Environmental Equipment Corporation Ltd
Richmond House, Churchfield Road
Walton on Thames
Surrey. KT12 2TP
t: 01932 230940
f: 01932 230941
e: info@eec.co.uk

Project:

Falconers Court, Shoreham-by-Sea

Title:

Plant Noise Impact Assessment

quietly moving forward

Environmental Equipment Corporation Ltd
Richmond House, Churchfield Road
Walton on Thames
Surrey. KT12 2TP
t: 01932 230940
f: 01932 230941
e: info@eec.co.uk

Report Title	Falconers Court, Shoreham-by-Sea Plant Noise Impact Assessment
Reference	AB/EC20639-7
Version	1
Issue Date	23 May 2025
Client	David Miles & Partners
Author	Adeola Badejo MEng (Hons) Acoustic Engineer
Checked	Tim Meed BSc(Hons) MIOA Technical Director

Revision	Date	Author	Checked
0	13/06/2024	Alex Oakes	Jon Mudd

CONTENTS:

1	INTRODUCTION	1
2	SITE	1
3	GUIDANCE	2
4	MEASUREMENTS	2
5	EQUIPMENT	3
6	RESULTS	3
7	PLANT ASSESSMENT	4
8	CONCLUSIONS	5

APPENDIX A:	Glossary of Technical Terms
APPENDIX B:	Site Plan & Measurement Location
APPENDIX C:	Planning Policy & Guidance
APPENDIX D:	Survey Results (Tabular)
APPENDIX E:	Survey Results (Graphical)
APPENDIX F:	Published Plant Noise Data

quietly moving forward

1 INTRODUCTION

1.01 Environmental Equipment Corporation Limited has been commissioned by David Miles & Partners to undertake a noise assessment of three Mitsubishi CAHV air source heat pumps (ASHP) to serve the existing residential apartment building of Falconers Court, Shoreham-by-Sea.

1.02 This noise assessment has been conducted in accordance with the policies and requirements of West Sussex County Council (WSCC) and is based on a noise survey carried out at the site over a typical weekday period.

1.03 This assessment includes:

- the setting of plant noise limits in accordance with the requirements of WSCC and national planning policy, standards and guidance; and
- the prediction of noise impacts at the worst affected noise sensitive receptors based on the proposed items of plant and their location.

1.04 This report is prepared solely for David Miles & Partners. Environmental Equipment Corporation Limited accepts no responsibility for its use by any third party. Note that the contents contained herein are produced for the purposes of review by relevant Planning Authority departments and do not constitute a detailed design or specification document to be used for the purposes of construction. Subsequent development of noise mitigation schemes shall engage EEC Ltd and David Miles & Partners so as to support the conclusions of this report.

1.05 Whilst every effort has been made to ensure that this report is easy to understand, it is necessarily technical in nature. To assist the reader, an explanation of the terminology used in this report is contained in Appendix A.

2 SITE

2.01 Falconers Court is a four storey apartment building with commercial units located at ground floor level. The site is located in a predominantly residential area of Shoreham-by-Sea.

2.02 The property is bound by the following:

- North – Ropetackle Roadway with residential dwellings running parallel;
- East – High Street roadway with mixed commercial and residential dwellings running parallel;
- South – Multi-storey residential dwellings of Little High-Street; and
- West – Broad Reach and Ropetackle roadways with further residential dwellings beyond.

2.03 This application is for three Mitsubishi CAHV-R450 Air Source Heat Pumps, which are to be located on the roof of the building, as presented in Appendix B.

2.04 The closest noise sensitive receptors to the proposed plant items are the following:

- Top floor residential dwellings of Carrick Walk

2.05 It is proposed to install each ASHP unit in a high-performance acoustic enclosure, designed to reduce the noise emissions from the units to the required levels at the nearest residential windows on the top floor residential dwellings of Carrick Walk.

quietly moving forward

2.06 All other noise sensitive receptors are at a greater distance from the proposed location of the units or are protected by more screening by the intervening structures, and as such will be subject to lower levels of noise.

3 GUIDANCE

3.01 National Planning Policy is presented in Appendix C of this document.

3.02 The 'Planning Noise Advise Document' produced by Sussex Council aims to provide guidance for the control of noise in respect of proposed planning applications, adopting the aims of the National Planning Policy Framework (NPPF) and the National Planning Policy Guidance (NPPG) document.

