Item No 06:-

16/04270/FUL (CT.0807/1/B)

Carted Barn
High Street
South Cerney
Cirencester
Gloucestershire
GL7 5UG

Item No 06:-

The installation of new AC condensers, refrigeration plant, louvre and satellite dish at Carted Barn High Street South Cerney Gloucestershire

Full Application 16/04270/FUL (CT.0807/1/B)	
Applicant:	The Co-operative Group
Agent:	Wellsfield Associates
Case Officer:	Andrew Moody
Ward Member(s):	Councillor Juliet Layton
Committee Date:	11th January 2017
RECOMMENDATION:	**REFUSE**

Main Issues:

(a) Impact upon the character of the area including Heritage Assets
(b) Residential amenity

Reasons for Referral:

This application has been referred to the Planning Committee for the determination at the request of the Councillor Layton, on the grounds of potential noise levels from the A/C and refrigeration plant.

1. Site Description:

The site lays within the development boundary of South Cerney, to the south of High Street, a classified road. The application site lies outside of the Conservation Area, the boundary of which runs along the front of the site.

The site comprises a two storey industrial building which fronts on to High Street, with a single storey range to the rear along the western boundary. The site was formally used as the administrative offices, storage and depot facilities for the MITIE Group. The total area of the site is approximately 0.14 hectares in area.

To the east side of the building there is an access from the High Street which also serves three residential properties; the Old Farmhouse to the east and Halapeno High and Mayfield to the south. The access is between the junctions of the High Street junctions with Broadway Lane and Ham Lane at a point where it is subject to a speed limit of 30 mph.

To the west of the site lies a residential development known as Broadway Court and there is also residential development opposite the application site to the north of the High Street. The site lies outside of the commercial centre of the village.

2. Relevant Planning History:

CT.0807/I. Erection of a factory for timber fencing together with office accommodation. Granted 27.06.63

CT.0807/J. Use of existing offices and factory as a cartographic unit. Granted 01.09.65

CT.0807/K. Extension to existing industrial premises to provide a storeroom. Granted 01.12.66

CT.0807/L. Alterations to first floor of office block to provide additional offices and alteration to vehicular access. Granted 01.09.73

CT.0807/S. Application for full planning permission for the erection of 2 no. Bungalows, Old Farm, High Street, South Cerney. Granted 01.11.94
CT.0807/T. Erection of two dwellings, revised vehicular access and car parking for adjoining Mitie group offices. Granted 19.07.95

11/01745/FUL. Erection of 6 dwellings, garages and associated works. Refused 22.09.11

14/02161/FUL: Conversion of existing building to a Class A1 use including new shop front and demolition of outbuilding to the rear. Erection of two dwellings, garages and associated works to the rear including car parking and landscaping. Granted 24.11.2014

14/05458/FUL: Variation of condition 14 of planning permission 14/02161/FUL (Conversion of existing building to a Class A1 use including new shop front and demolition of outbuilding to the rear. Erection of two dwellings, garages and associated works to the rear including car parking and landscaping) to amend the opening hours of the A1 unit to Monday to Saturday inclusive: 07:00 to 23:00, Sundays: 07:00 to 23:00 if the opening hours are not restricted by the Sunday Trading Act 1994 or any other statutory instrument amending or replacing it. Refused 12.02.2015. Appeal withdrawn

16/04917/FUL: Installation of a Kingspan roof to the Carted Barn. Awaiting validation

3. Planning Policies:

NPPF National Planning Policy Framework
LPR05 Pollution and Safety
LPR15 Conservation Areas
LPR18 Develop within Development Boundaries
LPR42 Cotswold Design Code

4. Observations of Consultees:

Environmental and Regulatory Services: No objection subject to condition

Conservation Officer: No comment

5. View of Town/Parish Council:

South Cerney Parish Council objects to this application because of noise disturbance to the neighbouring residential properties. The Environmental Noise Impact Assessment Report (22838/ENIA) suggests that the criteria for assessing the noise impact at this site should be BS 4142: 2014 "Methods for rating and assessing industrial and commercial sound". The report says that BS 4142: 2014 emphasises the importance of context in determining background noise level.

The fundamental issue here is that this site is immediately surrounded on all sides by residential properties, and therefore it most certainly is not an industrial or commercial setting.

Section 9.3 of the Report says, "Our calculations therefore indicate that noise levels from the proposed plant should JUST [emphasis added by Parish Council] be capable of achieving the plant noise emission criteria presented in Section 8.0." The report is saying is that the level of noise would only just be below what amounts to a STATUTORY NUISANCE in an industrial or commercial setting. This is an entirely residential setting, where a much lower level of noise criteria should be applied.

6. Other Representations:

6 letters of objection have been received, raising the following points:-

- Noise assessment is fundamentally flawed
- Impact upon the amenities of neighbours
- Louvre is not in keeping with local vernacular
- Outlook onto open boarded fence
- How do residents know that noise levels will be acceptable?
- If granted, how will the site be monitored to check noise levels?
- What happens if the noise is greater than the agreed recommendations?
- Building now has a bright metal roof
- Site is in a sensitive conservation area
- Site is within 50m of a listed building

7. Applicant's Supporting Information:

Design and Access Statement
Environmental Noise Impact Assessment

(a) Impact upon the Character of the Area including Heritage Assets

The proposal relates to the installation of new AC condensers, refrigeration plant, louvre and satellite dish at the Carted Barn, High Street, South Cerney. Works have commenced to implement the planning permission granted under 14/02161/FUL for the conversion of the building into Class A1 use.

The AC condensers, refrigeration plant and louvre would be sited to a rear facing elevation of the building, whilst the satellite dish would be installed to the roof at the southern end of the building. The external apparatus would be sited within an attenuation box and screened by a 2m high timber fence enclosure, whilst the louvre would be attached to the rear facing wall.

Concern has been expressed regarding the impact upon the conservation and the setting of listed buildings. There are a number of listed buildings to the north, west and east of the application site, and therefore the Local Planning Authority is required to have special regard to the desirability of preserving the setting of these buildings in accordance with Section 66 (1) of the Planning (Listed Building and Conservation Areas) Act 1990.

Furthermore, the site is adjacent to, but outside, the South Cerney Conservation Area, wherein the Local Planning Authority is statutorily obliged to pay special attention to the desirability of preserving or enhancing the character, appearance and setting of the area, in accordance with Section 72(1) of the Planning (Listed Building and Conservation Areas) Act 1990.

It is not considered that the installation of the satellite dish at the southern end of the building would impact upon the setting of these designated heritage assets, and similarly the AC condensers, refrigeration plant and louvre would be located to the rear facing wall of the building, and not therefore be visible from within the conservation area.

Furthermore, there is existing development located between the proposed development and the nearby listed buildings, and again it is not considered that these features would impact upon the setting of these listed buildings. The proposal is therefore considered to accord with Policy 15 of the Local Plan and Section 12 of the NPPF.

(b) Residential Amenity

Objections have also been received with regard to the impact of the apparatus upon the amenities of local residents, specifically from noise. The original report submitted in support of the

application was not considered to be sufficient by the Environmental and Regulatory Services Officer (ERS), such that further information was requested.

This was received in the form of an amended Environmental Noise Impact Assessment Report. Attenuation measures are proposed, for example the A/C units would be contained within an acoustic enclosure that reduces atmospheric noise emissions by 20 dBA, with further attenuation fitted to the louvres. As a consequence, the Report states that the cumulative noise emissions at the nearest noise sensitive window would be 35 dBA between the hours of 0700 - 2300 hours, and 24 dBA between 2300 and 0700 hours.

Following consultation with ERS, it has been commented that 'the inclusion of additional calculation data demonstrates how the target noise levels will be achieved. Target levels are appropriate for the protection of amenity of nearby residents.' A condition is recommended to limit noise emissions to 38 dBA between 0700 - 2300 hours, and 28 dBA between 2300 - 0700 hours, although the actual levels anticipated by the Report would be lower than this.

Therefore, no objection has been raised to the application subject to the condition recommended. Subject to this, the proposal accords with Policy 5 of the Local Plan and paragraph 17 of the NPPF.

9. Conclusion:

In conclusion, the proposed apparatus proposed to be installed is not considered to materially impact upon either the character of the area or the setting of nearby heritage assets, whilst the noise emitted by the would be at a level that should not materially impact upon the amenities currently enjoyed by occupants of nearby residential properties.

