

SHARPS REDMORE

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Report

Aldi, Havant Central Retail Park

Assessment of fixed plant noise

**Planning application
APP/18/00812 Condition 8**

Prepared by
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Date 18th October 2019
Project No: 1919178

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This report has been prepared with all reasonable skill, care and diligence commensurate with an acoustic consultancy practice under the terms and brief agreed with our client at that time. Sharps Redmore provides no duty or responsibility whatsoever to any third party who relies upon its content, recommendations or conclusions.

1.0 Introduction

1.1 Sharps Redmore (SR) has been instructed to undertake a noise assessment of proposed fixed plant equipment, at part of the re-development of Unit 6 of Havant Central Retail Park, to an Aldi store. See site layout drawing in Appendix F.

1.2 Consent for the development (APP/18/00812) has been granted, subject to a number of planning conditions.

Condition 8 states:

“No externally visible or audible plant, machinery or structures required for ventilation or filtration purposes shall be installed at the premises until and unless details of the external appearance and acoustic performance of the same have been submitted to and approved in writing by the Local Planning Authority.”

1.3 The proposal is to install the refrigeration plant (gas coolers and compressor packs) in a plant compound area between the store and Park Road North. The ventilation plant (Air handling unit (AHU)) is to be installed within the building, with inlet and exhaust cowls at roof level. The extract fans also installed internally, discharging through the façade facing Park Road North. See Appendix D for the plant site layout drawing indicating the proposed location of the plant.

1.4 The surrounding area is a combination of other commercial / retail outlets and residential. The nearest residential properties are located to the north in Wendover Road, and north east in Mavis Crescent.

1.5 The objective of the assessment is to determine how noise that may be generated as a result of the proposed fixed plant equipment would affect the amenity of the residential properties.

1.6 Section 2 of this report contains a discussion of the available methods of assessment and assessment criteria.

1.7 Section 3 of this report sets out the findings of an environmental noise survey, section 4 presents an assessment of noise from fixed plant equipment.

1.8 The assessment conclusions are contained in section 6 of this report.

2.0 Assessment methodology and criteria

- 2.1 The National Planning Policy Framework (NPPF), February 2019, sets out the Government's planning policies for England and "these policies articulate the Government's vision of sustainable development." In respect of noise, Paragraph 180 of the NPPF states the following:

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

- a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
- b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and*
- c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation".*

- 2.2 Guidance on the interpretation of the policy aims contained within the NPPF is contained within National Planning Policy Guidance (NPPG). The NPPG introduces the concept of a noise exposure hierarchy based on likely average response. The guidance contained in the NPPG is summarised in the table below:

TABLE 1: Noise Exposure Hierarchy

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
		Lowest Observed Adverse Effect Level	
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum

Perception	Examples of Outcomes	Increasing Effect Level	Action
		Significant Observed Adverse Effect Level	
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

- 2.3 The NPPF and NPPG reinforce the March 2010 DEFRA publication, “Noise Policy Statement for England” (NPSE), which states three policy aims, as follows:

“Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- *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.”*

- 2.4 Together, the first two aims require that no significant adverse impact should occur and that, where a noise level which falls between a level which represents the lowest observable adverse effect and a level which represents a significant observed adverse effect, then according to the explanatory notes in the statement:

“... all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life whilst also taking into consideration the guiding principles of sustainable development. This does not mean that such effects cannot occur.”

- 2.5 Taking an overview of national policy aims and guidance it is clear that when considering the impact of noise that the fact can be heard and causes impact, is not reason to refusal an application as consideration should also be given to the significance of the impact and the mitigation measures available.

2.6 It is possible to apply objective standards to the assessment of noise and the effect produced by the introduction of a certain noise source may be determined by several methods, as follows:

- i) The effect may be determined by reference to guideline noise values, such as those contained in the World Health Organisation (WHO) *"Guidelines for Community Noise"*.
- ii) Alternatively, the impact may be determined by considering the change in noise level that would result from the proposal, in an appropriate noise index for the characteristic of the noise in question. There are various criteria linking change in noise level to effect. This is the method that is suited to, for example, the assessment of noise from road traffic because it is capable of displaying impact to all properties adjacent to a road link irrespective of their distance from the road.
- iii) Another method is described within BS 4142:2014 to determine the significance of sound impact from sources of industrial and/or commercial nature. The sources that the newly revised standard is intended to assess are sound from industrial and manufacturing processes, sound from fixed plant installations, sound from loading and unloading of goods at industrial and/or commercial premises and the sound from mobile plant and vehicles, such as forklift, train or ship movements.

2.7 The assessment of fixed plant noise is principally undertaken in accordance with the methodology in BS 4142:2014. The significance of sound impact is to be determined according to the following summary process:

- i) Determine the background sound levels, in terms of the index L_{A90} , at the receptor locations of interest.
- ii) Determine the specific sound level of the source being assessed, in terms of its L_{AeqT} level ($T = 1$ hour for day or 15 minutes for night), at the receptor location of interest.
- iii) Apply a rating level acoustic feature correction if the source sound has tonal, impulsive, intermittent, or other characteristics which attract attention.
- iv) Compare the rating sound level with the background sound level; the greater the difference between the two, the higher the likelihood of adverse impact.
- v) A difference (rating – background) of around +10 dB is an indication of significant adverse impact, depending on the context; a difference of +5 dB is an indication of an adverse impact, depending on the context. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending upon context.

- 2.8 BS 4142:2014 introduces the concept of 'context' to the process of identifying noise impact. Section 11 of BS 4142:2014 explains *"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 (our emphasis). 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" (our emphasis).*
- 2.9 There are many *context* points to consider when undertaking an assessment of sound impact including:
- The absolute level of sound;
 - The character and level of the specific sound in the context of the existing noise climate; for example is the sound to occur in a location already characterised by similar activities as those proposed?
 - The sensitivity of the receptors;
 - The time and duration that the specific sound is to occur;
 - The conclusions of assessments undertaken using alternative assessment methods, for example WHO guidelines noise values or change in noise level;
- 2.10 It is therefore entirely possible that whilst the numerical outcome of a BS 4142:2014 assessment is indicative of adverse or significant adverse impact, when the proposal is considered in *context* the significance of the impact is reduced to an acceptable level.

3.0 Environmental noise survey details

- 3.1 It is usual in dealing with fixed sources of ventilation and refrigeration noise to use BS 4142:2014 “Method for rating and assessing industrial and commercial noise” as a means of establishing the potential impact from the new sources to the nearest residential properties.
- 3.2 A noise survey was undertaken at the site between 14th and 15th October. The monitoring location was chosen to be representative of the nearest residential properties potentially affected by the proposed plant.

Figure 1: Survey location



- 3.3 Measurements were carried out using a Norsonic 140 Class 1 precision sound level meter, which was calibrated before and after the survey with no drift noted. Weather conditions throughout the survey were generally dry and with light south westerly winds therefore considered suitable for taking noise measurements.
- 3.4 Noise levels were measured at an unattended location, with the meter set-up to record 15 minute samples.
- 3.5 Full details of the survey can be found in Appendix E and summarised in the tables below.

Table 2: Survey results

Noise levels (dB)					
Daytime (0700-2300)			Night (2300-0700)		
Ambient L_{Aeq}	Background L_{A90}	Typical background L_{A90}	Ambient L_{Aeq}	Background L_{A90}	Typical background L_{A90}
52 to 67 dBA	43 to 54 dBA	47 dBA*	43 to 64 dBA	33 to 49 dBA	34 dBA*

*The typical background noise levels have been based on the time period between 1900 & 2300 hours for daytime, and between 0100 to 0400 hours at night, to minimise the impact of extraneous noise sources such as rail and traffic.

