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NORMANDY WAY, HAVANT
PLANT NOISE ASSESSMENT – CONDITION 16

Technical Report: R10924-1 Rev 0

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For: Feltham Construction Ltd
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Document Status and Approval Schedule

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1.0 INTRODUCTION

- 1.1 24 Acoustics Ltd has been instructed by Feltham Construction Ltd to undertake an assessment of noise from proposed new plant at a new care home building in Havant.
- 1.2 This assessment follows site investigations and a background noise survey undertaken in December 2024, the results of which are reproduced in the following sections.
- 1.3 The site's planning consent contains a plant noise related condition (condition 16), requiring noise from new plant to not exceed specified limits at the nearest residential properties.
- 1.4 All noise levels in this report are presented in dB relative to 20µPa.

2.0 SITE DESCRIPTION AND PROPOSALS

- 2.1 The new care home building is located in the northeast of Havant, with the residential access road Normandy Way to the east and south. Bartons Road lies to the north of the site, which is the primary throughfare through the area.
- 2.2 The scheme comprises a new part two, part three storey care home building with kitchen, communal lounge and dining room. New plant is proposed to serve the building and will comprise air source heat pumps, MVHR units, air conditioning units and ventilation extract systems.
- 2.3 It is understood that the new MVHR, ASHP and air conditioning units will potentially operate on a 24-hour basis with kitchen extract plant operating during daytime hours only. Therefore, noise from plant shall be considered during daytime (07:00 to 23:00 hours) and night-time (23:00 to 07:00 hours) periods.
- 2.4 The nearest noise sensitive receptors to the proposed plant are approximately 55m to the south at 6 to 10 Normandy way as identified in Figure 1.

3.0 CRITERIA

Planning conditions

3.1 Planning condition 16 outlines noise limits for proposed plant, and is reproduced below:

"The development hereby permitted shall not be occupied unless and until the following information has been submitted to and approved in writing by the Local Planning Authority:

- Confirmation that the acoustic mitigation measures to be employed with regard to the building envelope, including fenestration and ventilation, for all residential rooms, will meet BS8223:2014 standards as recommended for indoor ambient noise levels for dwellings, and conform to the measures as recommended in the Noise impact assessment dated 19 April 2023 Rev 1 and produced by Parkerjones Acoustics.*
- Similarly for any potential mechanical plant associated with the development, an assessment in accordance with BS 4142:2014, has provided that a noise rating level limit of 40 dB and 30 dB L_{Aeq} for the day and night-time periods respectively, shall not be exceeded at 1m outside of nearby residential windows on and off site"*

3.2 This report addresses the requirements of the second part (noise from plant) of condition 16. The first part of the condition (internal noise levels) will be addressed in a future assessment.

BS 4142

3.3 BS 4142:2014 provides a method for rating the effects of industrial and commercial sound on residential areas. The standard advocates a comparison between the typical measured L_{A90} background noise level and L_{Aeq} noise level from the source being considered. For rating purposes if the noise source is tonal, intermittent or otherwise distinctive in character, a rating correction of up to 15 dBA is applied.

- 3.4 The standard states that a difference between the rating level and the background level of around +10 dBA is an indication of a significant adverse impact, depending on the context and a difference of around +5 dBA is likely to be an indication of an adverse impact again depending on the context. Where the rating level does not exceed the background noise level, this is an indication of the specific sound source having a low impact (depending upon the context).

4.0 ENVIRONMENTAL NOISE MEASUREMENTS

Measurement Instrumentation and Procedure

- 4.1 An environmental noise survey was undertaken by 24 Acoustics Ltd at the site between the 12th and 17th December 2024, in order to determine the background noise levels in the area.
- 4.2 The measurement location was to the south of the site, at a height of approximately 2 m above ground level, adjacent to the nearest residential properties on Normandy Way. The measurement location is shown in Figure 1.
- 4.3 The instrumentation was set up to monitor ambient, free-field noise levels and store data in 5-minute intervals, in terms of the overall A-weighted L_{eq} and L_{90} using fast time weighting. The following instrumentation was used during the survey:
- Rion NL32 Type 1 sound level meter;
 - Brüel & Kjær type 4231 acoustic calibrator.
- 4.4 Calibration of the equipment was checked before and on completion of the measurements and no drift was recorded. Noise measurements were made in accordance with BS 7445: 1991 'Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use'.
- 4.5 The weather conditions during the survey period were fine and dry, with wind speeds less than 5 m/s.

Background Noise Measurements - Results

- 4.6 The measured typical background noise levels are summarised in Table 1 and shown graphically in Appendix B.