The proposed development is therefore considered to accord with the policies within the Cotswold District Local Plan, together with the NPPF, which are not outweighed by other material planning considerations.

The recommendation is for planning permission to be granted.

10. Proposed conditions:

The development shall be started by 3 years from the date of this decision notice.

Reason: To comply with the requirements of Section 91 of the Town and Country Planning Act 1990 as amended by Section 51 of the Planning and Compulsory Purchase Act 2004.

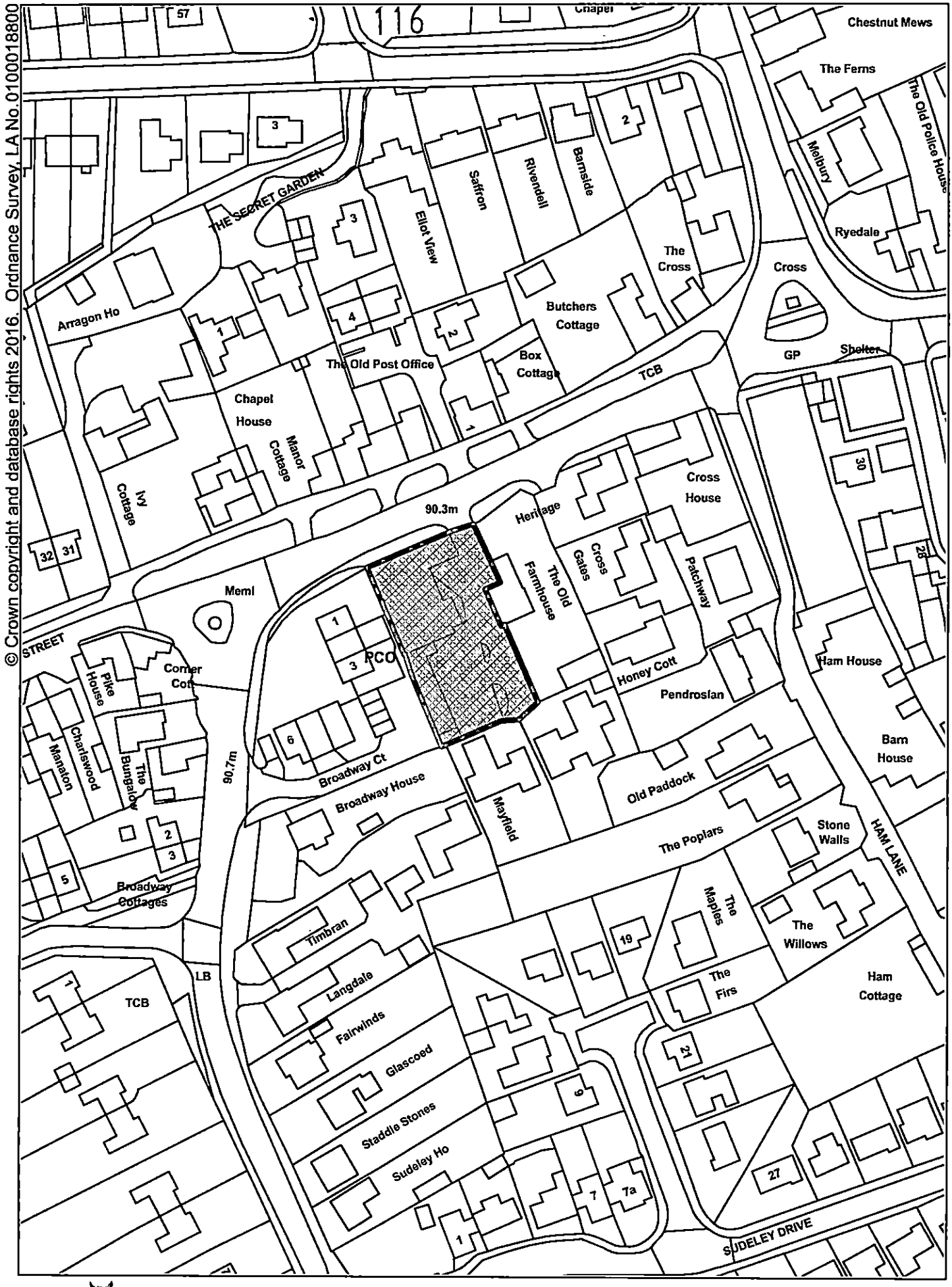
The development hereby approved shall be implemented in accordance with the following drawing numbers: 367.01; 367.03 and CR3.

Reason: For purposes of clarity and for the avoidance of doubt, in accordance with paragraphs 203 and 206 of the National Planning Policy Framework.

Noise emitted from the site as a result of mechanical plant shall not exceed 38dB LAeq1 hour between 0700 hours and 2300 hours; and 28dB LAeq1hour at any other time, as measured at the façade of any residential property.

Reason: To protect the amenity of the locality, especially for people living and/or working nearby, in accordance with Cotswold District Local Plan Policy 5 and The National Planning Policy Framework.

16/04270/FUL



Carted Barn High Street South Cerney

Scale: 1:1250

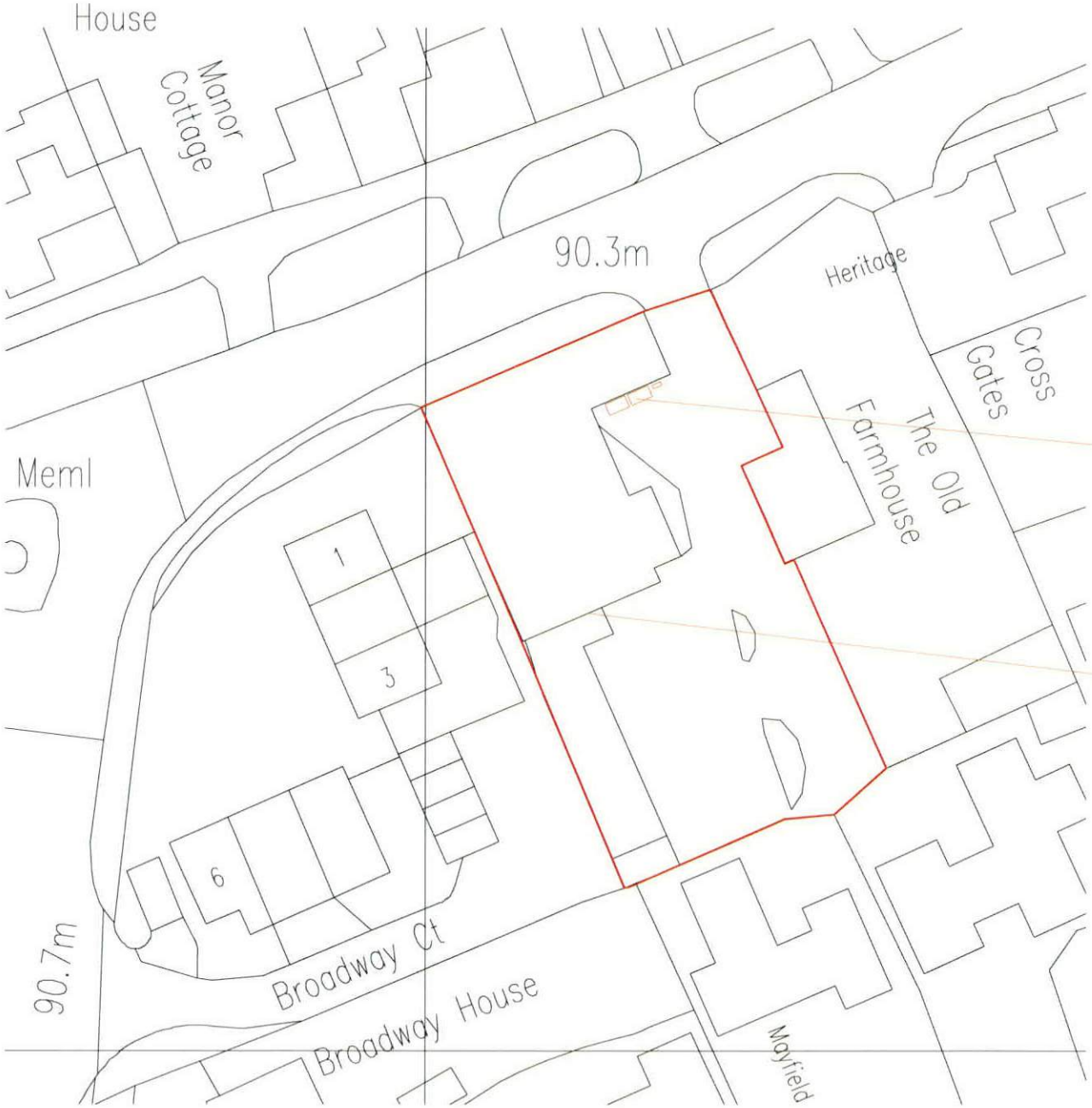
Organisation: Cotswold District Council

Department:

