SHARPS REDMORE

ACOUSTIC CONSULTANTS • Established 1990

Report

Aldi, Herefield Road, Uxbridge

Plant noise assessment

Prepared by
Mark Taylor MIOA

Date 28th February 2025
Project No 2422544

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Regional Locations
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Contents

Appendices

1.0 Introduction

1.1 Sharps Redmore (SR) has been instructed to undertake a noise assessment of the proposed replacement plant to serve the consented Aldi store on Harefield Road, Uxbridge.

1.2 The proposal is to install the refrigeration and air conditioning plant on a gantry at roof level at the rear of the store– See plant layout drawing in Appendix D.

1.3 The assessment criteria are presented at section 2.

1.4 An assessment of predicted plant noise levels is contained at section 3.

1.5 Details of the noise model methodology are presented in Section 4.

1.6 The site is located on Herefield Road, Uxbridge. The nearest residential properties to the proposed plant are located in Wilmar Close to the south of the store.

2.0 Establishing criteria

2.1 It is usual in dealing with fixed sources of ventilation and refrigeration noise to use BS 4142:2014+A1:2019 "Method for rating and assessing industrial and commercial sound" as a means of establishing the potential impact from the new sources to the nearest residential properties.

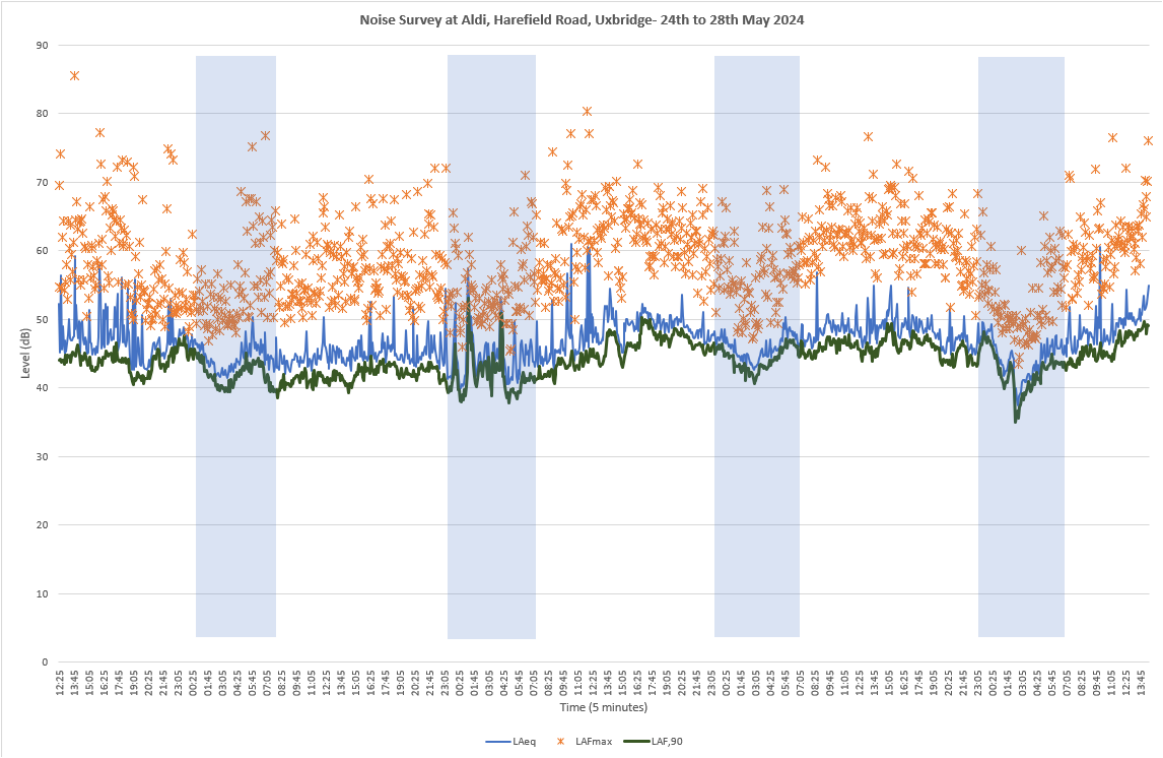
2.2 A noise survey was undertaken at the site, between 24th and 28th May 2024, on the rear boundary of the store – see Figure 1 below. The survey was undertaken using a Norsonic 140 Type 1 sound level meters, which was calibrated before and after the survey, with no sign of any drift. The sound level meter was set-up, to continually record noise levels at 5-minute intervals. All measurements were carried out in free-field conditions.