3.03 Section 2 'Industrial and Commercial Noise Sources' gives guidance on noise generated by new fixed plant, in which the document states that:

> **2.2. Guidelines and Criteria**
>
> 2.2.1. The starting point for designing any industrial/ commercial development should be to minimise noise "as far as reasonably practicable". The rating level of the plant/process, when measured in accordance with BS4142:2014, should, where practicable, be no greater than the existing background levels when measured in accordance with BS4142:2014. There may be instances, for specific sites, where a rating level below background is deemed appropriate. This can be determined through prior discussion with the Local Planning Authority or Local Environmental Health Department. For example, a rating level of 10 dBA below background may be required in certain instances if there are specific concerns such as the potential for noise creep. It is considered that meeting these criteria would avoid adverse noise impacts, in the interests of ensuring a good standard of amenity and protecting human health. Where these criteria are not attainable, the noise report should explain why, and how best practicable means will be implemented to control noise in order to satisfy the LPA that the development is acceptable.

3.04 In respect of the above, the rating level of the resultant noise emissions will be assessed so as not to exceed the existing background noise level.

4 MEASUREMENTS

4.01 Environmental noise measurements were carried out over a weekday period, between 0845 hours on Thursday 18th April 2024 and concluded 0600 hours the following day, to establish the existing noise levels at the site. The survey methodology and results are set out below.

4.02 Noise measurements have been carried out at the following position, as shown in Appendix B and described as:

- Position 1: Located at a height of approximately 1.5 metres above floor level of the first-floor courtyard. The measurement was not located within 3.5 metres of any reflecting surfaces, other than the mounting surface.

4.03 This position is considered to be representative of the nearest windows to the proposed exhaust louvre.

quietly moving forward

5 EQUIPMENT

5.01 The equipment used for the survey was as follows:-

- 01dB Metravib Black Solo Integrating Sound Level Meter conforming to Class 1 BS EN 61672, Type 1 BS EN 60804 & BS EN 60651: 1994;
- 01dB Metravib MCE 212 Condenser Microphone, PRE 21 S Pre-amp and Connecting Leads;
- 01dB Outdoor Microphone Kit and a
- Tripod.

5.02 The equipment holds current UKAS or equivalent accreditation and serial numbers as follows:

Sound Level Meter 01dB Black Solo	Serial No.	65736
	Calibration Date	26th October 2023
	Cal Certificate No.	U45751
½" MCE 212 Condenser Mic.	Serial No.	175307
	Calibration Date	26th October 2023
	Cal Certificate No.	45750
Calibrator CAL 21	Serial No.	34634297
	Calibration Date	2nd May 2023
	Cal. Certificate No.	U44154

N.B. Copies of calibration certificates are available upon request.

5.03 The equipment was calibrated both before and after the survey with no difference noted in the levels.

6 RESULTS

6.01 The weather during the survey was suitable for noise measurement, it being dry with little wind for the duration of the survey.

6.02 Noise sources at the site include local and distant road traffic. There were no other significant sources of noise during the survey.

6.03 A list of the levels measured is included in Appendix D and represented graphically in Appendix E.

6.04 A summary of the time averaged ambient levels and lowest measured background levels over the measurement periods are shown in Table 6.1. The minimum L_{A90} is the lowest fifteen-minute measurement in the specified period.

Position	Period	Average $L_{Aeq,T}$ – dB	Minimum L_{A90} – dB
1	Day time (0700-1900 hrs)	52	44
	Evening (1900-2300 hrs)	50	37
	Night-time (2300-0700 hrs)	47	31

Table 6.1: Free-Field Measured Ambient and Lowest Background Noise Levels

quietly moving forward

7 PLANT ASSESSMENT

7.01 This application is for the installation of a number of new ASHP's to serve the residential apartments of Falconers Court and be located on the roof of the premises.

7.02 Based on the standard requirements of Sussex Council and the lowest measured background noise level in each time period, Table 7.1 sets out the recommended noise limits that the proposed items of plant should meet.

7.03 In accordance with the requirements of Sussex Council, the proposed noise limits are based on not exceeding the measured background noise level.