Date: 22/12/2016

COTSWOLD DISTRICT COUNCIL

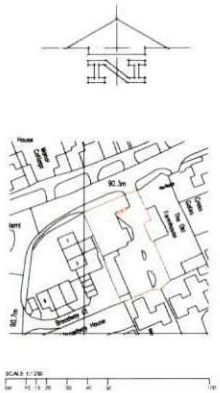
NORTH



BLOCK PLAN 1:200

REVISION

117



LOCATION PLAN 1:1250

FULL SURVEY NOT CARRIED OUT. DRAWING PRODUCED USING INFORMATION SUPPLIED BY THE CLIENT

Wellsfield Associates
86 High Road
Hockley
Essex
SS5 4TA
Tel: 07840 751750
mail@wellsfieldassociates.co.uk

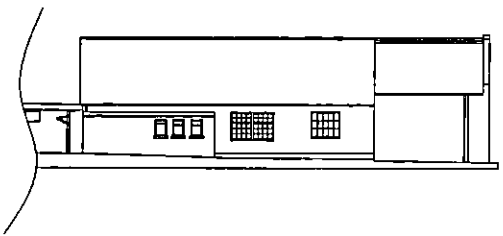
project
Proposed Co-op Store
High Street
South Cerney
Gloucestershire
GL75UG

BLOCK & SITE LOCATION PLANS

date	drawn
Sep '16	DAR

scale	drg no.
1:200, 1:1250@A1	3267 .01

REVISION



Elevation B

Elevation C

Elevation A

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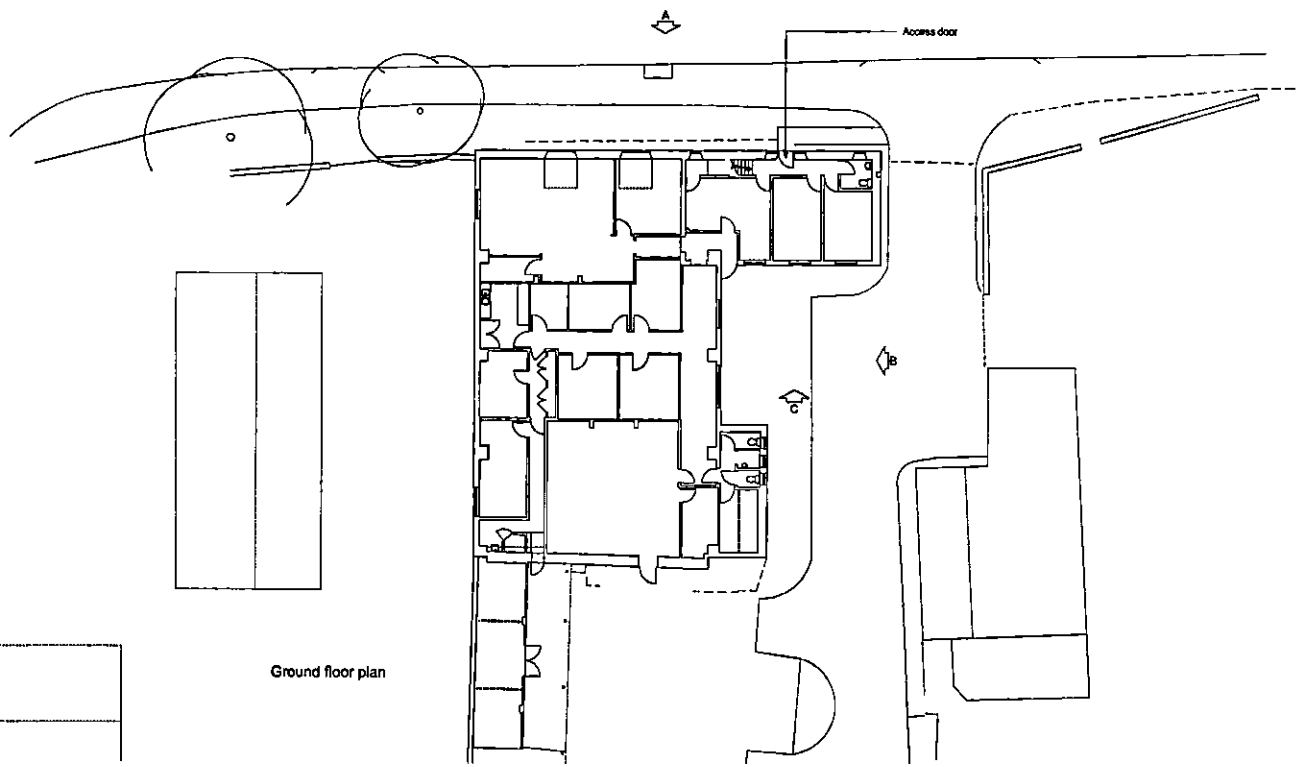
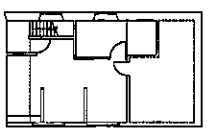