3.6 BS 4142:2014, para 8.1 states *“the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods.”*

3.7 In our experience, the operation of the plant is not impulsive, or tonal, however for the plant which may be intermittent (refrigeration plant), a +3 dB correction has been added to the source input data within the model, in accordance with the guidelines in BS 4142:2014 to the predicted noise level of the plant.

3.8 The guidance in BS 4142:2014, Section 11, states:

“a) Typically, the greater this difference, the greater the magnitude of the impact.

b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.

c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

d) The lower the rating level is relative to the measured background sound level; the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context”.

4.0 The fixed plant noise control scheme – conclusions and recommendations

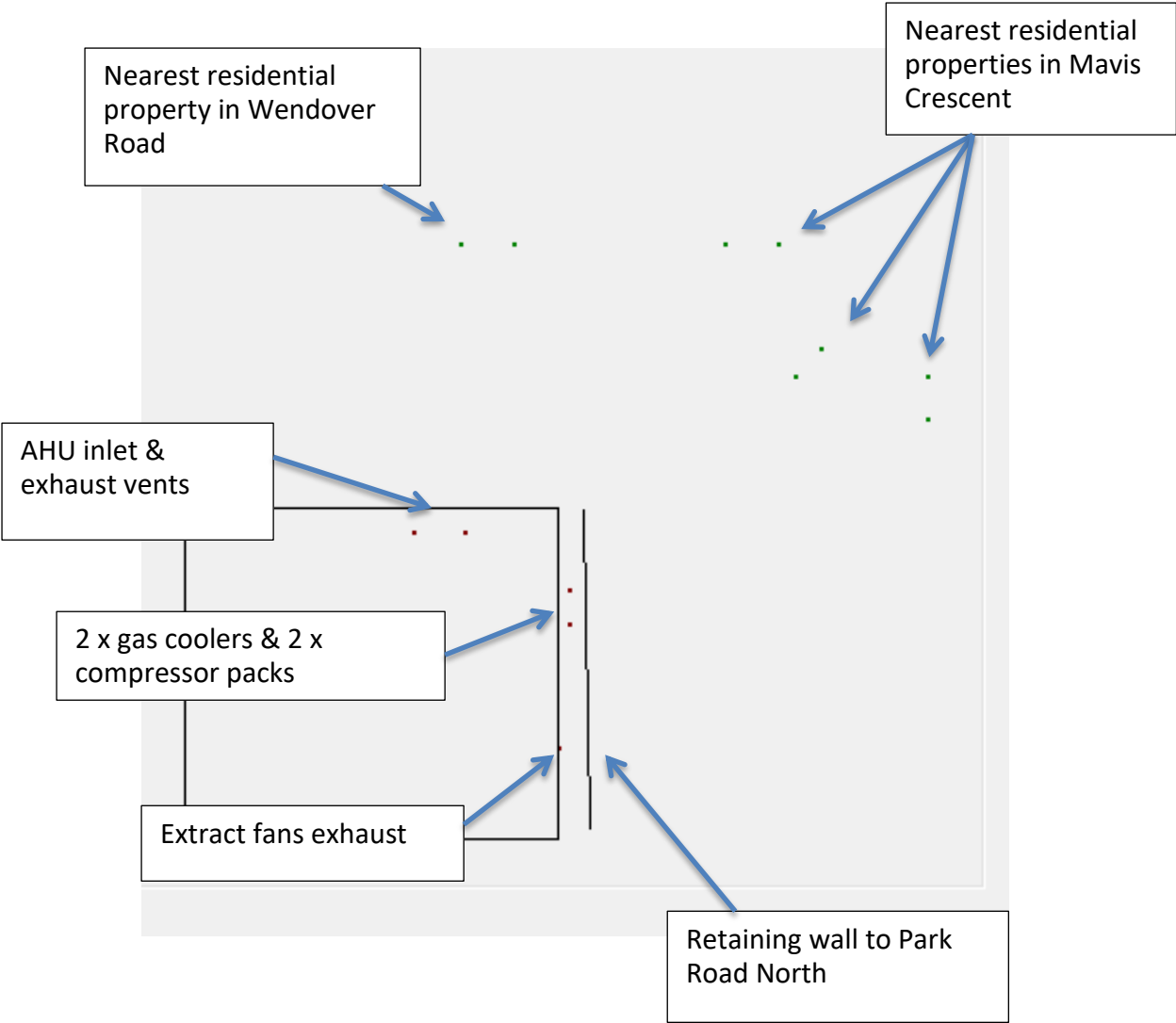
- 4.1 Based on the environmental noise model (see Section 5.0), the predicted noise levels without any additional mitigation are as follows:

Table 3 – Predicted noise levels

Receptor	Daytime (0700-2300)				Night (2300-0700)			
	Predicted LAeq	Typical Background LA90	Difference	Impact	Predicted LAeq	Typical Background LA90	Difference	Impact
Wendover Road	33 dBA	47 dBA	-14	Low	33 dBA	34 dBA	-1	Low
Wendover Road - garden	40 dBA	47 dBA	-7	Low	N/A			
Mavis Crescent	30 dBA	47 dBA	-17	Low	30 dBA	34 dBA	-4	Low
Mavis Crescent - garden	30 dBA	47 dBA	-17	Low	N/A			

- 4.2 A schedule of manufacturers noise data used for the proposed plant is shown in Appendix A
- 4.3 The noise control system is based on the selection of intrinsically quiet equipment, distance from the plant to the receptors, add-on attenuation, and screening from the store building itself, and from the retaining wall to the bridge to Park Road North.
- 4.4 A schedule of the insertion loss requirements is presented in Appendix C.
- 4.5 The retaining wall to the bridge over the railway, varies in height from 5m at the front of the store, up to a height of 6.5m towards the rear of the store. The line of the wall is shown on the elevation drawing in Appendix F.
- 4.6 The comparison presented in Table 3 indicates that the predicted rating noise levels for both day and night time operating of the plant do not exceed the typical background noise climate, which in accordance with the guidance in BS 4142:2014, is considered to be a 'low impact.'
- 4.7 Detailed below is a sketch from the noise model detailing the location of the store, the plant, the retaining wall to the road, and the nearest noise sensitive premises:

Figure 2: Noise model source and receptor locations



5.0 The noise model and prediction methodology

5.1 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.

5.2 There are three input spreadsheets containing:

- noise sources data
- receiver data
- acoustic screening data

These are included in Appendix B.

5.3 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

5.4 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.

5.5 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.

5.6 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.

5.7 Finally, several types of acoustic screening may be entered. In this case, this is designated "F" meaning a barrier of a finite length, in this case indicating the locations of the store, and retaining wall to Park Road North.

5.8 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 D and E for daytime and night time operations. The computer maintains a logarithmic total of the noise levels in Octave bands.

- 5.9 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.
- 5.10 Plant noise predictions are shown in summary form; full calculations of noise from each source to each receptor are available on request

6.0 Assessment conclusions

- 6.1 This assessment has been undertaken in accordance with BS 4142:2014 “Methods for rating and assessing industrial and commercial sound.”
- 6.2 Based on the proposed plant selections and mitigation, the predicted rating noise levels do not exceed the typical background noise climate, which in accordance with BS 4142:2014, is considered to be a low impact.
- 6.3 This assessment objectively demonstrates that noise arising from the fixed plant, complies with the requirement of paragraph 180 of the NPPF to avoid significant adverse impact.