Measured Typical Background Noise Level	
Daytime (07:00 to 23:00) dB LA90,1 hour	Night-time (23:00 to 07:00) dB LA90,15 min
41	30

Table 1: Measurement Results – Typical Background Noise Level

5.0 PLANT NOISE ASSESSMENT AND RECOMMENDATIONS

- 5.1 Six new air source heat pumps (ASHPs), ten air conditioning units, two MVHR units and a kitchen extract fan will be located to an open area of the roof. The MVHR, air conditioning and ASHP units will operate on a 24/7 basis, with kitchen extract plant operating during daytime periods only (07:00 to 23:00 hours).
- 5.2 The nearest residential properties are approximately 55m south of the rooftop plant location and the kitchen extract atmospheric louvre. Screening will be provided to surrounding residential properties by the building and rooftop edge/parapet wall. A description of the proposed plant is provided in Table 2 below with locations identified in Figure 2.

Proposed Plant Details				
Unit Reference	Make	Number	Model	Location
ASHP (heating)	Mitsubishi	2	CAHV-R450YA-HPB	Flat Roof
ASHP (Hot Water)	Mitsubishi	4	QAHV-N560YA-HPB	Flat Roof
Kitchen Extract	Systemair	1	MUB/T-S 042 450EC-K	Flat Roof
AC 1 to 5, 10	Mitsubishi	6	PUMY-SP112VKM2	Flat Roof
AC 6 and 8	Mitsubishi	2	PUMY-SP140VKM2	Flat Roof
AC 7 and 9	Mitsubishi	2	PUMY-P300YBM2	Flat Roof
MVHR 1	Nuaire	1	XBC25HA-NNN-E-LS4W	Flat Roof
MVHR 2	Nuaire	1	XBC15HA-NNN-E-LS4W	Flat Roof

Table 2: Proposed Plant Details

- 5.3 The apartments will be provided with Greenwood Unity CV2GIP/CV2SVGIP decentralised mechanical extract ventilation units with the wider building being served by Nuaire DAVE supply and extract fans. Noise levels from these units are very low and have not been considered further.
- 5.4 Manufacturer's noise data for the proposed ASHP units is described below:

- Mitsubishi CAHV-R450YA-HPB– Sound pressure level of 72 dBA at 1m;
- Mitsubishi QAHV-N560YA-HPB - Sound pressure level of 58 dBA at 1m.

5.5 It is relevant to note that the manufacturer's noise data for the Mitsubishi QAHV-N560YA-HPB unit relates to operation during wintertime conditions (e.g. -5 degrees centigrade), which is a worst case assumption and would only occur during the coldest periods in the year. Manufacturer's noise data for the Mitsubishi CAHV-R450YA-HPB is for the Capacity Priority Mode which is relevant during high load/worst case operations and presents the highest noise levels from the unit.

5.6 Table 3 shows the manufacturers' published noise level data for the proposed kitchen extract fan.

Systemair MUB/T-S 042 450EC-K Manufacturer's Stated Sound Power Level (dB) A-Weighted Octave Band Centre Frequency (Hz)										dBA
Unit	Component	63	125	250	500	1k	2k	4k	8k	
Kitchen Extract	Inlet	47	69	71	74	74	71	65	60	79
	Outlet	49	70	73	76	75	72	67	61	81
	Surrounding	58	72	64	52	50	48	40	31	60

Table 3: Manufacturer's Stated Sound Power Levels – Kitchen Extract

5.7 The manufacturer's noise data for the proposed air conditioning units are shown in Table 4.

Mitsubishi Unit	Manufacturer's Stated Sound Pressure Level (dB) at 1m Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
PUMY-SP112VKM2	57	55	54	52	49	45	38	32	54
PUMY-SP140VKM2	62	58	56	53	52	47	40	33	56
PUMY-P300YBM2	66	62	60	57	56	51	44	37	60

Table 4: Manufacturer's Stated Sound Pressure Levels at 1m – Air Conditioning Units

5.8 MVHR noise data is shown in Table 5 below.

Manufacturer's Stated Sound Power Level (dB) Octave Band Centre Frequency (Hz)										dBA
Unit	Component	63	125	250	500	1k	2k	4k	8k	
MVHR 1	Inlet	77	71	69	71	66	62	54	53	72
	Outlet	83	84	78	81	72	72	70	71	81
	Surrounding	69	68	55	58	45	44	44	36	58
MVHR 2	Inlet	70	60	55	56	62	55	47	43	64
	Outlet	75	73	65	67	68	65	60	58	72
	Surrounding	61	57	42	43	41	37	34	23	47

Table 5: Manufacturer's Stated Sound Power Levels – MVHR Units

- 5.9 Attenuators are proposed to the MVHR's atmospheric terminations. The attenuators' recommended minimum insertion losses are shown in Table 6.