Location	Period	Measured Existing $L_{A90,T}$	Proposed Noise Limit L_{Ar}
Carrick Walk	Day	44 dB	44 dB
	Evening	37 dB	37 dB
	Night	31 dB	31 dB

Table 7.1: Suggested Plant Noise Emission Limits Based on Lowest Measured L_{A90}, Free-field dB

7.04 Note that the limits suggested above are rating levels and as such any design should take into account the acoustic characteristics of the plant. In this instance the proposed units display none of the characteristics whereby the acoustic correction should be applied.

7.05 Assuming the proposed items meet the noise limits set out in Table 7.1 noise will be approaching the LOAEL with respect to the NPPF.

7.06 The proposed units have a stated manufacturers sound pressure level of 64 dB(A) each, measured at a distance of 1m, with a cumulative sound pressure level of 69 dB(A) for all three units operating. Copies of the manufacturer's plant data sheets are included in Appendix F.

7.07 It is proposed that all three ASHP's will each be housed in their own acoustic enclosure and on suitable anti-vibration mounts providing a minimum of 95% vibration isolation efficiency to limit the levels of structure borne noise transfer to connecting structures.

7.08 Predicted noise levels have been calculated at the closest noise sensitive windows on the top floor dwellings of Carrick Walk.

7.09 Other residential receptors located further from the site will be subject to lower noise levels than those predicted at the above locations.

7.10 Tables 7.2 – 7.3 present the results of worst-case plant noise predictions at the worst-case locations.

Item	Noise Level	Notes
3 No. Mitsubishi CAHV-R450	69 dB(A)	Cumulative sound pressure level of 3 No. units at 1m
Reflections	0 dB	No additional reflections
Barrier Effect	0 dB	Line of sight to proposed plant location
Noise Control	- 20 dB	High-performance acoustic enclosures
Conformal area Losses over 20 metres	- 19 dB	Distance to closest window

quietly moving forward

Resultant Noise Level	30 dB(A)	Carrick Walk Top Floor Windows

Table 7.2: Carrick Walk (Top-Floor Windows) Plant Noise Calculation

Property	Period	Proposed Noise Limit L_{Ar}	Predicted $L_{Aeq,T}$	Exceedance of noise limit
Carrick Walk	Daytime	44 dB	30 dB	- 14 dB
	Evening	37 dB	30 dB	- 7 dB
	Night-time	31 dB	30 dB	0 dB

Table 7.3: Assessment of Predicted Noise Levels Based on Proposed Noise Limit, Free-field dB(A)

7.11 It can be seen from the above tables that the noise limits are not exceeded during any period at the closest noise sensitive windows on the top floor of the Carrick Walk apartments.

7.12 Assuming that the proposed plant and noise control scheme is included in the installation, predicted noise levels will meet the requirements of the Local Authority during all periods of operation and at the closest noise sensitive receptors.

7.13 The proposed scheme of vibration isolation will also mitigate the transfer of vibration to the supporting and connecting structures and ensure that the airborne sound mitigation design is not compromised.

7.14 With respect to the NPPF, achieving the noise limits would be classified as approaching the NOEL.

8 CONCLUSIONS

8.01 David Miles & Partners has appointed Environmental Equipment Corporation Limited to undertake a noise assessment for a number of new air source heat pumps to serve the residential apartment block of Falconers Court.

8.02 The assessment has been carried out in accordance with national planning guidance and the requirements of West Sussex Council, and is based on an environmental noise survey conducted at the site over a mid-week period.

8.03 A noise assessment has been undertaken to evaluate the potential noise impact of the proposed air source heat pumps at the closest existing residential receptors.

8.04 Plant noise limits have been set based on the methodology contained in BS4142, the results of a background noise survey and the requirements of the Local Authority, to control the noise from

quietly moving forward

the proposed ASHP units. In accordance with the Local Authority, the noise limit has been set so as to not exceed the existing background noise level.

8.05 Predictions have shown that the noise criterion is met at all assessment locations during all periods of the air source heat pumps' proposed operation, assuming, the noise control scheme is included in the installation.

8.06 Assessing the site in accordance with the principles of the National Planning Policy Framework has shown that predicted noise levels would be approaching the lowest level at which adverse effects are observed to occur, the LOAEL.