APPENDIX A

NOISE SOURCE DATA

CLIENT :Aldi			A Sht: 1 of 1									
PROJECT :Havant			PROJECT No:1919178									
CONSULTANT:MOT			DATE :18 October 2019									
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	
Gas cooler	Lp	10	A	Maximum 43dBA at 10 metres								
Compressor pack	Lp	10	A	Maximum 43dBA at 10 metres								
Gas Cooler	Lp	10	A	Maximum 43dBA at 10 metres								
Compressor pack	Lp	10	A	Maximum 43dBA at 10 metres								
AHU inlet	Lw		A	67	66	76	72	69	70	68	67	
AHU exhaust	Lw		A	76	71	79	78	81	81	78	75	
Meeting room extract	Lw		A	67	69	68	67	65	61	58	54	
Staffroom extract	Lw		A	67	69	68	67	65	61	58	54	
Toilet extract	Lw		A	67	69	68	67	65	61	58	54	
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

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

Filename : u:\Noysplot\Aldi Havant\171019_1

Date : 18 October 2019

Entries by : MOT

Project number : 1919178

Project title : Havant

Client's name : Aldi

Map/plot details :

Length :3200

Width :3200

Height :250

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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

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

Filename : u:\Noysplot\Aldi Havant\171019_1

Source Description	Coordinates			Outlet details			Run Lp/ dBA Dist.			Mid frequency octave bands									
	X(m)	Y(m)	Z(m)	A(mm)	B(mm)	Ang. %	Q	DNA	Lw	Y/N	(m)	63	125	250	500	1k	2k	4k	8k
Gas cooler	202.5	185.0	4.5	0	0	0	200	3	A	P	Y	10.0	43	0	0	0	0	0	0
Compressor pack	202.5	185.0	2.5	0	0	0	200	3	A	P	Y	10.0	43	0	0	0	0	0	0
Gas Cooler	202.5	178.5	4.5	0	0	0	200	3	A	P	Y	10.0	43	0	0	0	0	0	0
Compressor pack	202.5	178.5	2.5	0	0	0	200	3	A	P	Y	10.0	43	0	0	0	0	0	0
AHU inlet	173.0	195.5	8.0	0	0	0	100	1	A	W	N	0.0	67	66	76	72	69	70	68
AHU exhaust	183.0	195.5	8.0	0	0	0	100	1	A	W	N	0.0	76	71	79	78	81	81	78
Meeting room extract	200.5	155.0	4.0	900	300	90	100	3	A	W	N	0.0	67	69	68	67	65	61	58
Staffroom extract	200.5	155.0	4.0	900	300	90	100	3	A	W	N	0.0	67	69	68	67	65	61	58
Toilet extract	200.5	155.0	4.0	900	300	90	100	3	A	W	N	0.0	67	69	68	67	65	61	58

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

Receptor data - description and coordinates

Filename : u:\Noysplot\Aldi Havant\171019_1

Receptor Description	Coordinates			DNA
	X(m)	Y(m)	Z(m)	
Wendover Road	182.0	250.0	4.5	A
Wendover Road - garden	192.0	250.0	1.5	D
Mavis Crescent	250.0	230.0	4.5	A
Mavis Crescent - garden	245.0	225.0	1.5	D
Mavis Crescent	242.0	250.0	4.5	A
Mavis Crescent - garden	232.0	250.0	1.5	D
Mavis Crescent	270.0	225.0	4.5	A
Mavis Cresent - garden	270.0	217.0	1.5	D

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

Barrier data - description and coordinates

Filename : u:\Noysplot\Aldi Havant\171019_1

Barrier type	Start		Coordinates			Finish	
	X(m)	Y(m)	Z(m)	X(m)	Y(m)	Z(m)	
F	130.0	200.0	7.0	200.0	200.0	7.0	
F	200.0	200.0	7.0	200.0	138.0	7.0	
F	200.0	138.0	7.0	130.0	138.0	7.0	
F	130.0	138.0	7.0	130.0	199.9	7.0	
F	206.0	140.0	5.0	205.0	200.0	6.5	

APPENDIX C

INSERTION LOSS REQUIREMENTS

CLIENT :Aldi	C Sht: 1 of 1								
PROJECT :Havant	PROJECT No:1919178								
CONSULTANT:MOT	DATE :18 October 2019								
ATMOSPHERIC SIDE DYNAMIC INSERTION LOSSES FOR NOISE CONTROL EQUIPMENT									
EQUIPMENT NAME/REFERENCE		MID FREQUENCY OCTAVE BANDS (HZ)							
		63	125	250	500	1k	2k	4k	8k
AHU inlet		3	5	7	10	16	14	12	10
AHU exhaust		3	5	7	10	16	18	14	12
NOTES: Dynamic insertion loss is the logarithmic summation of the air regenerated sound power level and the residual fan sound power level after subtracting the proposed static insertion loss. If this concept is unclear or if you have other queries, contact Sharps Redmore Partnership. After tendering, please send a copy of your proposed insertion losses, air regenerated Lw, passage velocities, pressure losses, air volumes, weights and dimensions to SRP.									

APPENDIX D

CALCULATIONS – DAYTIME 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

Day time overall receptor listings

Filename: u:\Noysplot\Aldi Havant\171019_1

Date: 18/10/2019

	Mid frequency Octave bands (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Wendover Road - garden	57	47	40	34	31	30	30	32	40
Wendover Road	53	41	34	28	24	22	22	22	33
Mavis Crescent	50	38	30	25	21	19	19	19	30
Mavis Crescent - garden	49	38	30	24	21	19	20	20	30
Mavis Crescent	49	37	30	25	21	18	19	19	30
Mavis Crescent - garden	50	38	31	24	19	16	17	17	30
Mavis Crescent	48	36	29	23	20	18	18	18	29
Mavis Crescent - garden	48	36	28	23	18	15	14	14	28

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

Day time source sound pressure levels at receptor: Wendover Road

Filename: u:\Noysplot\Aldi Havant\171019_1

Date: 18/10/2019

	Mid frequency Octave bands (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
AHU exhaust	26	20	28	25	22	20	21	20	29
Gas cooler	48	36	28	19	14	10	7	7	26
Gas Cooler	47	36	26	18	12	8	5	7	25
Compressor pack	47	35	27	18	13	9	6	7	25
Compressor pack	46	34	25	16	10	6	5	7	24
AHU inlet	17	15	25	19	10	13	13	14	22
Meeting room extract	11	11	9	3	0	0	0	0	0
Staffroom extract	11	11	9	3	0	0	0	0	0
Toilet extract	11	11	9	3	0	0	0	0	0
Total Free field Lp and dBA	53	41	34	28	24	22	22	22	33

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

Day time source sound pressure levels at receptor: Wendover Road - garden

Filename: u:\Noysplot\Aldi Havant\171019_1

Date: 18/10/2019

	Mid frequency Octave bands (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Gas cooler	53	43	36	30	27	26	26	28	36
Compressor pack	53	43	36	30	27	26	26	28	36
Gas Cooler	49	38	31	24	20	17	15	15	29
Compressor pack	48	38	30	23	20	17	15	15	29
AHU exhaust	26	19	25	23	22	20	21	20	28
AHU inlet	17	14	22	17	10	13	13	14	21
Meeting room extract	14	15	13	8	0	0	0	0	8
Staffroom extract	14	15	13	8	0	0	0	0	8
Toilet extract	14	15	13	8	0	0	0	0	8
Total Free field Lp and dBA	57	47	40	34	31	30	30	32	40

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

Day time source sound pressure levels at receptor: Mavis Crescent

Filename: u:\Noysplot\Aldi Havant\171019_1

Date: 18/10/2019

	Mid frequency Octave bands (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
AHU exhaust	22	16	22	19	19	17	18	17	25
Gas cooler	45	34	24	16	10	6	6	8	23
Gas Cooler	45	33	24	16	10	6	5	7	23
Compressor pack	42	29	19	10	7	6	6	8	20
Compressor pack	41	29	19	10	6	5	5	7	19
AHU inlet	12	10	18	12	5	9	9	10	17
Meeting room extract	12	17	17	15	8	0	0	0	15
Staffroom extract	12	17	17	15	8	0	0	0	15
Toilet extract	12	17	17	15	8	0	0	0	15
Total Free field Lp and dBA	50	38	30	25	21	19	19	19	30