MVHR Attenuators: Manufacturer's Stated Sound Reduction Performance (dB) at Octave Band Centre Frequency (Hz)							
63	125	250	500	1k	2k	4k	8k
2	4	8	14	18	15	11	8

Table 6: MVHR Atmospheric Termination attenuators

- 5.10 The proposed plant is not expected to contain tonal or otherwise distinctive noise characteristics that would be perceptible at the nearest residential property.

Assessment

- 5.11 Calculations have been undertaken, based on the manufacturers' stated plant noise levels to determine the cumulative level of noise from the new plant at the nearest residential properties.
- 5.12 Calculations include losses due to distance, screening (provided by the building and roof edge/parapet wall), reflections and directivity. To provide a robust assessment, it is assumed that all plant will be operating concurrently during the daytime periods (07:00 – 23:00 hours) with the ASHP, MVHR and air conditioning units operating during night time periods (23:00 – 07:00 hours).
- 5.13 Resultant cumulative plant noise levels at the nearest neighbouring residential properties are described in Table 7.

Residential Receptor Location	Predicted Maximum Plant Noise Level, dB	
	Daytime (07:00 to 23:00) dB L _{Aeq} 1 hour	Night-Time (23:00 to 07:00) dB L _{Aeq} 15 min
6 to 10 Normandy Way	27	25
Plant Noise Criteria	40	30
Difference	-13	-5

Table 7: Predicted Plant Noise Levels at Nearest Residential Properties

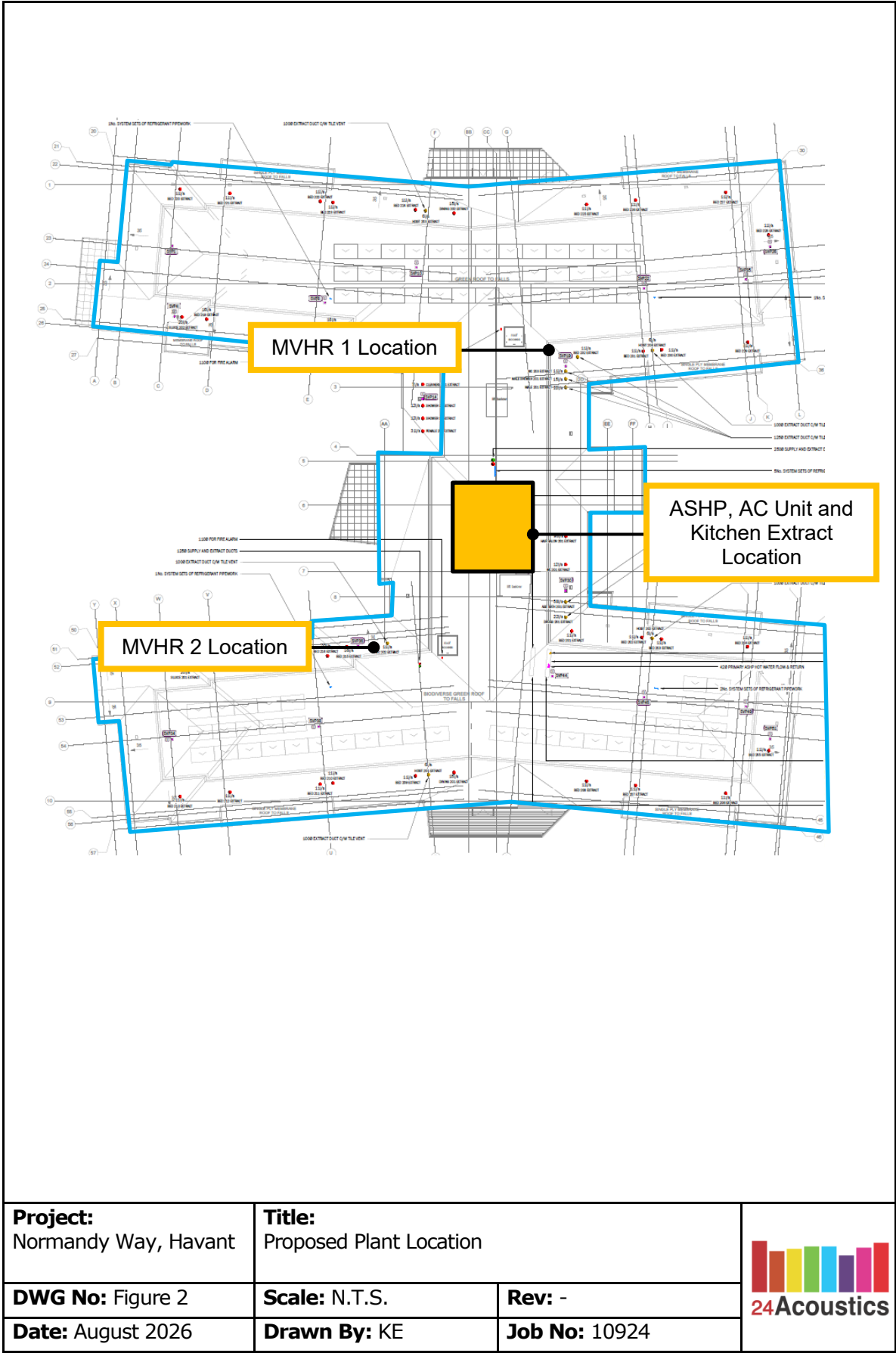
- 5.14 Calculations demonstrate that noise levels from ASHP and kitchen extract plant will be below the plant noise criteria of condition 16 at the nearest neighbouring residential dwellings during all periods.
- 5.15 Additionally, the predicted plant noise levels are below the measured background noise levels at the site of 41 dB L_{A90} 1 hour during the day and 30 dB L_{A90} 15 min during the night. External noise levels from plant are therefore acceptable.
- 5.16 Calculations have been undertaken to determine internal plant noise levels at the new care home building (i.e. rooms the plant is serving). The nearest care home habitable rooms are located on the top floor of the building and screened by the building edge/sloped parapet wall. Assuming a loss from an open window of 15 dBA (as per BS 8233), internal plant noise levels will be in the order of 22 to 24 dB L_{Aeq, T} in the nearest care home rooms, which is very low and, therefore, acceptable.