Figure 1: Survey location

2.3 The weather was dry, with low wind speeds, as such would not have an adverse impact of the environmental noise survey.

2.4 A summary of the survey results are shown in Figure 2 below:

Figure 2: Environmental noise survey data



2.5 Based on the environmental noise survey undertaken by ourselves, the following background noise levels are considered to be representative of the noise climate at the nearest residential properties to the store:

Table 1: Typical background

Time	Typical background L_{A90}
Day (0700-2300) based on late evening	45 dB
Night (2300-0700)	40 dB

3.0 The fixed plant noise control scheme – conclusions and recommendations

3.1 Based on the environmental noise model (see Section 5.0), the predicted noise levels without any additional mitigation are as follows:

Table 2 – Predicted noise levels at nearest residential properties from the proposed plant

Receptor location	Daytime 0700-2300			Night 2300-0700		
	Predicted L_{Aeq}	Background L_{A90}	Difference	Predicted L_{Aeq}	Background L_{A90}	Difference
Wilmer Close	32 dB (29+3)	45 dB	-13	32 dB (29+3)	40 dB	-8

3.2 A schedule of manufacturers noise data used for the proposed plant is shown in Appendix A.

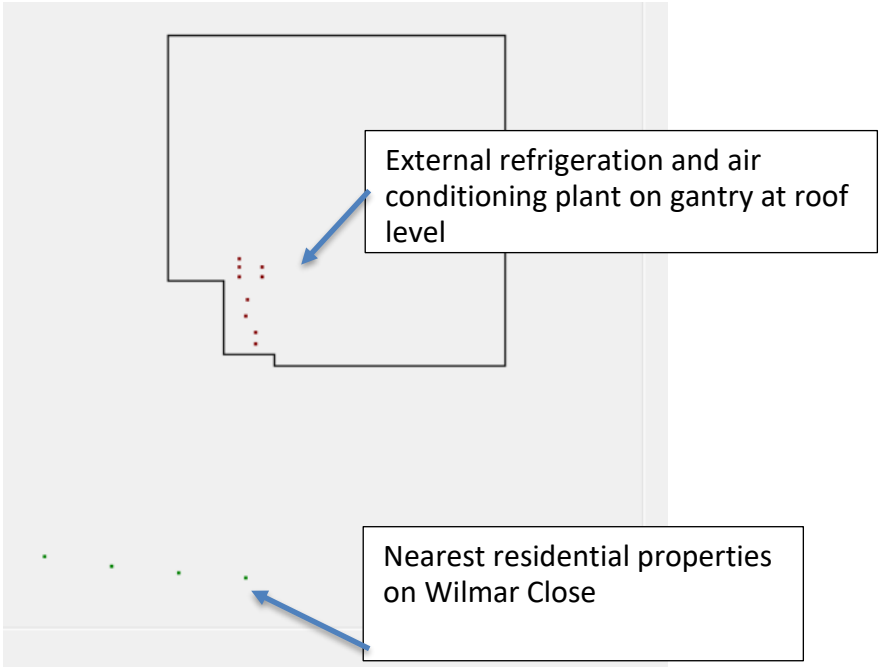
3.3 The noise control system is based on the selection of intrinsically quiet equipment, distance from the plant to the receptors.

3.4 Based on our experience, the type of plant proposed is neither tonal or impulsive in character, however the refrigeration plant may be intermittent, therefore a +3 dB character correction has been applied to the predicted noise levels in Table 2.