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

Day time source sound pressure levels at receptor: Mavis Crescent - garden

Filename: u:\Noysplot\Aldi Havant\171019_1

Date: 18/10/2019

	Mid frequency Octave bands (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Gas cooler	46	34	25	16	10	7	7	9	24
Gas Cooler	45	34	25	16	10	6	6	8	24
AHU exhaust	23	16	22	18	15	13	14	13	22
Compressor pack	42	30	20	11	8	7	7	9	20
Compressor pack	42	29	19	11	7	6	6	8	20
AHU inlet	13	10	18	11	2	5	5	6	14
Meeting room extract	13	17	16	14	8	0	0	0	14
Staffroom extract	13	17	16	14	8	0	0	0	14
Toilet extract	13	17	16	14	8	0	0	0	14
Total Free field Lp and dBA	50	38	31	24	19	16	17	17	30

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

Day time source sound pressure levels at receptor: Mavis Crescent

Filename: u:\Noysplot\Aldi Havant\171019_1

Date: 18/10/2019

	Mid frequency Octave bands (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
AHU exhaust	23	16	23	22	19	17	18	17	26
Gas Cooler	44	33	24	16	10	6	4	6	23
Gas cooler	44	32	23	15	9	5	4	6	22
Compressor pack	41	28	19	10	5	4	4	6	19
Compressor pack	40	28	18	9	5	4	4	6	18
AHU inlet	13	10	19	15	6	9	9	10	18
Meeting room extract	11	15	17	12	4	0	0	0	12
Staffroom extract	11	15	17	12	4	0	0	0	12
Toilet extract	11	15	17	12	4	0	0	0	12
Total Free field Lp and dBA	49	37	30	25	21	18	19	19	30

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

Day time source sound pressure levels at receptor: Mavis Crescent - garden

Filename: u:\Noysplot\Aldi Havant\171019_1

Date: 18/10/2019

	Mid frequency Octave bands (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
AHU exhaust	23	17	23	20	20	18	19	18	26
Gas cooler	45	33	24	15	10	6	5	7	23
Gas Cooler	44	33	24	15	9	6	4	6	23
Compressor pack	41	29	19	10	6	5	5	7	19
Compressor pack	41	29	19	10	5	4	4	6	19
AHU inlet	13	11	19	13	7	10	10	11	18
Meeting room extract	11	15	16	11	2	0	0	0	11
Staffroom extract	11	15	16	11	2	0	0	0	11
Toilet extract	11	15	16	11	2	0	0	0	11
Total Free field Lp and dBA	49	38	30	24	21	19	20	20	30

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

Day time source sound pressure levels at receptor: Mavis Crescent

Filename: u:\Noysplot\Aldi Havant\171019_1

Date: 18/10/2019

	Mid frequency Octave bands (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
AHU exhaust	21	14	21	17	15	16	17	16	23
Gas Cooler	44	32	23	14	9	5	4	6	22
Gas cooler	43	31	22	13	8	4	4	6	21
Compressor pack	40	27	17	9	5	4	4	6	18
Compressor pack	39	27	17	8	5	4	4	6	17
Staffroom extract	11	17	17	15	11	5	0	0	16
Meeting room extract	11	17	17	15	11	5	0	0	16
Toilet extract	11	17	17	15	11	5	0	0	16
AHU inlet	11	8	17	10	2	8	8	9	16
Total Free field Lp and dBA	48	36	29	23	20	18	18	18	29

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

Day time source sound pressure levels at receptor: Mavis Crescent - garden

Filename: u:\Noysplot\Aldi Havant\171019_1

Date: 18/10/2019

	Mid frequency Octave bands (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Gas cooler	44	32	22	14	8	5	5	7	22
Gas Cooler	43	31	22	14	8	4	4	6	21
AHU exhaust	21	14	20	16	13	10	11	9	19
Compressor pack	40	27	17	9	6	5	5	7	18
Compressor pack	39	27	17	8	5	4	4	6	17
Staffroom extract	11	17	17	15	10	5	0	0	16
Meeting room extract	11	17	17	15	10	5	0	0	16
Toilet extract	11	17	17	15	10	5	0	0	16
AHU inlet	11	8	16	9	0	2	1	1	11
Total Free field Lp and dBA	48	36	28	23	18	15	14	14	28

APPENDIX E

CALCULATIONS – NIGHT TIME 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: u:\Noysplot\Aldi Havant\171019_1

Date: 18/10/2019

	Mid frequency Octave bands (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Wendover Road	53	41	34	28	24	22	22	22	33
Mavis Crescent	50	38	30	25	21	19	19	19	30
Mavis Crescent	49	37	30	25	21	18	19	19	30
Mavis Crescent	48	36	29	23	20	18	18	18	29

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 source sound pressure levels at receptor: Wendover Road

Filename: u:\Noysplot\Aldi Havant\171019_1

Date: 18/10/2019

	Mid frequency Octave bands (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
AHU exhaust	26	20	28	25	22	20	21	20	29
Gas cooler	48	36	28	19	14	10	7	7	26
Gas Cooler	47	36	26	18	12	8	5	7	25
Compressor pack	47	35	27	18	13	9	6	7	25
Compressor pack	46	34	25	16	10	6	5	7	24
AHU inlet	17	15	25	19	10	13	13	14	22
Staffroom extract	11	11	9	3	0	0	0	0	0
Toilet extract	11	11	9	3	0	0	0	0	0
Meeting room extract	11	11	9	3	0	0	0	0	0
Total Free field Lp and dBA	53	41	34	28	24	22	22	22	33

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 source sound pressure levels at receptor: Mavis Crescent

Filename: u:\Noysplot\Aldi Havant\171019_1

Date: 18/10/2019

	Mid frequency Octave bands (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
AHU exhaust	22	16	22	19	19	17	18	17	25
Gas cooler	45	34	24	16	10	6	6	8	23
Gas Cooler	45	33	24	16	10	6	5	7	23
Compressor pack	42	29	19	10	7	6	6	8	20
Compressor pack	41	29	19	10	6	5	5	7	19
AHU inlet	12	10	18	12	5	9	9	10	17
Staffroom extract	12	17	17	15	8	0	0	0	15
Toilet extract	12	17	17	15	8	0	0	0	15
Meeting room extract	12	17	17	15	8	0	0	0	15
Total Free field Lp and dBA	50	38	30	25	21	19	19	19	30

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 source sound pressure levels at receptor: Mavis Crescent

Filename: u:\Noysplot\Aldi Havant\171019_1

Date: 18/10/2019

	Mid frequency Octave bands (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
AHU exhaust	23	16	23	22	19	17	18	17	26
Gas Cooler	44	33	24	16	10	6	4	6	23
Gas cooler	44	32	23	15	9	5	4	6	22
Compressor pack	41	28	19	10	5	4	4	6	19
Compressor pack	40	28	18	9	5	4	4	6	18
AHU inlet	13	10	19	15	6	9	9	10	18
Staffroom extract	11	15	17	12	4	0	0	0	12
Toilet extract	11	15	17	12	4	0	0	0	12
Meeting room extract	11	15	17	12	4	0	0	0	12
Total Free field Lp and dBA	49	37	30	25	21	18	19	19	30

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 source sound pressure levels at receptor: Mavis Crescent

