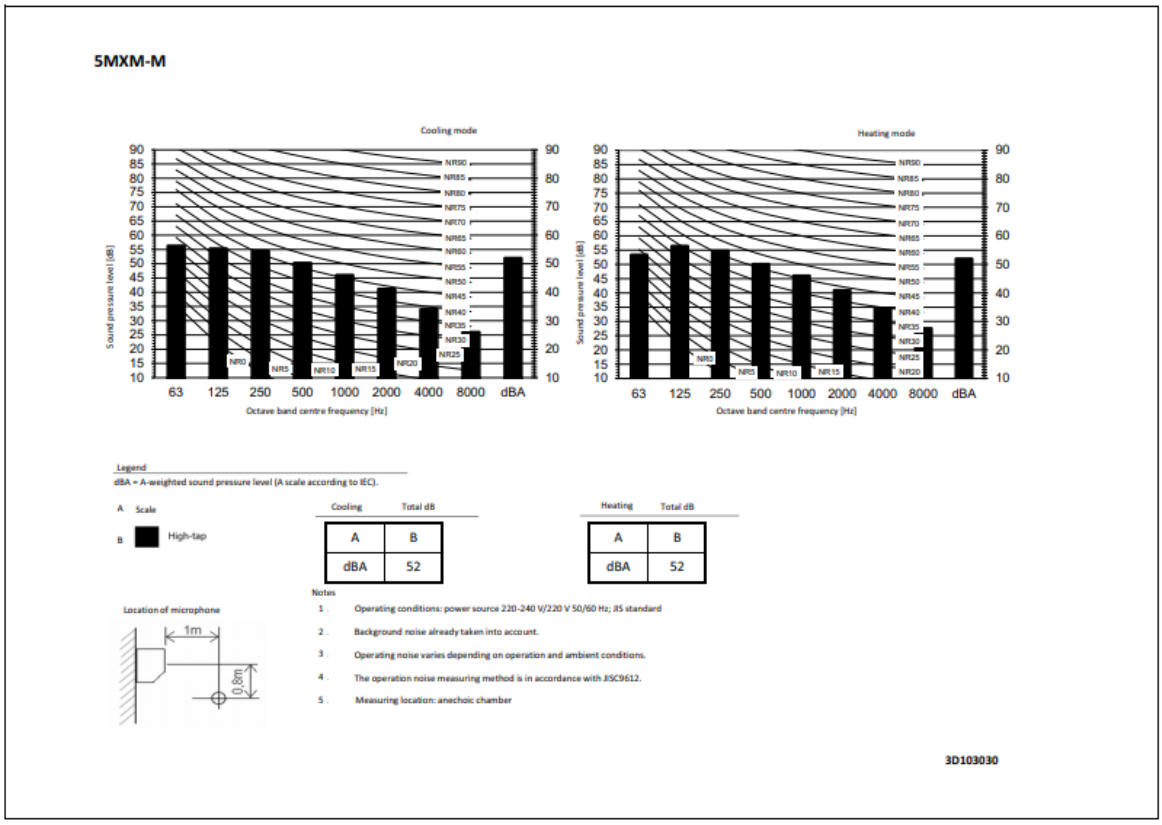


Figure D3 – Proposed condenser plant, manufacturers' sound data condenser unit 5MXM-M.