3.5 The predicted rating noise levels are significantly below the background noise climate during the day and night. Based on the guidance in BS 4142:2014+A1:2019, where the rating level does not exceed the background noise climate, it is considered to be a low impact.

3.6 Detailed below is a sketch from the noise model detailing the location of the store, the plant, and the receptors:

Figure 3: Noise model source and receptor locations



4.0 The noise model and prediction methodology

4.1 The noise model employed has been written in-house to provide an accurate prediction method for assessing environmental noise from, in particular, plant and equipment items which can be perceived as being point sources. It has been mainly used for the prediction of noise emanating from superstores.

4.2 There are three input spreadsheets containing:

- noise sources data
- receiver data
- acoustic screening data

These are included in Appendix A.

4.3 The noise sources data include one of the following forms for each item of plant:

- either, octave band sound power levels in the range of 63 to 8000Hz – this being available from manufacturer of many of the supply and extract fans.
- or, octave band sound pressure levels in the range of 63 to 8000Hz – this is available usually for the small, externally mounted split units' condenser fans from the manufacturer's product catalogue when measured at one metre in anechoic conditions, thus allowing straight forward calculation of the equivalent sound power levels.
- or, single value sound pressure levels at a stated distance

4.4 The relative location of the plant using X and Y co-ordinates with an arbitrary datum point and a Z (height) co-ordinate based on supporting steel and screening heights from the main contractor and then the equipment heights based, in this case, on the mechanical services contractor drawings.

4.5 Where known, the area and orientation of the noise outlet is entered together with its location adjacent to either one, two or three reflective surfaces so that the calculation can establish the directivity pattern and outlet reflection losses.

4.6 The receiver data needed are the X, Y and Z co-ordinates so that the relative distance and angle can be calculated between the source and the receiver.

4.7 Finally, several types of acoustic screening may be entered. In this case, this is designated "R" meaning a ring barrier indicating the building itself.

4.8 The noise model carries out "text book" atmospheric side calculations at each receiver position from each source allowing for the attenuation from such as the calculated distance and screening. The calculations are performed in eight Octave bands from 63 to 8000Hz but can then be summarised as dBA, NR or NC for convenience. In this case, the overall summary levels are in dBA. Calculations for the plant are included in Appendix C. The computer maintains a logarithmic total of the noise levels in Octave bands.

4.9 At the end of each program "run", the overall day or night time noise level at each receiver position are calculated and ranked in descending order of noise level. Where this ranking shows that the receiver position's noise level exceeds the noise criterion, each calculation can be interrogated to determine the plant items needing more detailed inspection to establish the attenuation needed. The process is repeated until either the noise level meets the noise criterion or the program demonstrates that other noise control methods are needed. This may take the form of restricting the offending plant's period of operation or improving the screening or re-selection to give quieter plant.

4.10 Plant noise predictions are shown in summary form; full calculations of noise from each source to each receptor are available on request.

5.0 Assessment conclusions

5.1 This assessment has been undertaken in accordance with the guidelines in BS 4142:2014+A1:2109.

5.2 The predicted rating noise levels are significantly below the background noise climate during the day, night, which is accordance with BS 4142, is considered to be a low impact.

5.3 It is also noted that the predicted rating noise is in excess of the 5 dB below background, which is understood to be the LPA's standard approach to noise from plant.

5.4 This assessment therefore objectively demonstrates that noise arising from the fixed plant, complies with the requirement of paragraph 198 of the NPPF to avoid significant adverse impact.