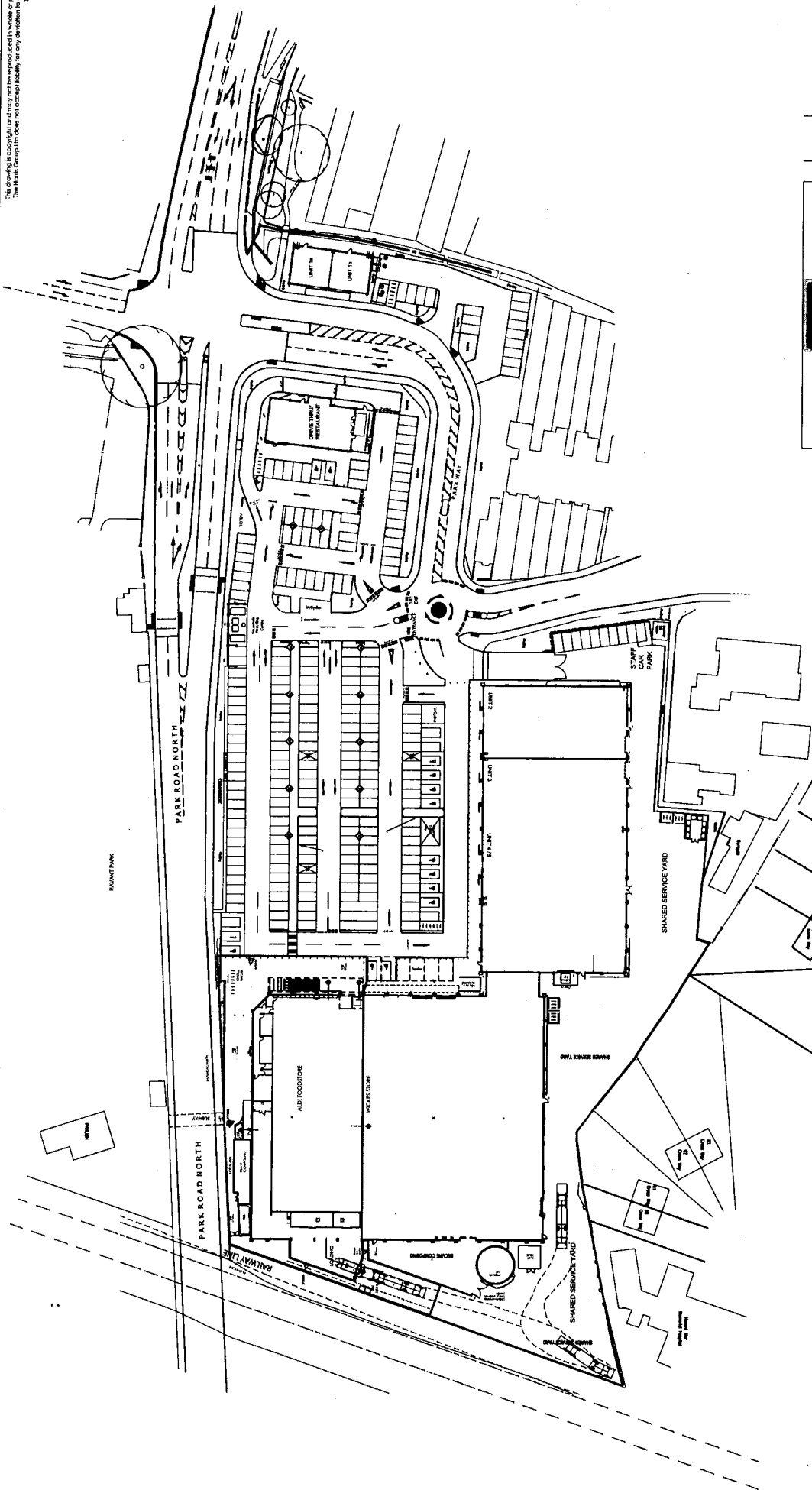
Filename: u:\Noysplot\Aldi Havant\171019_1
 Date: 18/10/2019

	Mid frequency Octave bands (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
AHU exhaust	21	14	21	17	15	16	17	16	23
Gas Cooler	44	32	23	14	9	5	4	6	22
Gas cooler	43	31	22	13	8	4	4	6	21
Compressor pack	40	27	17	9	5	4	4	6	18
Compressor pack	39	27	17	8	5	4	4	6	17
Toilet extract	11	17	17	15	11	5	0	0	16
Staffroom extract	11	17	17	15	11	5	0	0	16
Meeting room extract	11	17	17	15	11	5	0	0	16
AHU inlet	11	8	17	10	2	8	8	9	16
Total Free field Lp and dBA	48	36	29	23	20	18	18	18	29

APPENDIX F

SITE LAYOUT AND ELEVATION DRAWINGS

This drawing is copyright and may not be reproduced in whole or part without written authority. The Morris Group Ltd does not accept liability for any deviation from our drawings or specification. Do not scale off this drawing.



	PROPOSED FOODSTORE	Project No.	DRAWING TITLE		Rev	Date	Description	Rev By	Check By
	HAVANT CENTRAL RETAIL PARK PARK WAY HAVANT PO9 1HH		Job-Order No.	2743-SHP-200		Rev			
Client	ALDI STORES LIMITED - SHEPPEY	2/1, Johning North, Gosport, Hampshire, UK T. 01922 29 1800	☐ Carves Warehouses, 77 Oak Street, Gosport, Hampshire, UK T. 0161 2388555		☐ The Old Rectory, 79 High Street, Gosport, Hampshire, UK T. 01922 27 2727		☒ 101 London Road, Gosport, PO15 7JG T. 01922 27 2727		☐ 101 London Road, Gosport, PO15 7JG T. 01922 27 2727
Scale	1:1000	Drawing Size	A3		Checked		R.O.D		
Date	23/07/2019	Drawn By	SC		Checked		R.O.D		

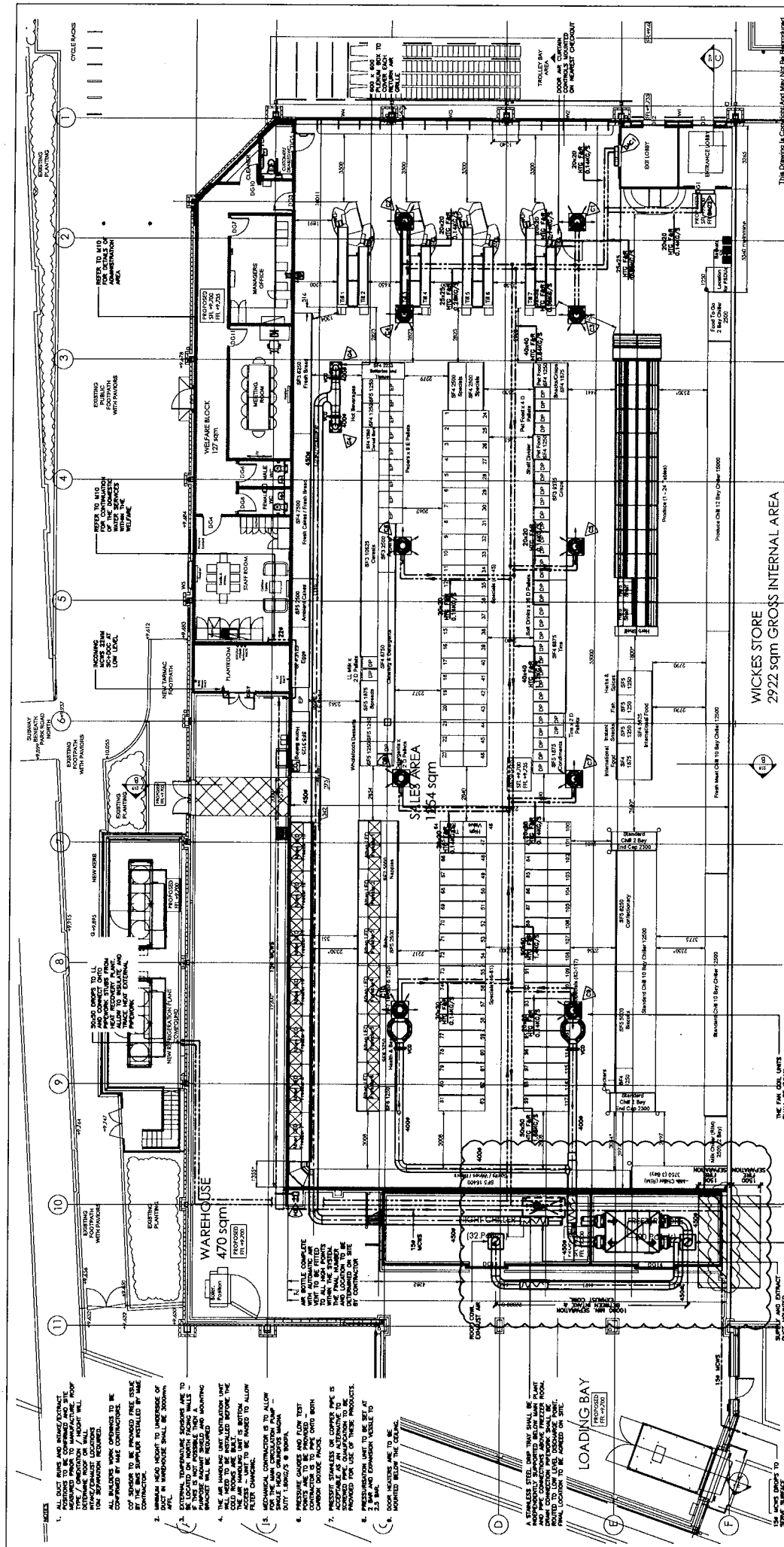
KEY:- ☐ Site Boundary	THE HARBOR GROUP LTD DOES NOT ACCEPT LIABILITY FOR ANY DEVIATION TO OUR DRAWINGS OR SPECIFICATION.	THIS IS BASED ON THIRD PARTY INFORMATION AND A SIGNIFICANT DISCREPANCY	THE DRAWING HAS BEEN PREPARED TO ASSIST THE CLIENT AND THE CONTRACTOR. IT IS NOT INTENDED TO BE A FINAL DRAWING. REFS TO EXISTING DRAWINGS AND SURVEY DATA SHOWN ARE SUBJECT TO DESIGN DEVELOPMENT.
---	--	--	---