6.0 CONCLUSIONS

- 6.1 24 Acoustics Ltd has been instructed by Feltham Construction Ltd to undertake a noise assessment for proposed new plant at Normandy Way, Havant, in response to planning condition 16.
- 6.2 An environmental noise survey has been undertaken to determine the prevailing background noise levels during daytime, evening and night-time periods.
- 6.3 Based upon the survey results and manufacturers' noise data, an assessment of noise from the proposed plant has been undertaken at the nearest noise sensitive properties.
- 6.4 Predicted noise levels demonstrate that noise from proposed plant will be below the representative background noise levels and the relevant plant noise criteria outlined in planning condition 16 at the nearest residential properties.
- 6.5 Based on the above, noise from proposed plant will be acceptable and achieves the requirements of planning condition 16.



Project: Normandy Way, Havant	Title: Site location, building location, measurement location and nearest residential properties		
DWG No: Figure 1	Scale: N.T.S.	Rev: -	
Date: August 2026	Drawn By: KE	Job No: 10924	



APPENDIX A: ACOUSTIC TERMINOLOGY

Noise is defined as unwanted sound. The range of audible sound is from 0 to 140 dB. The frequency response of the ear is usually taken to be around 18 Hz (number of oscillations per second) to 18000 Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than the lower and higher frequencies and because of this, the low and high frequency components of a sound are reduced in importance by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most widely used and which correlates best with subjective response to noise is the dBA weighting. This is an internationally accepted standard for noise measurements.

For variable sources, such as traffic, a difference of 3 dBA is just distinguishable. In addition, a doubling of traffic flow will increase the overall noise by 3 dBA. The 'loudness' of a noise is a purely subjective parameter, but it is generally accepted that an increase/ decrease of 10 dBA corresponds to a doubling/ halving in perceived loudness.

External noise levels are rarely steady, but rise and fall according to activities within an area. In attempt to produce a figure that relates this variable noise level to subjective response, a number of noise indices have been developed. These include:

- i) The L_{Amax} noise level

This is the maximum noise level recorded over the measurement period.

- ii) The L_{Aeq} noise level

This is "equivalent continuous A-weighted sound pressure level, in decibels" and is defined in British Standard BS 7445 as the "value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time interval, T , has the same mean square sound pressure as a sound under consideration whose level varies with time".

It is a unit commonly used to describe construction noise and noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise. In more straightforward terms, it is a measure of energy within the varying noise.

iii) The L_{A10} noise level

This is the noise level that is exceeded for 10% of the measurement period and gives an indication of the noisier levels. It is a unit that has been used over many years for the measurement and assessment of road traffic noise.

iv) The L_{A90} noise level

This is the noise level that is exceeded for 90% of the measurement period and gives an indication of the noise level during the quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial noise.

APPENDIX B: NOISE SURVEY RESULTS