APPENDIX A

NOISE SOURCE DATA

SHARPS REDMORE PARTNERSHIP, THE WHITE HOUSE, LONDON ROAD, COPDOCK, IPSWICH. IP8 3JH
Telephone: 44(0)1473 730073 Facsimile: 44(0)1473 730030 Email: srp@sharpsredmore.co.uk

CLIENT :Aldi	A Sht: 1 of 1
PROJECT :Uxbridge	PROJECT No:2422544
CONSULTANT:MT	DATE :03 March 2025

SOUND POWER LEVELS (Lw) & SOUND PRESSURE LEVELS (Lp)
FOR FANS AND OTHER EQUIPMENT

EQUIPMENT NAME/REFERENCE	Lw/Lp	DIST. (m)	OP. TIME DNA	MID FREQUENCY OCTAVE BANDS (HZ) 63	125	250	500	1k	2k	4k	8k
LT condenser	Lp	10	A	Maximum 36dBA at 10 metres							
MT condenser	Lp	10	A	Maximum 33dBA at 10 metres							
Gas cooler	Lp	10	A	Maximum 30dBA at 10 metres							
Compressor pack	Lp	10	A	Maximum 30dBA at 10 metres							
ASHP	Lp	5	A	Maximum 38dBA at 5 metres							
ASHP	Lp	5	A	Maximum 38dBA at 5 metres							
ASHP	Lp	5	A	Maximum 38dBA at 5 metres							
ASHP	Lp	5	A	Maximum 38dBA at 5 metres							
ASHP	Lp	5	A	Maximum 38dBA at 5 metres							

NOTES:

1. Lw/Lp:
   Lw means sound power level (dB)
   Lp means sound pressure level at stated distance (dB/m)
2. Operational time (OP.TIME D/N/A):
   D (Day) - could operate at any time between 0700 & 2300
   N (Night) - could operate at any time between 2300 & 0700
   A (All) - could operate at any time during the day and night

APPENDIX B

NOISE MODEL INPUT DATA

SHARPS REDMORE PARTNERSHIP

The White House, London Road, Copdock, Ipswich, IP8 3JH
Tel: 44 (0) 1473 730073 Fax: 44 (0) 1473 730030 Email: srp@sharpsredmore.co.uk

Filename : P:\24 - Projects\2422544 Harefield Road, Uxbridge- GJK\Noysplot\280225_1

Date : 03 March 2025

Entries by : MT

Project number : 2422544

Project title : Uxbridge

Client's name : Aldi

Map/plot details :

Length :3200
Width :3200
Height :250

SHARPS REDMORE PARTNERSHIP

The White House, London Road, Copdock, Ipswich, IP8 3JH
Tel: 44 (0) 1473 730073 Fax: 44 (0) 1473 730030 Email: srp@sharpsredmore.co.uk

Source data - description, coordinates, outlet size, percentage to atmosphere, directivity, sound levels and running period.

Filename : P:\24 - Projects\2422544 Harefield Road, Uxbridge- GJK\Noysplot\280225_1

Source Description	Coordinates X(m)	Y(m)	Z(m)	Outlet details A(mm)	B(mm)	Ang.	%	Q	Run DNA	Lp/ Lw	dBA Y/N	Dist. (m)	Mid frequency octave bands 63	125	250	500	1k	2k	4k	8k
LT condenser	197.0	202.0	6.0	0	0	0	100	1	A	P	Y	10.0	36	0	0	0	0	0	0	0
MT condenser	197.0	204.0	6.0	0	0	0	100	1	A	P	Y	10.0	33	0	0	0	0	0	0	0
Gas cooler	195.0	207.0	6.7	0	0	0	100	1	A	P	Y	10.0	30	0	0	0	0	0	0	0
Compressor pack	195.5	209.8	7.6	0	0	0	100	1	A	P	Y	10.0	30	0	0	0	0	0	0	0
ASHP	198.0	214.0	6.8	0	0	0	100	2	A	P	Y	5.0	38	0	0	0	0	0	0	0
ASHP	194.0	214.0	6.8	0	0	0	100	2	A	P	Y	5.0	38	0	0	0	0	0	0	0
ASHP	198.0	215.8	6.8	0	0	0	100	2	A	P	Y	5.0	38	0	0	0	0	0	0	0
ASHP	194.0	215.8	6.8	0	0	0	100	2	A	P	Y	5.0	38	0	0	0	0	0	0	0
ASHP	194.0	217.3	6.8	0	0	0	100	2	A	P	Y	5.0	38	0	0	0	0	0	0	0