CAD file reference J:\Working Projects\2700s\2700s\2743-CHE - HAVANT, Central Retail Park



APPENDIX G

PLANT LAYOUT DRAWINGS



BMT
BUILDING
MANAGEMENT
TECHNOLOGY

Unit 2 Forest Business
Forest Road
Laceby
LE5 1NR
Tel: (0116) 244 0331
E-mail: enquiries@bmt-uk.co.uk

Drawing Title:
ALDI SWINDON
CENTRAL RETAIL PARK,
HAVANT
MECHANICAL
GENERAL ARRANGEMENT

Drawing No: B3486/M1
Scale: 1:100 @ A1
First Issue Date: AUG 2019

Issue	Date	By	Description
8	07.10.19	CT	AKU & DUCT POSITIONS
9	07.10.19	CT	REVISION
A	AUG 19	MR	FIRST ISSUE

Client:
ALDI STORES LTD

ALDI

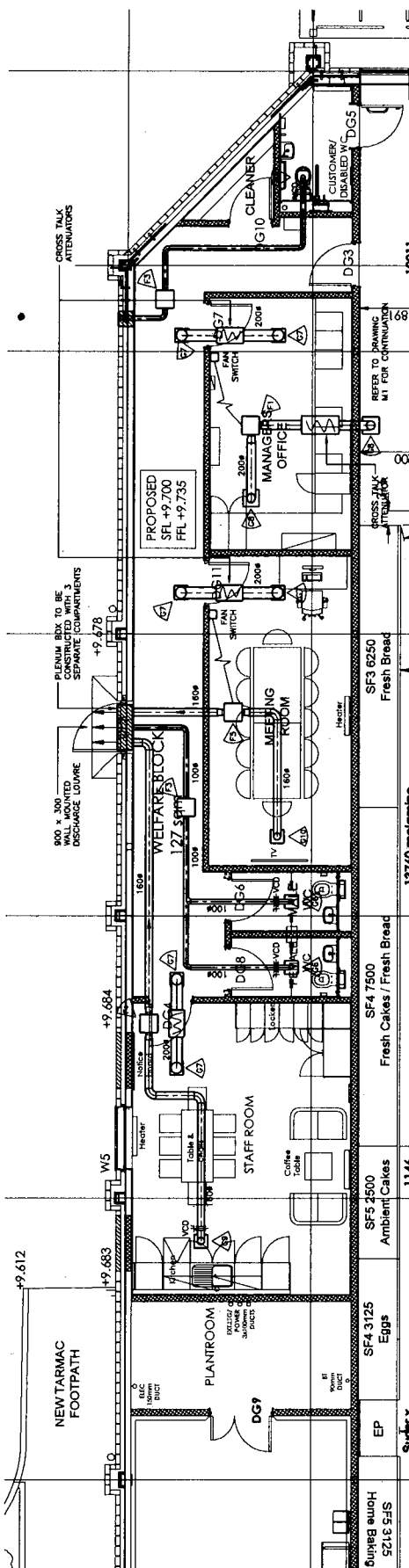
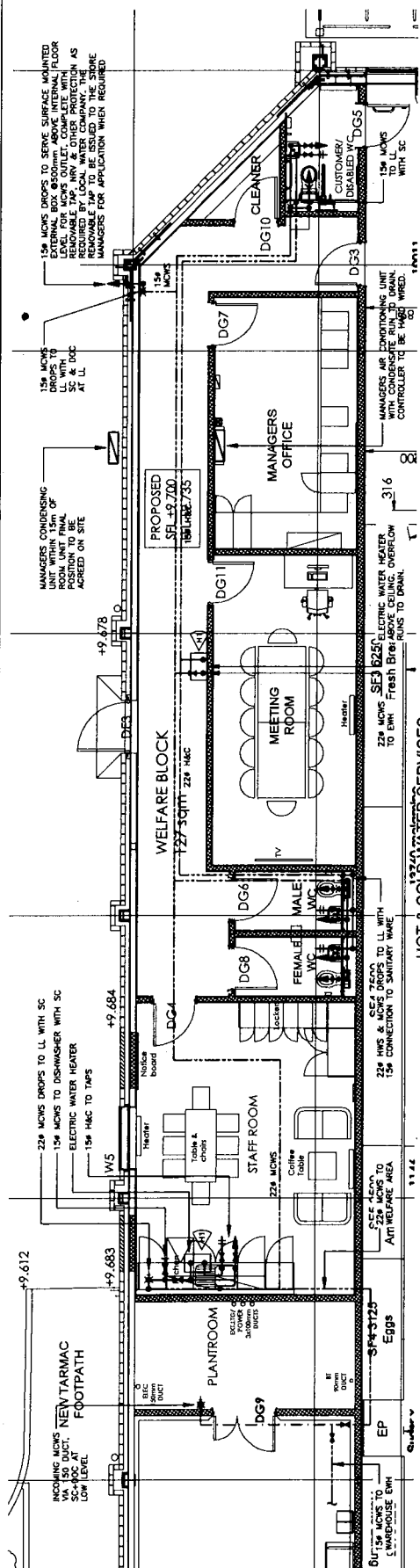
Architect:
THE HARRIS PARTNERSHIP

SYMBOL	DESCRIPTION	EXTRACT REF. No.
	UNDERPUNDED PRECIPITATION	
	LOW LEVEL PRECIPITATION	
	HIGH LEVEL PRECIPITATION	
	PRECIPITATION (ALL BLADES OUT OF PHASE)	
	ACCESS DOOR	
	VOLUME CONTROL DAMPER	
	AUTOMATIC AIR VENT	
	ANTI-VAC VALVE	
	WARM COLD WATER SERVICE	
	HOT WATER SERVICE	
	ELECTRIC WATER HEATER	