Ground floor plan



First floor plan

EXISTING DETAILS

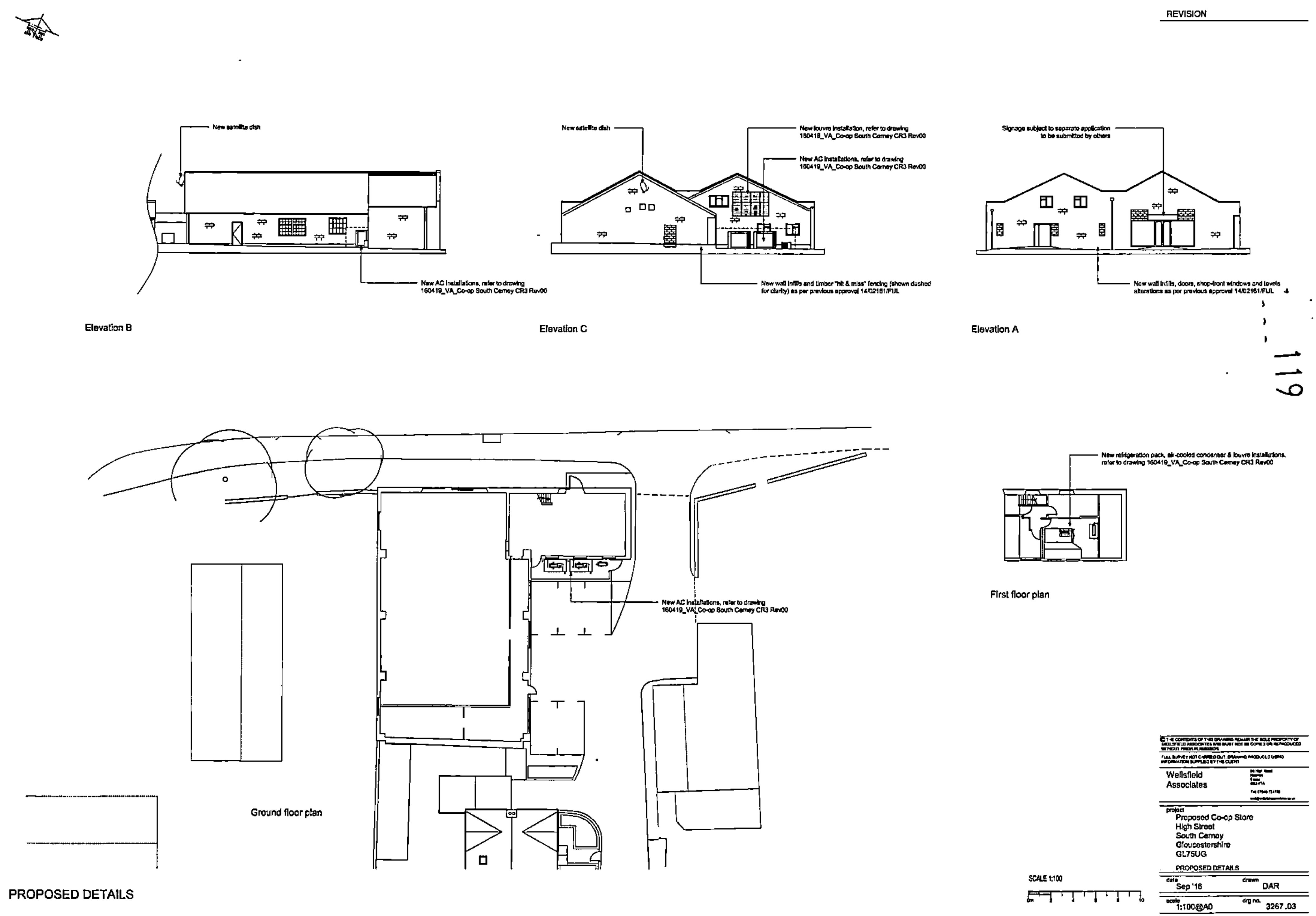
SCALE 1:100

Wellsfield Associates

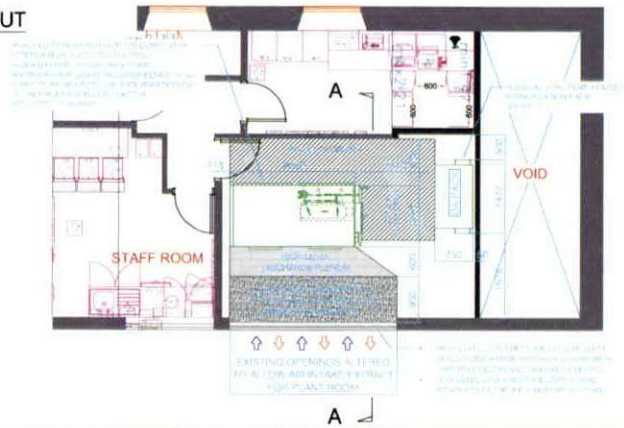
project
Proposed Co-op Store
High Street
South Cerney
Gloucestershire
GL75UG

EXISTING DETAILS

date	drawn
Sep '16	DAR
scale	drg no.
1:100@A0	3267.02


REVISION
New satellite dish
New AC Installations, refer to drawing 160419_VA_Co-op South Cerney CR3 Rev00
Elevation B
New satellite dish
New louvre installation, refer to drawing 160418_VA_Co-op South Cerney CR3 Rev00
New AC Installations, refer to drawing 160419_VA_Co-op South Cerney CR3 Rev00
New wall infills and timber "hit & miss" fencing (shown dashed for clarity) as per previous approval 14/02161/FUL
Elevation C
Signage subject to separate application to be submitted by others
New wall infills, doors, shop-front windows and levels alterations as per previous approval 14/02161/FUL
Elevation A
119
New refrigeration pack, air-cooled condenser & louvre installations, refer to drawing 160419_VA_Co-op South Cerney CR3 Rev00
First floor plan
New AC Installations, refer to drawing 160419_VA_Co-op South Cerney CR3 Rev00
Ground floor plan
PROPOSED DETAILS
SCALE 1:100
Wellsfield Associates
project
Proposed Co-op Store
High Street
South Cerney
Gloucestershire
GL75UG
PROPOSED DETAILS
date Sep '16
drawn DAR
scale 1:100@A0
drg no. 3267.03

PLANT ROOM LAYOUT



Hubbard — **MODEL** — **REFRIGERATION PACK SELECTION** — **PACK DETAILS** — **R407a**

Reference	Model	Manufacturer	New/Exist	SST (°C)	Evap Capacity (kW)	THR (kW)	Design current (A/ph)	Full load Current (A/ph)	Electrical Connection	Length (mm)	Width (mm)	Height (mm)	Weight (kg)	Max dBA Rating @ 10m
HA1	ZBD45KCE-TFD	Copeland	New	-7	11.55	15.55	8.83	12.3						
HA1	ZB45KCE-TFD	Copeland	New	-7	11.55	15.65	9.30	13.1						
HA1	ZB45KCE-TFD	Copeland	New	-7	11.55	15.65	9.30	13.1						
				HT TOTALS	**34.65**	**46.85**	**27.43**	**38.50**	415v/3ph/50Hz	1472	750	1946	850	70
LOW TEMPERATURE COMPRESSOR SELECTION														
LA1	ZFD13KVE-TFD EVI	Copeland	New	31	3.74	6.92	5.67	9.00						
				LT TOTALS	**3.74**	**6.92**	**5.67**	**9.00**						
PACK TOTALS					**38.39**	**53.77**	**33.10**	**47.50**						

CONDENSER SELECTION — **Refrigerant** — **R407a**

Model	Manufacturer	New / Existing	Condensing / Ambient Temperature (°C)	TD (K)	THR (kW)	Current @ Design (per fan) (A)	Full Load Current (per fan) (A)	Supply Voltage & Phase	Run speed signal voltage (0-10v) (Day / Night)	Condenser Inlet & Outlet Sizes (In / Out)	Refrigerant (kg)	Weight (kg)	Dimensions (LxWxH) (mm)	dB(A) @ 10m Day Time	dB(A) @ 10m Night time
ASR-125-ECMP-1058	Rivacold	New	43/35	8	54.00	2.68	4.5	3 x 400V-50Hz	8.2 / 4.9	1-1/8" /1-1/8"	R407a	414	2405 x 1210 x 2021	57	41

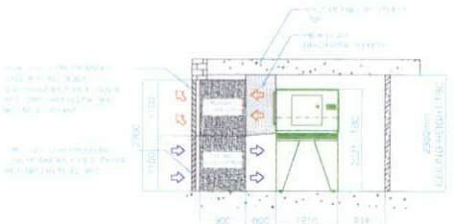
Receiver Detail

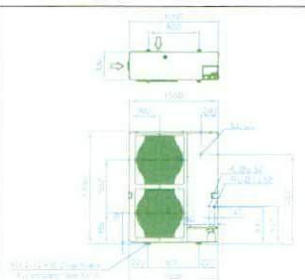
Reference	Manufacturer	Orientation	Size (ltr)	Connections sizes inlet / Outlet
RA	Hubbard	Horizontal	40	1-1/8

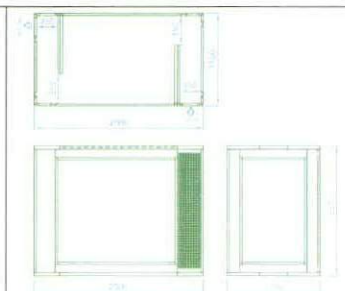
Air Conditioning - Selection Details — **Refrigerant** — **R410a**

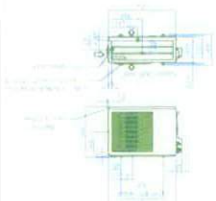
Item (Sys-FCU)	Model	#1	New/Existing	Type	Position	Duty Cooling (kW)	Duty - Heating (kW)	MCB Rating	Weight (kgs)	Refrigerant weight (kg)	Electrical Connections	FLA	Tail Sizes (S&L)	Dimensions (L x W x H)	Noise dBa @1m
ACU-1	PUHZ-ZRP140YKA2	Mitsubishi	New	Outdoor unit	Plant	-	-	16	131	5	380-415v,50Hz	8.09	5/8",3/8"	1050 x 330 x 1338	52
ACU-2	PUHZ-ZRP140YKA2	Mitsubishi	New	Outdoor unit	Plant	-	-	16	131	5	380-415v,50Hz	8.09	5/8",3/8"	1050 x 330 x 1338	52
ACU-3	PUHZ-ZRP35VKA	Mitsubishi	New	Outdoor unit	Plant	-	-	16	43	0	220-240v, 50Hz	4.17	1/2",1/4"	809 x 300 x 630	46