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The White House, London Road, Copdock, Ipswich, IP8 3JH
Tel: 44 (0) 1473 730073 Fax: 44 (0) 1473 730030 Email: srp@sharpsredmore.co.uk

Receptor data - description and coordinates

Filename : P:\24 - Projects\2422544 Harefield Road, Uxbridge- GJK\Noysplot\280225_1

Receptor Description	Coordinates X(m)	Y(m)	Z(m)	DNA
18 to 20 Wilmar Close	195.0	160.0	4.5	A
22 to 24 Wilmar Close	183.0	161.0	4.5	A
26 to 28 Wilmar Close	171.0	162.0	4.5	A
30 to 32 Wilmar Close	159.0	164.0	4.5	A

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Barrier data - description and coordinates

Filename : P:\24 - Projects\2422544 Harefield Road, Uxbridge- GJK\Noysplot\280225_1

Barrier type	Coordinates Start X(m)	Start Y(m)	Start Z(m)	Finish X(m)	Finish Y(m)	Finish Z(m)
R	200.0	200.0	5.0	191.0	200.0	5.0
R	191.0	200.0	5.0	191.0	213.0	5.0
R	191.0	213.0	5.0	181.0	213.0	5.0
R	181.0	213.0	5.0	181.0	257.0	5.0
R	181.0	257.0	5.0	241.5	257.0	5.0
R	241.5	257.0	5.0	241.5	198.0	5.0
R	241.5	198.0	5.0	200.0	198.0	5.0
R	200.0	198.0	5.0	200.0	200.0	5.0

APPENDIX C

PREDICTED NOISE LEVELS - SUMMARY

SHARPS REDMORE PARTNERSHIP

The White House, London Road, Copdock, Ipswich, IP8 3JH
Tel: 44 (0) 1473 730073 Fax: 44 (0) 1473 730030 Email: srp@sharpsredmore.co.uk

Night-time overall receptor listings

Filename: P:\24 - Projects\2422544 Harefield Road, Uxbridge- GJK\Noysplot\280225_1
Date: 03/03/2025

	Mid frequency Octave bands (Hz)								
	63	125	250	500	1k	2k	4k	8k	dBA
18 to 20 Wilmar Close	44	35	29	24	21	20	20	22	29
22 to 24 Wilmar Close	43	35	29	23	20	19	19	21	29
26 to 28 Wilmar Close	43	35	29	23	20	19	19	21	29
30 to 32 Wilmar Close	43	34	28	22	19	18	18	20	28

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The White House, London Road, Copdock, Ipswich, IP8 3JH
Tel: 44 (0) 1473 730073 Fax: 44 (0) 1473 730030 Email: srp@sharpsredmore.co.uk

Night-time source sound pressure levels at receptor: 18 to 20 Wilmar Close

Filename: P:\24 - Projects\2422544 Harefield Road, Uxbridge- GJK\Noysplot\280225_1
Date: 03/03/2025

	Mid frequency Octave bands (Hz)								
	63	125	250	500	1k	2k	4k	8k	dBA
LT condenser	39	31	24	18	15	14	14	16	24
MT condenser	33	25	20	14	11	10	10	12	20
ASHP	33	24	20	14	11	10	10	12	19
ASHP	33	24	20	14	11	10	10	12	19
ASHP	33	24	19	14	11	10	10	12	19
ASHP	33	24	19	14	11	10	10	12	19
ASHP	33	23	18	14	11	10	10	12	19
Gas cooler	31	24	17	11	8	7	7	9	17
Compressor pack	32	23	16	10	7	6	6	8	16
Total Free field Lp and dBA	44	35	29	24	21	20	20	22	29

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Tel: 44 (0) 1473 730073 Fax: 44 (0) 1473 730030 Email: srp@sharpsredmore.co.uk