- ALL DUCTS TO BE INSTALLED WITHIN THE ROOF SPACE AND NOT TO INTERFERE WITH THE STRUCTURE OF THE ROOF OR THE EXISTING ROOF OR WALL. ALL DUCTS TO BE INSTALLED WITHIN THE ROOF SPACE AND NOT TO INTERFERE WITH THE STRUCTURE OF THE ROOF OR THE EXISTING ROOF OR WALL.
- ALL BUILDING WORKS TO BE COMPLETED BY 15th SEPTEMBER 2019. ALL BUILDING WORKS TO BE COMPLETED BY 15th SEPTEMBER 2019.
- ALL BUILDING WORKS TO BE COMPLETED BY 15th SEPTEMBER 2019. ALL BUILDING WORKS TO BE COMPLETED BY 15th SEPTEMBER 2019.
- ALL BUILDING WORKS TO BE COMPLETED BY 15th SEPTEMBER 2019. ALL BUILDING WORKS TO BE COMPLETED BY 15th SEPTEMBER 2019.
- ALL BUILDING WORKS TO BE COMPLETED BY 15th SEPTEMBER 2019. ALL BUILDING WORKS TO BE COMPLETED BY 15th SEPTEMBER 2019.
- ALL BUILDING WORKS TO BE COMPLETED BY 15th SEPTEMBER 2019. ALL BUILDING WORKS TO BE COMPLETED BY 15th SEPTEMBER 2019.
- ALL BUILDING WORKS TO BE COMPLETED BY 15th SEPTEMBER 2019. ALL BUILDING WORKS TO BE COMPLETED BY 15th SEPTEMBER 2019.
- ALL BUILDING WORKS TO BE COMPLETED BY 15th SEPTEMBER 2019. ALL BUILDING WORKS TO BE COMPLETED BY 15th SEPTEMBER 2019.
- ALL BUILDING WORKS TO BE COMPLETED BY 15th SEPTEMBER 2019. ALL BUILDING WORKS TO BE COMPLETED BY 15th SEPTEMBER 2019.
- ALL BUILDING WORKS TO BE COMPLETED BY 15th SEPTEMBER 2019. ALL BUILDING WORKS TO BE COMPLETED BY 15th SEPTEMBER 2019.

THE FAN COIL UNITS
SHALL BE INSTALLED
WITHIN THE ROOF SPACE
AND NOT TO INTERFERE
WITH THE STRUCTURE OF
THE ROOF OR THE
EXISTING ROOF OR WALL.

ALL DUCTS TO BE
INSTALLED WITHIN THE
ROOF SPACE AND NOT TO
INTERFERE WITH THE
STRUCTURE OF THE ROOF
OR THE EXISTING ROOF
OR WALL.

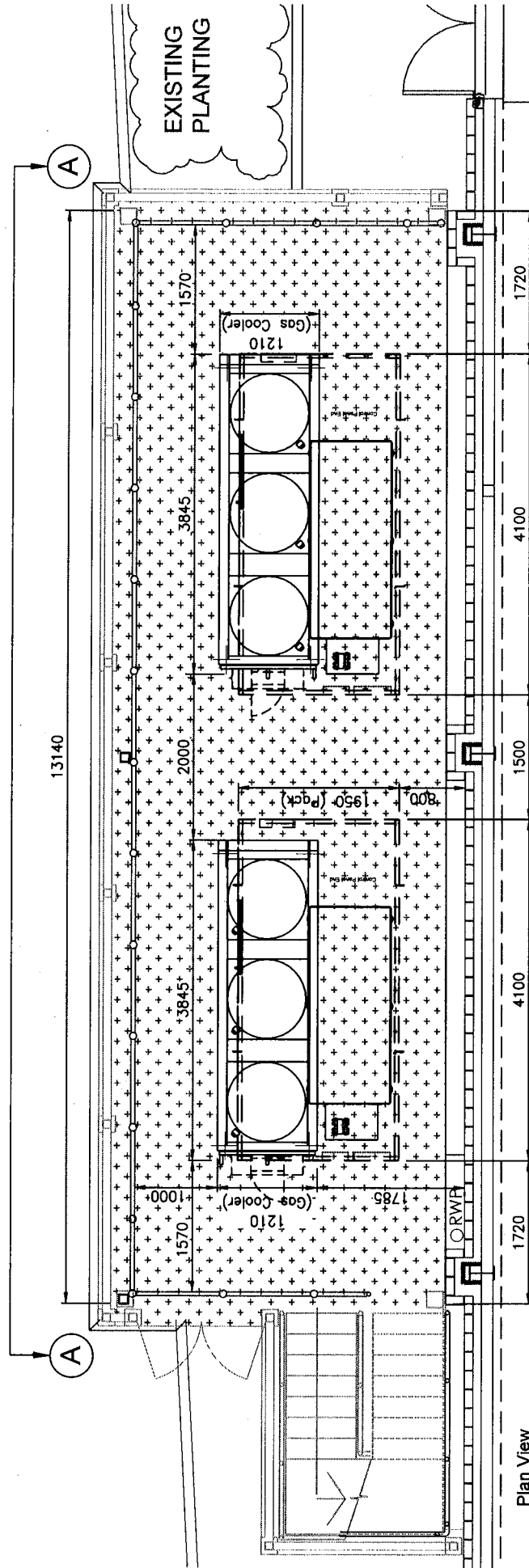
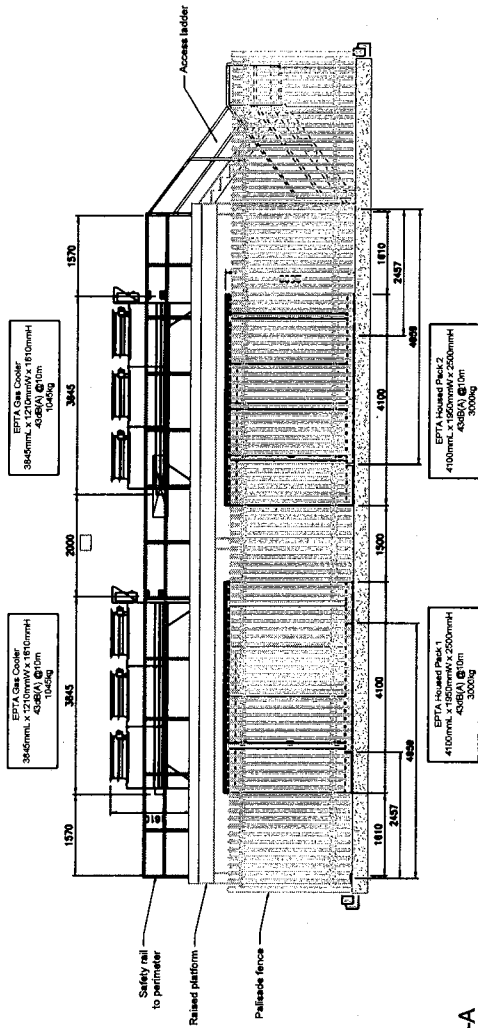


LEGEND	
SYMBOL	DESCRIPTION
	EQUIPMENT REF. No. (REFER TO SPECIFICATION)
---	UNDERGROUND PIPENWORK
---	LOW LEVEL PIPENWORK
---	HIGH LEVEL PIPENWORK
---	PIPENWORK ABOVE CEILING
	HOT WATER SERVICES OUTLET
	COLD WATER SERVICES OUTLET

LEGEND	
SYMBOL	DESCRIPTION
FD	FIRE DAMPER (ALL BLADES OUT OF AIR STREAM)
VCD	VOLUME CONTROL DAMPER
SC	STOP COCK
AW	AUTOMATIC AIR VENT
AW	ANTI-WAC VALVE
DOC	DRAIN OFF COCK
MOWS	MAINS COLD WATER SERVICE
HWS	HOT WATER SERVICE
EWI	ELECTRIC WATER HEATER

1. ALL DUCT RUNS AND INTAKE/EXHAUST LOCATIONS SHALL BE CONFIRMED AND SITE MEASURED PRIOR TO MANUFACTURE.
2. ALL ITEMS OF SANITARY WARE TO HAVE BALFOUR TYPE ISOLATING HOT AND COLD WATER SUPPLY PRESS.
3. A DIRTY FILTER SYSTEM IS RECOVERY UNIT TO SHOW WHEN THE AIR FILTERS NEED CLEANING OR REPLACING. THE DIRTY FILTER INDICATOR LIGHT ON THE RECOVERY UNIT WORK ON THE EDGE OF THE SUPPLY FAN SECTION.
4. LAYOUT MAY BE HANGERS, ROTATED TO SUIT STORE OBSERVATION.