SECTION VIEW A-A

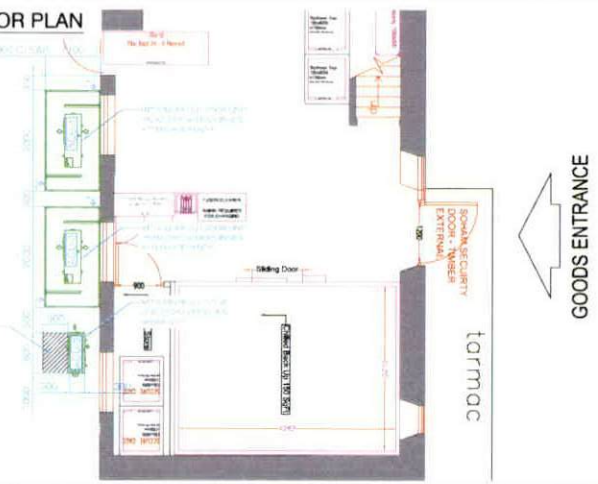


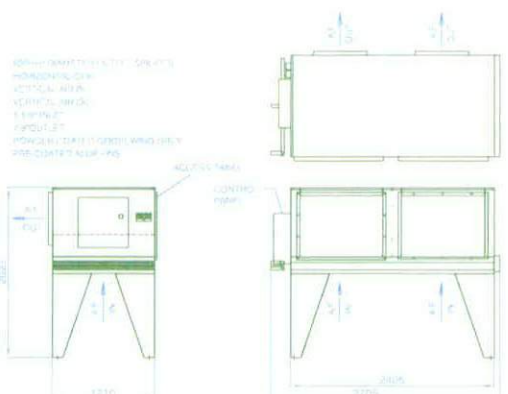


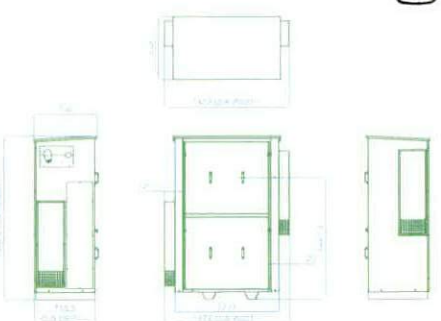




PARTIAL GROUND FLOOR PLAN







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The co-operative estates

design consult manage maintain

AB group abgroup.com

AB Group - Head Office
Bank Chambers, 2 Church Street,
Reigate, Surrey,RH2 0AN.
Tel: 0333 9000 180
abgroup.com

AB Group - Northern Office
Fourways House, 57 Hilton Street,
Manchester, M1 2EJ.
Tel: 0333 9000 180
abgroup.com

SCALE 1:50 — 1000 2000 — DO NOT SCALE

THIRD ANGLE PROJECTION

LEGEND

HA01 FIXTURE NUMBER

Notes

PRELIMINARY

Revision	Details	Drawn	Date
00	Preliminary Issue.	VA	19.04.16

Site Address:	The Co-op SOUTH CERNEY Gloucestershire, GL7 5UG
Drawing Title:	REFRIGERATION / AIR CONDITIONING PLANT LAYOUT
Consultant:	Simon Carter
Design Engineer:	Jonathan Silveira
Date: 19.04.2016	Drawn By: VA
Approved By: J Silveira	Drawing No: CR3
Revision: 00	Scale: 1:50@A1
Contract No: QR C1927	Derived File: P1F4M0

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Co-operative Store
High Street
South Cerney
GL7 5UG

Environmental Noise Impact Assessment Report

22838/ENIA1 Rev1

10 November 2016

For:
AB Group Limited
(South) Bank Chambers
2 Church Street
Reigate
RH2 0AN

Hann Tucker Associates
Consultants in Acoustics Noise & Vibration

Head Office: Duke House, 1-2 Duke Street, Woking, Surrey, GU21 5BA (t)
Manchester Office: First Floor, 346 Deansgate, Manchester, M3 4LY

Hann Tucker Associates

Environmental Noise Survey Report
22838/ENIA1 Rev1

Document Control

Rev	Date	Comment	Prepared by	Authorised by
0	21/04/2016	-	Fauwaz Baig Assistant Consultant BEng (Hons), AMIOA	Nick Russell Principal Consultant MIOA
1	10/11/2016	Revision to Section 9.	[redacted] Fauwaz Baig Assistant Consultant BEng (Hons), AMIOA	Nick Russell Principal Consultant MIOA

Hann Tucker Associates

Environmental Noise Impact Assessment Report 22838/ENIA1 Rev1

Contents

Attachments

1.0 Introduction

New items of building services are proposed to be installed at this store. Hann Tucker Associates have therefore been commissioned to undertake an environmental noise survey and recommend plant noise emission criteria.

2.0 Objectives

To inspect the site to familiarise ourselves with its layout and surroundings and to identify a suitable accessible location for environmental noise measurements.

To undertake noise level measurements during the quietest daytime and night-time periods on a typical weekday in general accordance with BS 7445. To record A-weighted (dBA) L_{eq} and L_{90} environmental noise levels.

To recommend suitable plant noise emission criteria based on the requirements of the Local Authority.

3.0 Site Description

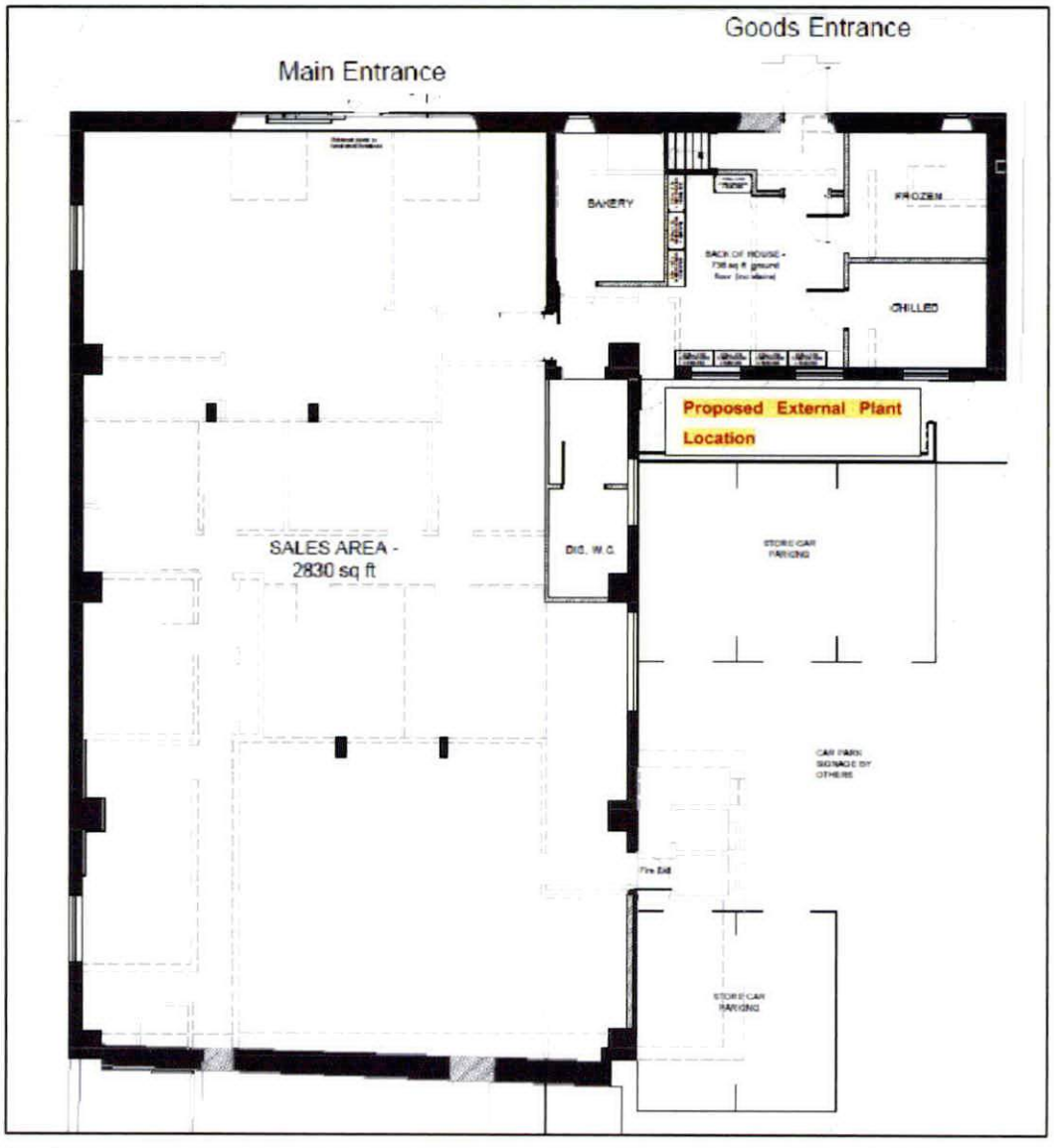
3.1 Location

The site is located on High Street, South Cerney in Gloucestershire as shown on the Location Map below.