Appendix E: Calculations

Daytime - NNSR: 10 Lincoln's In Field									
Condenser 1									
Unit	**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**	**dBA**
DAIKEN 5MXM-M Sound Pressure Data, dB L_p	56	55	55	51	46	42	34	26	
A-weighting, dB	-26.2	-16	-9	-3	0	1	1	-1	
Sound Pressure Level, A-weighted, dB L_{pA}	30	39	46	48	46	43	35	25	52
Distance loss to receiver, 5 m	-14	-14	-14	-14	-14	-14	-14	-14	
Sound pressure level at receiver, dB L_{pA}	16	25	32	34	32	29	21	11	38
Attenuation, dB	0	0	0	0	0	0	0	0	
Resultant level at receptor, dB $L_{Aeq,T}$	16	25	32	34	32	29	21	11	
Single figure level at receptor, dB $L_{Aeq,T}$									38
Condenser 2									
Unit	**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**	**dBA**
DAIKEN 5MXM-M Sound Pressure Data, dB L_p	56	55	55	51	46	42	34	26	
A-weighting, dB	-26.2	-16	-9	-3	0	1	1	-1	
Sound Pressure Level, A-weighted, dB L_{pA}	30	39	46	48	46	43	35	25	52
Distance loss to receiver, 8.5 m	-19	-19	-19	-19	-19	-19	-19	-19	
Sound pressure level at receiver, dB L_{pA}	11	20	28	29	27	25	16	6	34
Attenuation, dB	0	0	0	0	0	0	0	0	
Resultant level at receptor, dB $L_{Aeq,T}$	11	20	28	29	27	25	16	6	
Single figure level at receptor, dB $L_{Aeq,T}$									34
Cumulative specific sound level at receptor, dB $L_{Aeq,T}$									**40**
Night-time - NNSR: Rosewood Hotel									
Condenser 1									
Unit	**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**	**dBA**
DAIKEN 5MXM-M Sound Pressure Data, dB L_p	56	55	55	51	46	42	34	26	
A-weighting, dB	-26.2	-16	-9	-3	0	1	1	-1	
Sound Pressure Level, A-weighted, dB L_{pA}	30	39	46	48	46	43	35	25	52
Distance loss to receiver, 13 m	-22	-22	-22	-22	-22	-22	-22	-22	
Sound pressure level at receiver, dB L_{pA}	8	17	24	26	24	21	13	3	30
Attenuation, dB	0	0	0	0	0	0	0	0	
Resultant level at receptor, dB $L_{Aeq,T}$	8	17	24	26	24	21	13	3	
Single figure level at receptor, dB $L_{Aeq,T}$									30
Condenser 2									
Unit	**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**	**dBA**
DAIKEN 5MXM-M Sound Pressure Data, dB L_p	56	55	55	51	46	42	34	26	
A-weighting, dB	-26.2	-16	-9	-3	0	1	1	-1	
Sound Pressure Level, A-weighted, dB L_{pA}	30	39	46	48	46	43	35	25	52
Distance loss to receiver, 13 m	-22	-22	-22	-22	-22	-22	-22	-22	
Sound pressure level at receiver, dB L_{pA}	8	17	24	26	24	21	13	3	30
Attenuation, dB	0	0	0	0	0	0	0	0	
Resultant level at receptor, dB $L_{Aeq,T}$	8	17	24	26	24	21	13	3	
Single figure level at receptor, dB $L_{Aeq,T}$									30
Cumulative specific sound level at receptor, dB $L_{Aeq,T}$									**33**

Figure E1 – Calculated specific sound levels at the nearest receptor locations 10 Lincoln Inn's Fields and Rosewood Hotel, for the day and night-time periods respectively.

Appendix F: Acousticians Qualifications and Status

James Blakeley BSc. (Hons) MIOA

Position Held:	Senior Acoustic Consultant.
Qualifications:	BSc. (Hons) Audio Technology.
Affiliations:	Corporate Member of the Institute of Acoustics.
Acoustics Experience:	8 years.
Core Competences:	Environmental acoustics, building acoustics.

Steve Skingle BSc. (Hons) MAES MIOA

Position Held:	Principal Acoustic Consultant.
Qualifications:	BSc. (Hons) Acoustics.
	Institute of Acoustics Diploma in Acoustics and Noise Control.
Affiliations:	Corporate Member of the Institute of Acoustics.
	Corporate Member of the Audio Engineering Society.
Acoustics Experience:	18 years.
Core Competences:	Building acoustics, environmental acoustics, electro acoustics.