8.07 On the basis of this assessment it is considered that noise does not pose a material constraint to the operation of the ASHP units.

quietly moving forward

APPENDIX A

GLOSSARY OF TECHNICAL TERMS

quietly moving forward

ACOUSTIC TERMINOLOGY

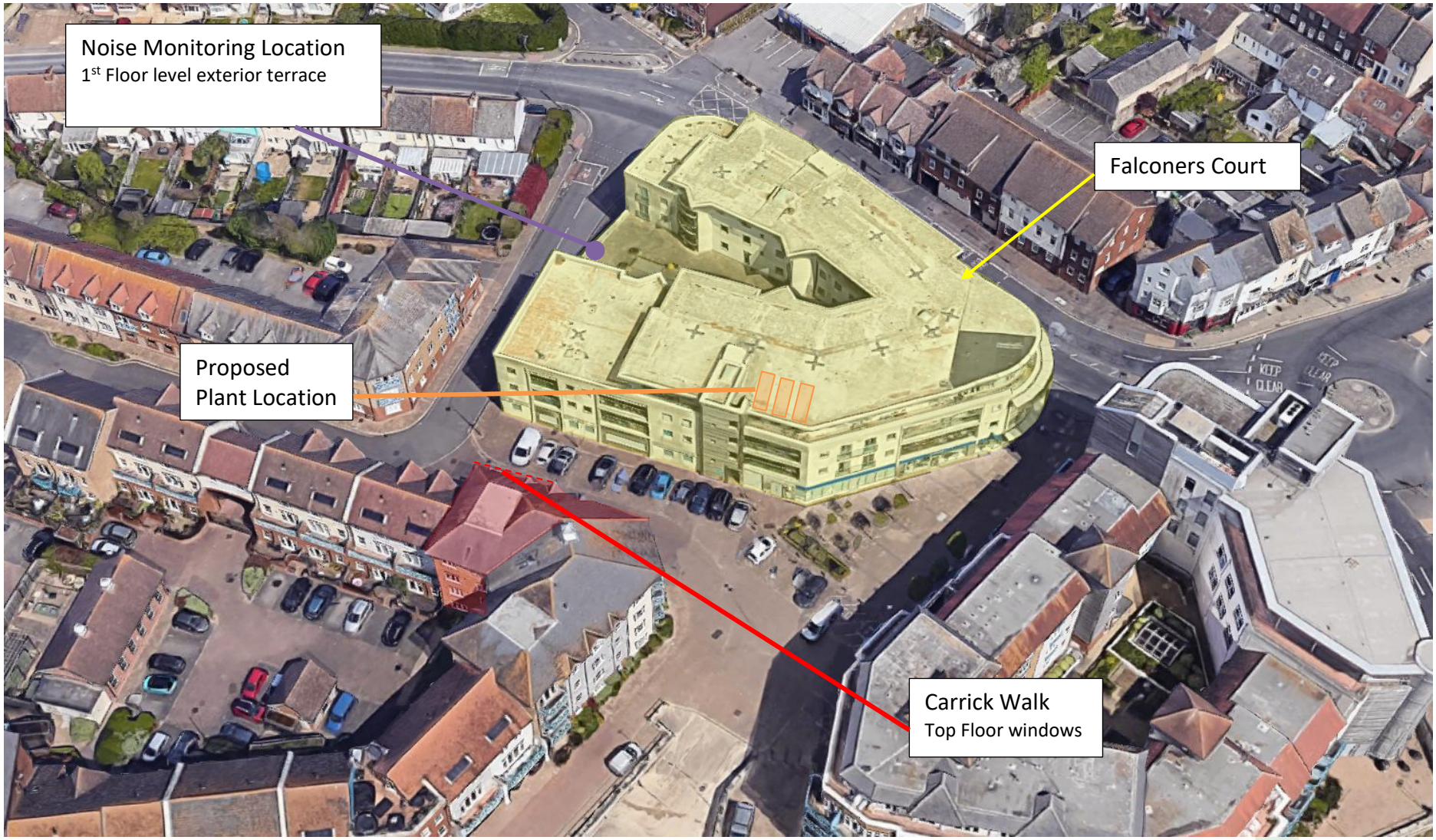
Absorption Classes	The sound absorption of a material is rated from Class A to Class E, where Class A materials provide the highest level of sound absorption.
Ambient Noise Levels	Noise levels measured in the absence of noise requiring control, frequently measured to determine the situation prior to the additional of a new noise source.
dB	Decibel. The logarithmic unit of sound level.
dB(A)	A-weighted decibel. The A-weighting approximates the response of the human ear.
$D_{nT,w}$	Weighted standardized level difference. A single number quantity of the sound level difference between two rooms. $D_{nT,w}$ is typically used to measure the on-site sound insulation performance of a building element such as a wall, floor or ceiling. Measured in accordance with BS EN ISO 16283-1 and weighted in accordance with BS EN ISO 717-1.
$D_{n,e,w}$	The weighted element-normalized level difference. A single number rating of the sound reduction provided by a sound passing through an individual element. $D_{n,e,w}$ is typically used to define the sound insulation provided by ventilators. Measured in accordance with BS EN ISO 10140-2:2010 and rated in accordance with BS EN ISO 717-1.
Flanking	Transmission of sound energy through paths adjacent to the building element being considered. For example, sound may be transmitted around a wall by travelling up into the ceiling space and then down into the adjacent room.
Frequency	Sound can occur over a range of frequencies extending from the very low, such as the rumble of thunder, up to the very high such as the crash of cymbals. Sound is generally described over the frequency range from 63Hz to 4kHz, roughly equal to the range of frequencies on a piano.
Impact Sound	Sound produced by an object impacting directly on a building structure, such as footfall noise or chairs scrapping on a floor.