Night-time source sound pressure levels at receptor: 22 to 24 Wilmar Close

Filename: P:\24 - Projects\2422544 Harefield Road, Uxbridge- GJK\Noysplot\280225_1
Date: 03/03/2025

	Mid frequency Octave bands (Hz)								
	63	125	250	500	1k	2k	4k	8k	dBA
LT condenser	38	30	23	17	14	13	13	15	23
MT condenser	33	25	20	14	11	10	10	12	20
ASHP	33	24	20	14	11	10	10	12	19
ASHP	33	24	20	14	11	10	10	12	19
ASHP	33	24	19	14	11	10	10	12	19
ASHP	33	24	19	14	11	10	10	12	19
ASHP	33	24	19	14	11	10	10	12	19
Compressor pack	32	23	16	10	7	6	6	8	16
Gas cooler	30	23	16	10	7	6	6	8	16
Total Free field Lp and dBA	43	35	29	23	20	19	19	21	29

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Tel: 44 (0) 1473 730073 Fax: 44 (0) 1473 730030 Email: srp@sharpsredmore.co.uk

Night-time source sound pressure levels at receptor: 26 to 28 Wilmar Close

Filename: P:\24 - Projects\2422544 Harefield Road, Uxbridge- GJK\Noysplot\280225_1
Date: 03/03/2025

	Mid frequency Octave bands (Hz)								
	63	125	250	500	1k	2k	4k	8k	dBA
LT condenser	37	29	22	16	13	12	12	14	22
ASHP	35	27	20	14	11	10	10	12	20
ASHP	35	27	20	14	11	10	10	12	20
ASHP	33	24	20	14	11	10	10	12	19
ASHP	33	26	19	13	10	9	9	11	19
MT condenser	32	24	19	13	10	9	9	11	19
ASHP	32	23	18	13	10	9	9	11	18
Gas cooler	30	23	16	10	7	6	6	8	16
Compressor pack	31	22	15	9	6	5	5	7	15
Total Free field Lp and dBA	43	35	29	23	20	19	19	21	29

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Tel: 44 (0) 1473 730073 Fax: 44 (0) 1473 730030 Email: srp@sharpsredmore.co.uk