 BMT BUILDING MANAGEMENT TECHNOLOGY Unit 24 Forest Business Park Road Leicestershire LE3 7HE		Tel: 01533 244103/8 E-Mail: enquiries@bmt.co.uk www.bmt.co.uk		Drawing No: B3486/E1		Issue: A	
Drawing Title: CENTRAL RETAIL PARK, HAVANT MECHANICAL WELEARE AREA		Client: ALDI STORES LTD		Project: THE HARRIS PARTNERSHIP		First Issue Date: AUG 1979	
Scale: 1:50 @ A1		Issue: 1:50 @ A1		Issue: 1:50 @ A1		Issue: 1:50 @ A1	



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CLIENT



ALDI Stores Ltd

REVISIONS

REV.	DESCRIPTION	DRAWN	APPD.	DATE
-	Original issue.	S.W.	E.B.	25-07-2019
A	EPFA plant sizes changed. Access stairs amended. Gases moved.	S.W.	E.B.	06-08-2019
B	Access stairs amended. Gases moved. Palletised fence added.	S.W.	E.B.	14-08-2019
C	Plant platform amended. Gas Cooler related.	S.W.	E.B.	02-10-2019

PROJECT

Aldi Havant

DRAWING TITLE Plant Area Layout

DRAWING NUMBER 1224-R6

SCALE 1:50/100

SHEET SIZE A3

STATUS INFORMATION

K2 Engineering (Cooling) Ltd
Specialists in Refrigeration and
Air Conditioning

K2 Engineering (Cooling) Ltd
27 Broomfield Road
Brighton Road, Surrey
KT20 6AT

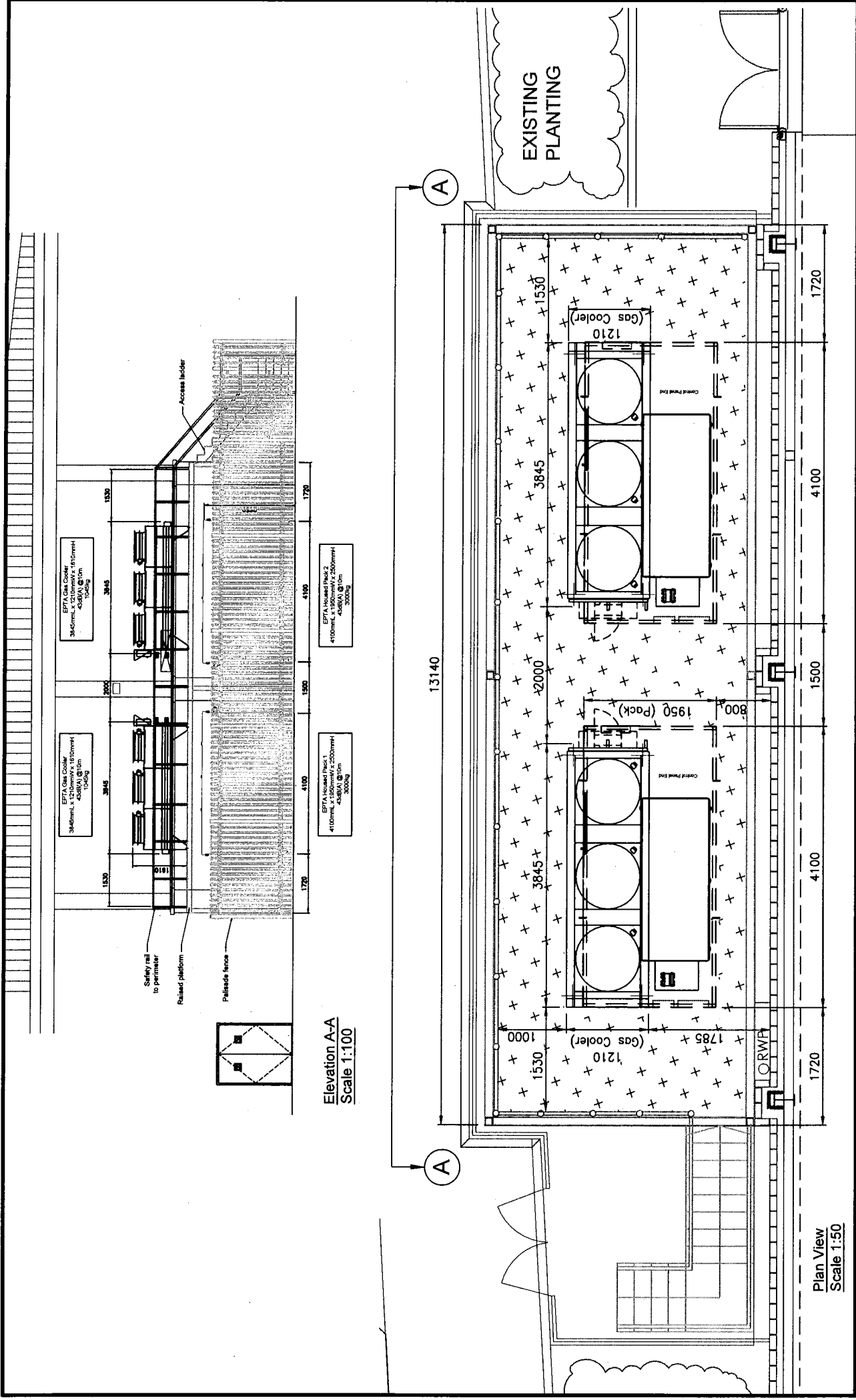
Tel: +44 (0) 20 8394 0900
Email: david@k2cooling.com

APPENDIX G

PLANT LAYOUT DRAWINGS



 BMT BUILDING MANAGEMENT TECHNOLOGY Unit 12 Forest Business Park Lakeside Road Lancaster LE13 1ER Tel: 01524 241038 E-Mail: info@bmt-technology.co.uk	Drawing Title:	
	ALDI SWINDON CENTRAL RETAIL PARK, HAVANT MECHANICAL WELFARE AREA	
Drawing No: B3486/E1	Scale: 1:50 @ A1	Project Name/Client: AUG 2010



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ALDI Stores Ltd

CLIENT

REVISIONS

REV.	DESCRIPTION	DATE
1	Original issue.	25-07-2019
2	EPTA Gas Coolers changed. Access stairs amended. Gases moved.	14-08-2019
3	Gas Cooler sizes updated. Pallets moved to be 800mm from store wall. Access stairs amended. Gases moved. Pallets fence added.	14-08-2019

PROJECT

PROJECT TITLE Aldi Havant

DRAWING NUMBER 1229-R6

SCALE 1:50/100

SHEET SIZE A3

STATUS INFORMATION

K2 Engineering (Cooling) Ltd
Specialists in Refrigeration and Air Conditioning

K2 Engineering (Cooling) Ltd
2 The Parade
Brighton Road
Burgh Heath, Surrey
KT20 6AT
Tel: +44 (0) 20 8394 0800
Email: david@k2cooling.com

APPENDIX H

ENVIRONMENTAL SURVEY DATA

Noise Survey at Aldi, Havant

14th October 2019 and 15th October 2019