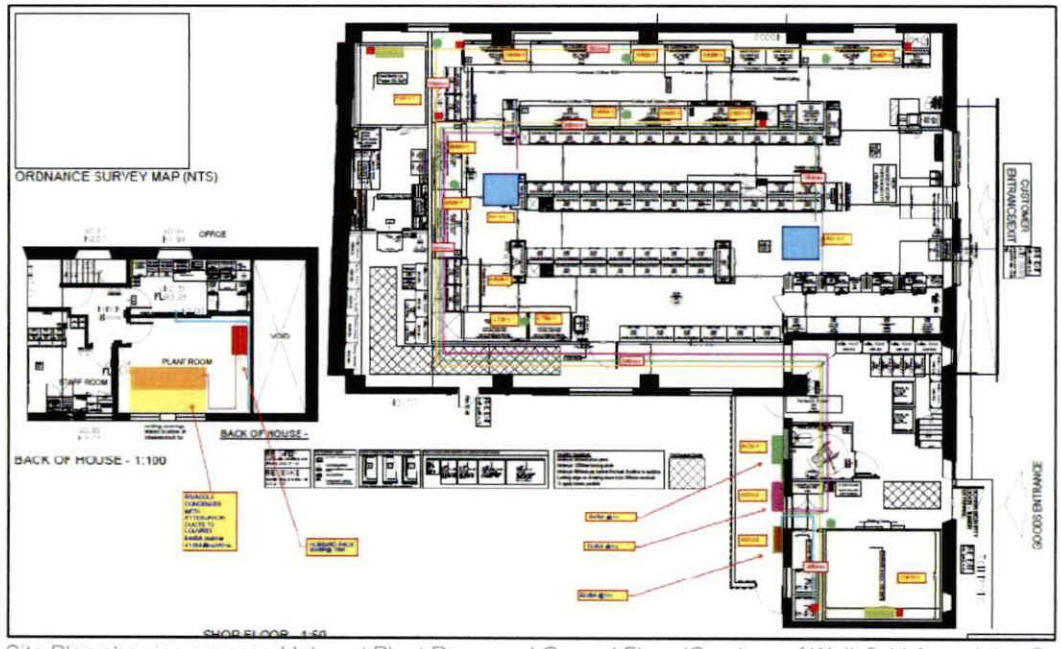
Location Map (Map Data © 2016 Google)

3.2 Description

The site is located at High Street, South Cerney and is bounded by residential dwellings to the south, east and west. The site also has a car park to the rear adjacent to the proposed plant location. The Condenser and the Refrigeration pack are to be located internally in a plant room on the first floor. The A/C units are proposed to be located on the ground floor directly under the plant room louvers. See site plans below.



Site Plan showing proposed external A/C locations on Ground Floor (Courtesy of Wellsfield Associates © 2015)



Site Plan showing proposed Internal Plant Room and Ground Floor (Courtesy of Wellsfield Associates © 2015)

4.0 Acoustic Terminology

For an explanation of the acoustic terminology used in this report please refer to Appendix A enclosed.

5.0 Methodology

The survey was undertaken by F.Baig, BEng(Hons) AMIOA.

5.1 Procedure

Fully automated environmental noise monitoring was undertaken from approximately 13:00 hours on Monday 18 January to 11:30 hours on Tuesday 19 January 2016.

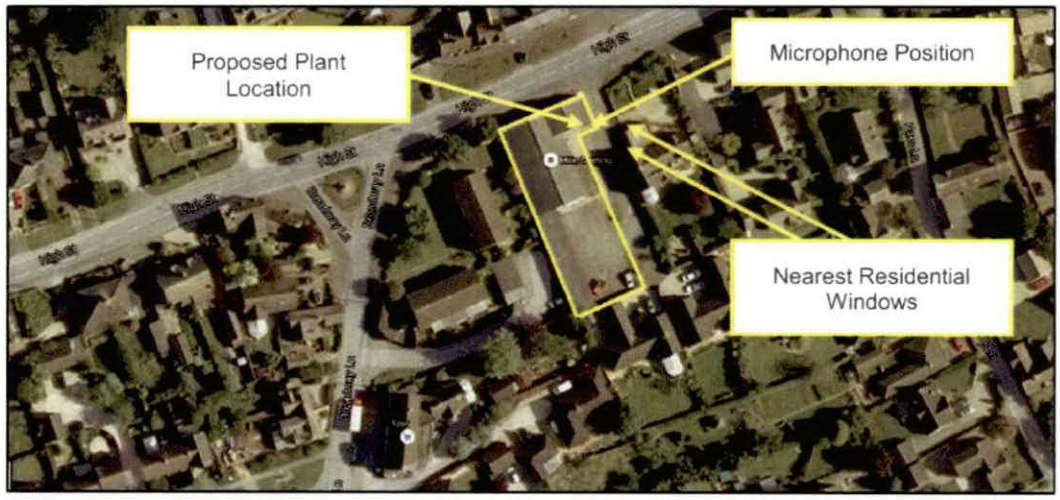
Due to the nature of the survey, i.e. unmanned, it is not possible to accurately comment on the weather conditions throughout the entire survey period. However at the beginning and end of the survey period the weather conditions were calm and the sky was generally overcast. We understand that generally throughout the survey period the weather conditions were calm and dry. These conditions are considered suitable for obtaining representative measurement results.

Measurements were taken continuously of the A-weighted (dBA) L_{90} and L_{eq} sound pressure levels over 15 minute periods.

5.2 Measurement Position

The microphone was attached to a pole then fastened to the hit and miss fence which runs along the perimeter of the external plant area. The microphone was at a height of approximately 3 metres above ground level and at least 3 metres away from any reflective surfaces.

The position is shown on the plan below.



Plan Showing Unmanned Measurement Positions (Map Data © 2016 Google)

5.3 Instrumentation

The instrumentation used during the survey is presented in the table below:

Description	Manufacturer	Type	Serial Number	Laboratory Calibration
Type 1 Data Logging Sound Level Meter	Larson Davis	824	3802	Calibration on 23/07/2014
Type 1 ½" Condenser Microphone	PCB	377B02	107040	Calibration on 23/07/2014
Type 1 Calibrator	Larson Davis	CAL200	3082	Calibration on 09/04/2015

The sound level meter, including the extension cable, was calibrated prior to and on completion of the survey. No significant change was found to have occurred (no more than 0.1 dB).

The sound level meter was located in an environmental case with the microphone connected to the sound level meter via an extension cable. The microphone was fitted with a windshield.

6.0 Results

The results have been plotted on Time History Graph 22838/THX1 enclosed, presenting the 15 minute A-weighted (dBA) L_{90} and L_{eq} levels at the measurement position throughout the duration of the survey.

7.0 Discussion Of Noise Climate

Due to the nature of the survey, i.e. unmanned, it is not possible to accurately describe the dominant noise sources, or specific noise events throughout the entire survey period. However at the beginning and end of the survey period the dominant noise source was noted to be road traffic noise from High Street.

8.0 Plant Noise Emission Criteria

8.1 Local Authority Requirements

The site lies within the jurisdiction of The Cotswold District Council. Their advice regarding criteria for atmospheric noise emissions from building service plant is as follows:

"Whilst the council does not have any prescribed noise criteria for the design of mechanical systems we would expect you to have regard to BS4142:2014 and BS 8233:2014 in any assessment and design".

8.2 BS 4142:2014

When setting plant noise emission criteria reference is commonly made to BS 4142: 2014 "*Methods for rating and assessing industrial and commercial sound*".

BS 4142 states 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 estimation of the impact of the specific noise can be obtained by the difference of the rating noise level and the background noise level and considering the following:*

- *"Typically, the greater this difference, the greater the magnitude of the impact."*
- *"A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context."*
- *"A difference of around +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 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."*

The determination of the "rating level" and the "background level" are both open to interpretation, depending on the context.