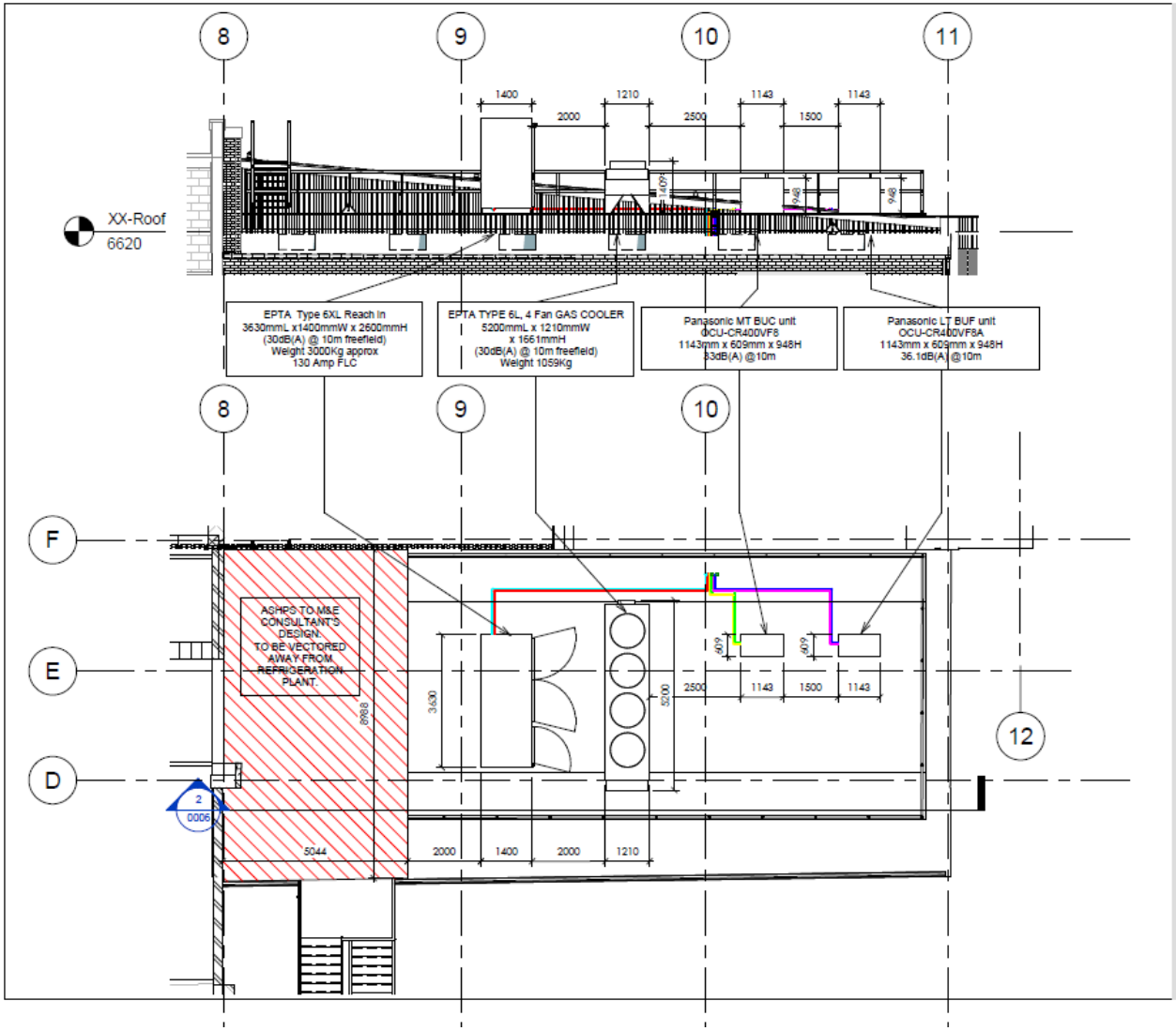
Night-time source sound pressure levels at receptor: 30 to 32 Wilmar Close

Filename: P:\24 - Projects\2422544 Harefield Road, Uxbridge- GJK\Noysplot\280225_1
Date: 03/03/2025

	Mid frequency Octave bands (Hz)								
	63	125	250	500	1k	2k	4k	8k	dBA
LT condenser	35	28	21	15	12	11	11	13	21
ASHP	36	26	19	13	10	9	9	11	19
ASHP	36	26	19	13	10	9	9	11	19
ASHP	35	26	19	13	10	9	9	11	19
ASHP	32	24	19	13	10	9	9	11	19
ASHP	32	24	19	13	10	9	9	11	19
MT condenser	31	22	18	12	9	8	8	10	17
Compressor pack	32	22	15	9	6	5	5	7	15
Gas cooler	30	22	15	9	6	5	5	7	15
Total Free field Lp and dBA	43	34	28	22	19	18	18	20	28

APPENDIX D

PLANT LAYOUT DRAWINGS



Drawing Revisions

Rev	Date	Description	Drawn	Chk'd By
P02	17/07/2024	Linked model updated (Issued 12/07/2024).	AA	ST
P03	23/07/2024	R6 annotation amended.	AA	ST
C01	24/07/2024	Tender Issue	AA	ST
C02	29/10/2024	Gas cooler position amended.	AA	ST
C03	08/11/2024	Plant equipment amended to sit on plant deck.	AA	ST

Client
ALDI

Project Title
Uxbridge

Project Address
1,2 Harefield Road,
Uxbridge,
London UB8 1JS

Drawing Title
R6 Plant Compound Layout

Drawn	Checked	Scale @ A3	BIM Status	Date
AA	ST	1 : 100	D2	01/07/2024
Drawing Status			Revision	K2 Project No.
For Tender			C03	2853