$L_{Aeq,t}$	The equivalent continuous sound level measured in dBA. This is commonly referred to as the average noise level. 't' is the interval time for the measurement. Typically 't' of 16hrs and 8hrs is used for day and night time ambient noise respectively or 't' is defined by the period of interest in BS4142 assessments.
$L_{A90,t}$	The noise level exceeded for 90% of the measurement period, measured in dBA. This is commonly referred to as the background noise level.
$L'_{nT,w}$	Weighted, standardized impact sound pressure level. A single number rating of the impact sound insulation of a floor/ceiling when impacted on by a standard "tapper" machine. The lower the $L'_{nT,w}$, the better the acoustic performance. Measured in accordance with BBS EN ISO 140-7 and rated in accordance with BS EN ISO 717-2.
NR	Noise Rating. A single number rating which is based on the sound level in the octave bands 31.5Hz – 8kHz inclusive, generally used to assess noise from mechanical services in buildings.
Octave Band	Frequencies are often grouped together into octaves for analysis. Octave bands are labelled by their centre frequency which are: 63Hz, 125Hz, 250Hz, 500Hz, 1kHz, 2kHz and 4kHz.
Reverberation Time (T_{mf})	Reverberation time is used for assessing the acoustic qualities of a space. It is defined as the time it takes for an impulse to decay by 60dB. T_{mf} is the arithmetic average of the reverberation time in the mid frequency bands (500Hz, 1kHz and 2kHz).
R_w	Weighted sound reduction index. A single number rating of the sound insulation performance of a specific building element. R_w is measured in a laboratory. R_w is commonly used by manufacturers to describe the sound insulation performance of building elements such as plasterboard and concrete. Measured in accordance with BS EN ISO 10140-2:2010 and rated in accordance with BS EN ISO 717-1.
Sound Absorption	When sound hits a surface, some of the sound energy is absorbed by the surface material. Sound absorption refers to the ability of a material to absorb sound, rated from 0, complete reflection, to 1, complete absorption.
Sound Insulation	When sound hits a surface, some of the sound energy travels through the material. 'Sound insulation' refers to the ability of a material to prevent the travel of sound.
Structure-borne transmission	Transmission of sound energy as vibrations via the structure of a building.