In summary it is not possible to set plant noise emission criteria purely on the basis of BS 4142:2014. It is reasonable to infer from the above, however, that a difference of around -5dB corresponds to "No Observed Effect Level" as defined in the Noise Policy Statement for England.

8.3 Statutory Noise Nuisance

There is no quantitive definition of statutory noise nuisance. It is generally accepted however, that if the plant noise level is at least 5dB (or 10dB if tonal) below the minimum background $L_{90(15minutes)}$ at 1m from the nearest noise sensitive window, then the risk of a statutory noise nuisance is avoided. By adopting this as a design criterion the guidance contained in BS 4142:2014 should also be complied with.

8.4 Proposed Criteria

We understand from our correspondence with Cotswold District Council that they would look for an assessment in accordance with BS 4142: 2014 *Methods for rating and assessing industrial and commercial sound* to assess the noise impact on surrounding premises.

Section 8 of BS 4142: 2014 states,

> *"8.1 ... In using the background sound level in the method for rating and assessing industrial and commercial sound it is important to ensure that values are reliable and suitably represent both the particular circumstances and periods of interest. For this (sic) purposes, the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods ...*
>
> *Since the intention is to determine a background sound level in the absence of the specific sound that is under consideration, it is necessary to understand that the background sound level can in some circumstances legitimately include industrial*

and/or commercial sounds that are present as separate to the specific sound…

8.1.4 The monitoring duration should reflect the range of background sound levels for the period being assessed. In practice, there is no "single" background sound level as this is a fluctuating parameter. However, the background sound level used for the assessment should be representative of the period being assessed.

… A representative level ought to account for the range of background sound levels and ought not automatically to be assumed to be either the minimum or modal value."

BS 4142: 2014 emphasises the importance of context in determining the background noise level, allowing for time of day and the nature of the existing noise sources and surrounding premises. In this particular context, the nearest surrounding premises are all residential, and the noise climate is largely composed of road traffic noise, which fluctuates throughout the measurement period. Statistical analysis has therefore been carried out on the data in order to ascertain the most appropriate values with which to describe the background noise. For the distribution of measured daytime and night-time data, $L_{A90(15min)}$ values that are considered to be representative are presented in the table below. In this case these values were also the most commonly occurring.

Representative $L_{A90\ (15\ mins)}$ (dB re $2x10^{-5}$ Pa)	
Daytime (07:00 – 23:00 hours)	**Night-time (23:00 – 07:00 hours)**
40 dBA	30 dBA

Based on the above advice, and the results of the environmental noise survey, we recommend that the following plant noise emission criteria be achieved at 1 metre from the nearest noise sensitive residential window with all plant operating simultaneously.

Plant Noise Emission Criteria (dB re $2x10^{-5}$ Pa)	
Daytime (07:00 – 23:00 hours)	**Night-time (23:00 – 07:00 hours)**
35 dBA	25 dBA

If plant is intermittently operational, contains tonal or impulsive characteristics the external design criteria should be reduced in accordance with BS 4142:2014.

It should be noted that the above are subject to the final approval of the Local Authority.

9.0 Plant Noise Assessment

We understand that the following items of plant are to be installed at the site:

Description	Manufacturer	Qty	Plant Model	Sound Pressure Level (dBA)	Plant Location
Shop Floor A/C units	Mitsubishi	2	PUHZ-ZRP140	52 @1m	External Plant Area
Managers office A/C unit	Mitsubishi	1	PUHZ-ZRP35VKA	46 @1m	External Plant Area
Refrigeration Condenser	Rivacold	1	ASR-125-ECMP-1058	57 @10m Daytime 41 @10m Night-time	Plant Room
Refrigeration Pack	Hubbard	1	HA1	45 @10m	Plant Room

9.1 Plant Noise Emissions

We understand the manufacturer's noise data for the equipment to be as follows:

Plant Description	Sound Power Level (dB re $2x10^{-12}$ Watts) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
PUHZ-ZRP140	58.5	56.5	55	57.5	46	41	36	29
PUHZ-ZRP35VKA	58	50.5	45	44	40	37	32	31
ASR-125-ECMP-1058 (Day)	52	64	73	78	76	75	70	69
ASR-125-ECMP-1058 (Night)	49	52	49	62	63	57	54	43
Refrigeration Pack	80	78	77	73	70	67	67	64

9.2 Attenuation Measures

9.2.1 External Plant Area

In order to comply with the criteria set out under Section 8, we would propose that the PUHZ-ZRP140 A/C units are contained within a proprietary acoustic enclosures that reduce atmospheric noise emissions by at least 20 dBA.

9.2.2 Internal Plant Room

In order to comply with the criteria set out under Section 8, we would propose that the discharge louvres be fitted with an attenuator providing the insertion losses presented in the table below.

Insertion losses at octave band centre frequency, Hz								
Octave Band (Hz)	**63**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**8K**
dB	9	10	14	25	31	31	29	24

9.3 Plant Noise Impact Assessment

We have undertaken an assessment of atmospheric plant noise emissions based upon the information we have currently received from AB Group, in line with the current CR3 plant drawing and the Architects site plan accompanying this report.

The provided CR3 drawing shows that plant will be located in two separate areas as mentioned in Section 3.2. For this reason two separate assessments have been carried out, calculating the atmospheric noise emission from each of the service areas their respective nearest noise sensitive residential window, for the daytime and night-time periods.

9.4 Internal Plant Room

The following table summarises our predictions of atmospheric noise emission from the proposed refrigeration condenser and refrigeration pack to the nearest noise sensitive residential window, for the daytime and night-time periods.

Daytime Internal Plant Room , Sound Power Level (dB)								
Octave Band (Hz)	**63**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**8K**
All Internal Plant Items	80	78	78.5	79	77	76	72	70
Attenuator	-9	-10	-14	-25	-31	-31	-29	-24
Plenum	-3	-3	-3	-3	-3	-3	-3	-3
Grille	-3	0	0	0	0	0	0	0
Total	65	65	62	51	43	42	40	43

Night-time Internal Plant Room , Sound Power Level (dB)								
Octave Band (Hz)	**63**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**8K**
All Internal Plant Items	80	78	77	73	71	67	67	64
Attenuator	-9	-10	-14	-25	-31	-31	-29	-24
Plenum	-3	-3	-3	-3	-3	-3	-3	-3
Grille	-3	0	0	0	0	0	0	0
Total	65	65	60	45	37	33	35	37

	Sound Pressure Level (dBA) @ Receiver	
	Daytime (07:00 – 23:00 hours)	**Night-time (23:00 – 07:00 hours)**
Refrigeration Condenser and Refrigeration Pack	56 @Louvres	54 @Louvres
Hemispherical Conformal Area Distance Loss (SWL to SPL 13m)	-34	-34
Calculated Noise Level at Receptor	**22**	**21**

9.5 External Plant Area

The following table summarises our predictions of atmospheric noise emission from the proposed plant to the nearest noise sensitive residential window, for the daytime, the external plant items will not be operational during night-time hours.

	Sound Pressure Level (dBA) @ Receiver	
	Daytime (07:00 – 23:00 hours)	**Night-time (23:00 – 07:00 hours)**
Shop Floor A/C units with acoustic enclosure	35 @1m	Not running
Managers office A/C unit	46 @1m	
Cumulative Noise Level	46 @1m	
Distance Correction (13m)	-18	-
Radiation Mode Correction	+3	-
Calculated Noise Level at Receptor	**31**	-

9.6 Cumulative Noise Emissions

	Sound Pressure Level (dBA)	
	Daytime (07:00 – 23:00 hours)	**Night-time (23:00 – 07:00 hours)**
External Plant Area	31 @ Receptor	Not running
Internal Plant Room	22 @ Receptor	21 @ Receptor
Cumulative Noise Level	32	21
Façade Reflection	+3	+3
Calculated Noise Level 1m away from nearest noise sensitive window	**35**	**24**

Our calculations therefore indicate that noise levels from the proposed plant should just be capable of achieving the plant noise emission criteria presented in Section 8.0.

10.0 Conclusions

An environmental noise survey has been undertaken in order to establish the currently prevailing environmental noise climate.

Environmental plant noise emission criteria have been recommended based on the results of the noise survey and with reference to the requirements of the Local Authority and BS4142 so as to avoid causing statutory noise nuisance.