Project No.	Originator	Volume	Level	Type	Role	Number
79-XXXX -	K2E -	XX -	R1 -	DR -	Z -	0006

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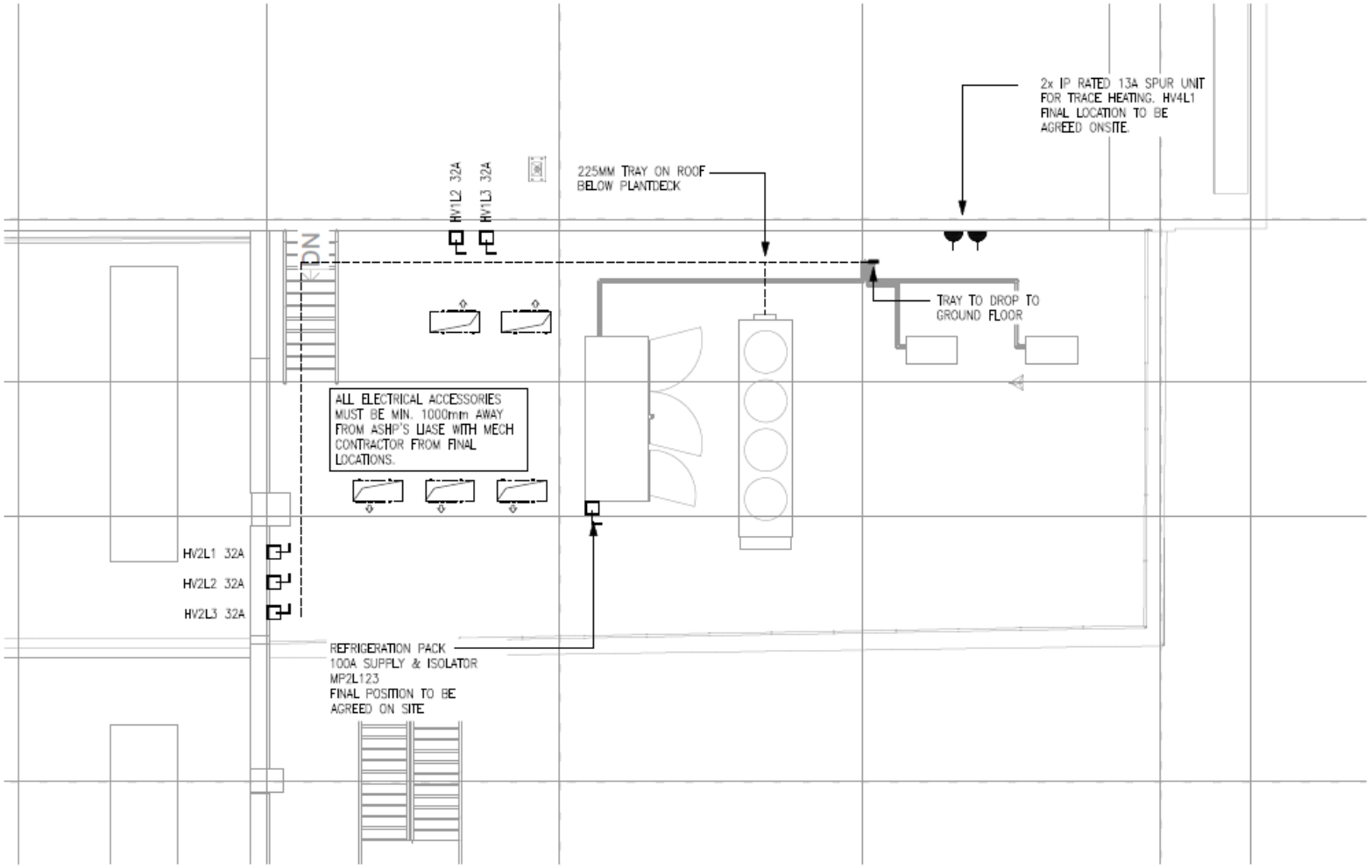

ROOF PLANT AREA
POWER LAYOUT