quietly moving forward

APPENDIX B

SITE PLAN
&
MEASUREMENT LOCATION

quietly moving forward


Noise Monitoring Location
1st Floor level exterior terrace
Falconers Court
Proposed
Plant Location
Carrick Walk
Top Floor windows

APPENDIX C

PLANNING POLICY AND GUIDANCE

quietly moving forward

National Planning Policy Framework and the Noise Policy Statement for England

The Department for Communities and Local Government published the National Planning Policy Framework (NPPF) on 27th March 2012 (as amended on 20th December 2023) and upon its publication, the majority of planning policy statements and guidance notes were withdrawn, including Planning Policy Guidance 24 Planning and Noise, which previously presented the government's overarching planning policy on noise.

Paragraph 180 in Section 15 of the NPPF , entitled Conserving and enhancing the natural environment, states that:

> *"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…"*

Paragraph 191 in Section 15 also states that:

> *"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…"*

The Department for Environment Food and Rural Affairs published the Noise Policy Statement for England (NPSE) in March 2010. The explanatory note of NPSE defines the following terms used in the NPPF:

> *"NOEL – No Observed Effect Level*
>
> *This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.*
>
> *LOAEL – Lowest Observed Adverse Effect Level*
>
> *This is the level above which adverse effects on health and quality of life can be detected.*
>
> *2.21 Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.*
>
> *SOAEL – Significant Observed Adverse Effect Level*
>
> *This is the level above which significant adverse effects on health and quality of life occur."*

The NPSE does not define any of the above effect levels numerically.

The NPSE presents the Noise Policy Aims as:

> *"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy and sustainable development:*

quietly moving forward

avoid significant adverse impacts on health and quality of life;

mitigate and minimise adverse impacts on health and quality of life; and

where possible, contribute to the improvement of health and quality of life."

It can be seen that the first two bullet points are similar to Section 11 of the NPPF, with a third aim that seeks to improve health and quality of life. The NPSE later expands on the Noise Policy Aims, stating:

2.23 The first aim of the NPSE states that significant adverse effects on health and quality of life should be avoided while also taking into account the guiding principles of sustainable development (paragraph 1.8).

2.24 The second aim of the NPSE refers to the situation where the impact lies somewhere between LOAEL and SOAEL. It requires that all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development (paragraph 1.8). This does not mean that such adverse effects cannot occur.

2.25 This aim (the third aim)*, seeks where possible, positively to improve health and quality of life through the pro-active management of noise while also taking into account the guiding principles of sustainable development (paragraph 1.8), recognising that there will be opportunities for such measures to be taken and that they will deliver potential benefits to society. The protection of quiet places and quiet times as well as the enhancement of the acoustic environment will assist with delivering this aim."*

It is clear that noise described in the NPSE as SOAEL that would lead to significant adverse effects should be avoided, although there is no definition as to what constitutes a significant adverse effect. Similarly, noise should be mitigated where it is high enough to lead to adverse effects, termed the LOAEL, but not so high that it leads to significant adverse effects.

quietly moving forward

British Standard 4142

To assess the acceptability of the resultant noise levels we have consulted the relevant standards. BS 4142:2014 'Methods for rating and assessing industrial and commercial sound' has been used to assess the likelihood any adverse impacts based on the resultant noise level from the new plant item, including any corrections for the character of the noise against the existing background noise level.

BS4142 gives guidance on assessing the likelihood of adverse impacts by calculating a 'rating level' of the new noise source and comparing its magnitude at noise sensitive locations to the existing or underlying background noise level. The background noise level is subtracted from the 'rating level' to assess the likelihood of complaints:

- The greater the difference the greater the likelihood of complaints.
- A difference of around +10dB or more is an indication of a significant adverse impact, depending on the context.
- A difference of +5dB 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 noise 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 not exceed the background sound level, this is an indication of the specific sound source having a low sound impact, depending on the context.

This assessment is carried out over a one hour period for the daytime and a fifteen minute period for the night-time. For the purposes of the standard it states that daytime and night-time are typically 07:00 to 23:00 hours and 23:00 to 07:00 hours respectively.

The 'rating level' of the noise source is obtained taking the following factors into consideration:

- The new plant noise (the specific noise) is measured or predicted in terms of L_{Aeq}.
- An additional correction shall be included if the noise contains a distinguishable, discrete continuous note, if the noise contains distinct impulses or if the noise is irregular enough to attract attention. The value for any tonal noise can be an addition of up to 6dB and for impulsive noise of up to 9dB.

BS 4142 goes onto state that:

> *'The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs. An effective assessment cannot be conducted without an understanding of the reason(s) for the assessment and the context in which the sound occurs/will occur. When making assessments and arriving at decisions, therefore, it is essential to place the sound in context.'*

BS4142 has been referenced in setting noise limits for any fixed plant proposed as part of the proposed development.

quietly moving forward

APPENDIX D

SURVEY RESULTS
(TABULAR)

quietly moving forward

EC 20639 - Falconers Court - Shoreham by Sea

David Miles & Partners

Tabulated Noise data

Time	L_{Aeq}	L_{AMax}	L_{A90}
08:45	53	72	47
09:00	52	68	47
09:15	52	70	47
09:30	51	69	46
09:45	50	64	45
10:00	51	68	46
10:15	50	67	45
10:30	52	67	46
10:45	53	71	44
11:00	53	71	47
11:15	54	74	46
11:30	55	80	44
11:45	49	60	44
12:00	49	60	44
12:15	54	82	46
12:30	50	71	45
12:45	50	68	45
13:00	51	69	46
13:15	51	72	45
13:30	51	64	45
13:45	52	65	46
14:00	52	76	46
14:15	51	64	45
14:30	51	66	46
14:45	52	66	46
15:00	51	75	46
15:15	50	64	46
15:30	53	75	46
15:45	51	65	47
16:00	51	65	46
16:15	55	85	47
16:30	53	73	48
16:45	53	71	47
17:00	52	64	48
17:15	53	70	48
17:30	51	67	47
17:45	51	69	47
18:00	54	72	46
18:15	50	73	46
18:30	51	70	46
18:45	50	63	45
19:00	53	71	46
19:15	50	70	45
19:30	52	71	43
19:45	51	63	43
20:00	50	62	43
20:15	50	60	45
20:30	53	63	45

Time	L_{Aeq}	L_{AMax}	L_{A90}
20:45	51	66	44
21:00	49	61	42
21:15	49	68	44
21:30	50	66	41
21:45	47	65	41
22:00	49	73	40
22:15	47	65	39
22:30	45	59	38
22:45	44	62	37
23:00	47	68	36
23:15	46	62	37
23:30	48	72	36
23:45	45	63	36
00:00	41	56	33
00:15	43	66	34
00:30	41	56	33
00:45	41	58	31
01:00	39	56	33
01:15	40	56	32
01:30	42	59	32
01:45	40	58	33
02:00	43	56	34
02:15	43	60	34
02:30	44	66	35
02:45	42	65	33
03:00	44	63	34
03:15	46	67	37
03:30	43	57	36
03:45	45	70	37
04:00	50	70	40
04:15	48	68	41
04:30	51	80	42
04:45	47	60	42
05:00	48	60	43
05:15	50	63	45
05:30	52	72	46
05:45	53	71	48
06:00	53	69	48

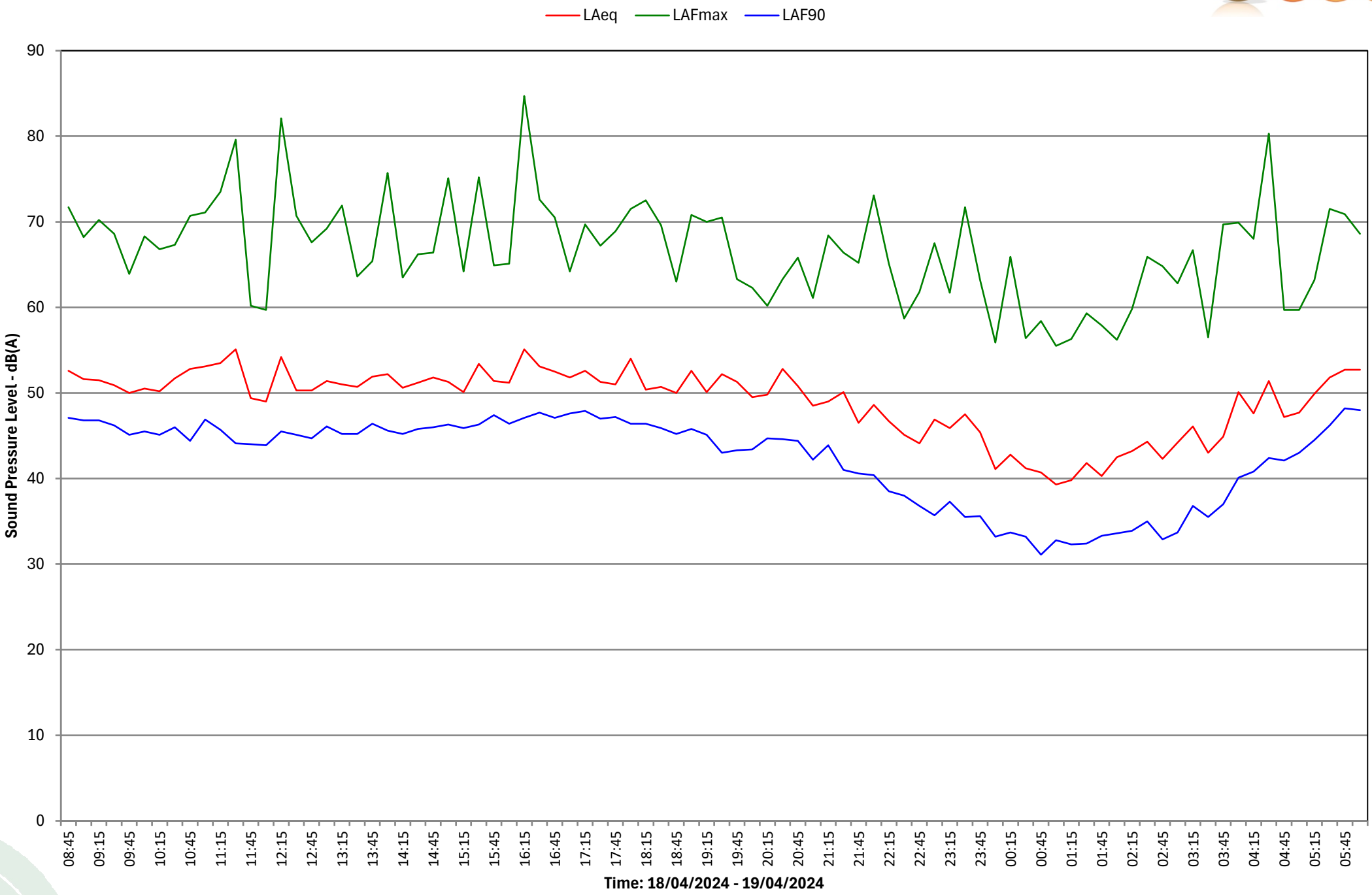
quietly moving forward

APPENDIX E

SURVEY RESULTS
(GRAPHICAL)

quietly moving forward

Noise Level Time History at Falconers Court - Shoreham by Sea



APPENDIX F

PUBLISHED PLANT NOISE DATA

quietly moving forward

MODEL			CAHV-R450YA-HPB
Power source			3-phase 4-wire 380-400-415V 50/60 Hz
Capacity(EN14511) *1		kW	40
	Power input	kW	14.03
	Current input	A	23.7-22.5-21.7
	COP (kW/kW)		2.85
	SCOP Low/Medium		3.57/3.24
Capacity *2		kW	33.4
	Power input	kW	16.6
	Current input	A	28.0-26.6-25.7
	COP (kW/kW)		2.01
Maximum current input		A	44.0-41.8-40.3
Water pressure drop *1			10.2 kPa (1.47 psi)
Temperature range *5	Outlet water temperature		24-70°C
	Outdoor temperature	D.B.	-25-43°C
Circulating water volume range *5			25 l/min-250 l/min
Sound pressure level (measured 1m below the unit in an anechoic room) *1*4		dB (A)	64
Sound pressure level (measured 1m below the unit in an anechoic room) *3*4		dB (A)	72
Water pipe diameter and type	Inlet	mm (in)	38.1 (1 1/2"), housing type joint
	Outlet	mm (in)	38.1 (1 1/2"), housing type joint
External finish			Acrylic painted steel sheet <Munsell 5Y 8/1 or similar>
External dimensions H × W × D		mm	1710 × 1750 × 740
Net weight		kg (lbs)	359 (791)
Design pressure	R454C	MPa	3.85
	Water	MPa	1.0
Heat exchanger	Water-side		Copper brazed stainless steel sheet
	Air-side		Plate fins and copper tubes
Compressor	Type		Inverter scroll hermetic compressor
	Manufacturer		MITSUBISHI ELECTRIC CORPORATION
	Starting method		Inverter
	Motor output	kW	12.1
	Lubricant		FVC32EA
Fan	Air flow rate	L/s	2500 × 2
	External static pressure		10 Pa (1mm H2O)
	Type and quantity		Propeller fan × 2
	Control and driving mechanism		Inverter control, direct driven by motor
	Motor output	kW	0.92 × 2
HIC (Heat inter-changer) circuit			Copper pipe
Protection devices	High pressure		High-pressure sensor and switch set at 3.85 MPa (643 psi)
	Inverter circuit		Overheat and overcurrent protection
	Compressor		Overheat protection
	Fan motor		Thermal switch
Defrosting method			Auto-defrost mode (Reversed refrigerant cycle)
Refrigerant	Type and factory charge	kg	R454C, 9.0 kg
	Flow and temperature control		LEV and HIC circuit

quietly moving forward