Plant noise emission limits have been recommended, based on the information currently made available to us.

An assessment has been carried out to determine the likely plant noise emissions to the nearest noise sensitive residential window. Our assessment indicates the proposed building services plant, with the proposed attenuation, should achieve the proposed environmental noise criteria.

Appendix A

The acoustic terms used in this report are defined as follows:

dB — Decibel - Used as a measurement of sound level. Decibels are not an absolute unit of measurement but an expression of ratio between two quantities expressed in logarithmic form. The relationships between Decibel levels do not work in the same way that non-logarithmic (linear) numbers work (e.g. 30dB + 30dB = 33dB, not 60dB).

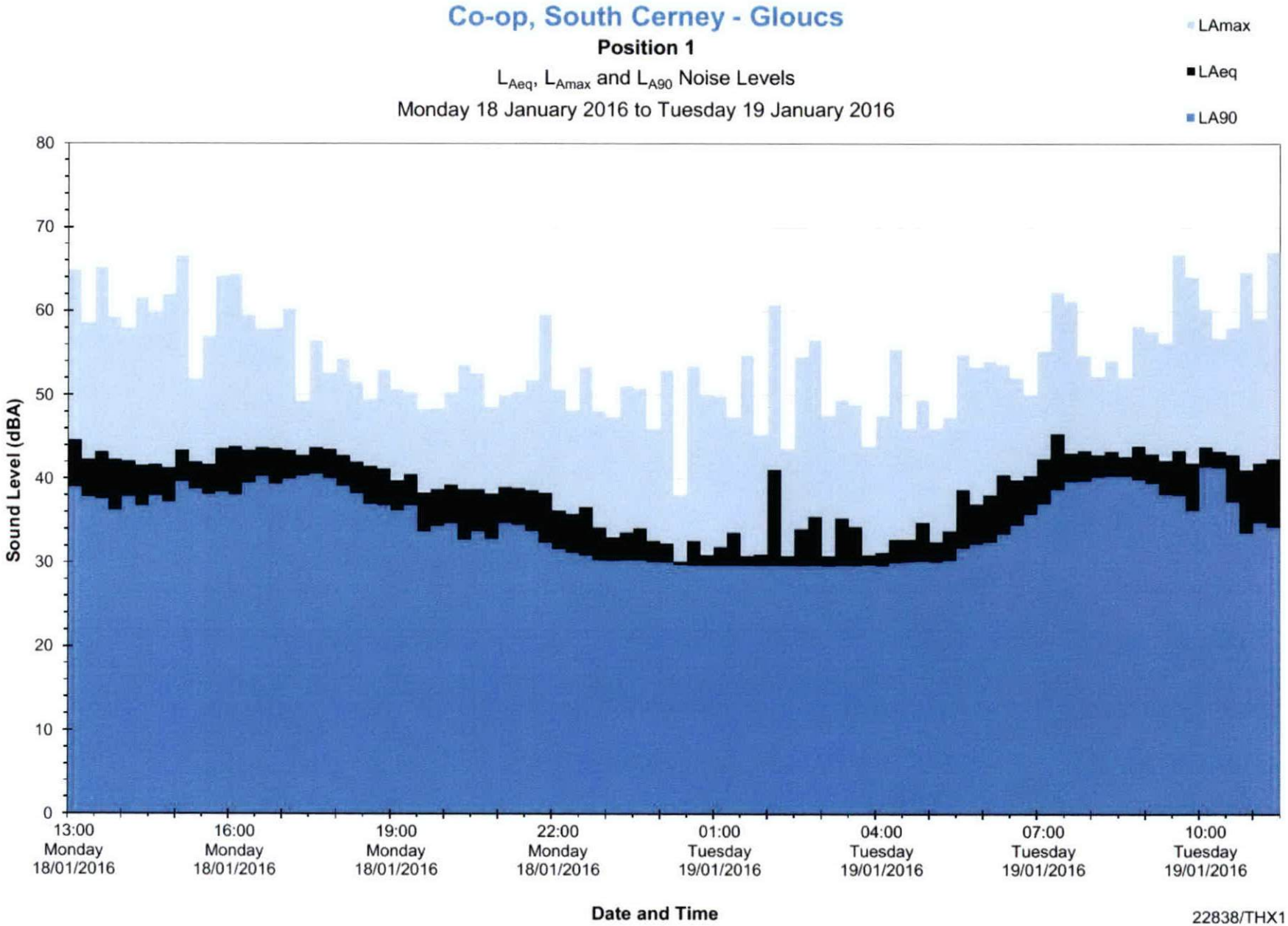
dBA — The human ear is more susceptible to mid-frequency noise than the high and low frequencies. The 'A'-weighting scale approximates this response and allows sound levels to be expressed as an overall single figure value in dBA. The $_A$ subscript is applied to an acoustical parameter to indicate the stated noise level is A-weighted

It should be noted that levels in dBA do not have a linear relationship to each other; for similar noises, a change in noise level of 10dBA represents a doubling or halving of subjective loudness. A change of 3dBA is just perceptible.

$L_{90,T}$ — L_{90} is the noise level exceeded for 90% of the period *T* (i.e. the quietest 10% of the measurement) and is often used to describe the background noise level.

$L_{eq,T}$ — $L_{eq,T}$ is the equivalent continuous sound pressure level. It is an average of the total sound energy measured over a specified time period, *T*.

Date	Time	L_{eq}	L_{max}	L_{90}
18/01/2016	13:00	44.6	64.9	35.008
18/01/2016	13:15	42.3	58.6	37.789
18/01/2016	13:30	43.2	65.2	37.562
18/01/2016	13:45	42.3	59.1	36.234
18/01/2016	14:00	42.1	58	37.851
18/01/2016	14:15	41.6	61.6	36.75
18/01/2016	14:30	41.7	59.8	37.961
18/01/2016	14:45	41.3	62	37.219
18/01/2016	15:00	43.4	66.6	39.656
18/01/2016	15:15	42	51.9	38.742
18/01/2016	15:30	41.7	57	38.133
18/01/2016	15:45	43.6	64.2	38.422
18/01/2016	16:00	43.8	64.4	38.07
18/01/2016	16:15	43.4	59.5	39.484
18/01/2016	16:30	43.7	57.9	40.312
18/01/2016	16:45	43.6	58	39.859
18/01/2016	17:00	43.4	60.3	39.976
18/01/2016	17:15	42.8	49.3	40.344
18/01/2016	17:30	43.7	56.5	40.555
18/01/2016	17:45	43.5	52.7	40.055
18/01/2016	18:00	42.8	54.3	39.125
18/01/2016	18:15	42	51.6	38.242
18/01/2016	18:30	41.5	49.5	38.984
18/01/2016	18:45	41.2	53	38.789
18/01/2016	19:00	39.8	50.7	36.18
18/01/2016	19:15	40.5	50.3	38.805
18/01/2016	19:30	38.3	48.3	33.695
18/01/2016	19:45	38.7	48.4	34.851
18/01/2016	20:00	39.3	50.3	34.664
18/01/2016	20:15	38.7	53.6	32.711
18/01/2016	20:30	38.7	52.6	33.719
18/01/2016	20:45	38.2	48.6	32.844
18/01/2016	21:00	39	48.9	34.734
18/01/2016	21:15	38.9	50.4	34.508
18/01/2016	21:30	38.6	51.8	33.797
18/01/2016	21:45	38.3	59.6	32.375
18/01/2016	22:00	36.2	50.7	31.609
18/01/2016	22:15	35.8	48.2	31.164
18/01/2016	22:30	36.6	53.4	30.836
18/01/2016	22:45	34.2	48.1	30.242
18/01/2016	23:00	33	47.4	30.219
18/01/2016	23:15	33.6	51.1	30.234
18/01/2016	23:30	34.1	50.8	30.234
18/01/2016	23:45	32.6	46	30.078
19/01/2016	00:00	32.3	53	30.039
19/01/2016	00:15	30.1	38.1	29.703
19/01/2016	00:30	32.6	53.5	29.672
19/01/2016	00:45	30.9	50	29.672
19/01/2016	01:00	31.9	48.8	29.672
19/01/2016	01:15	33.6	47.4	29.672
19/01/2016	01:30	30.8	54.8	29.672
19/01/2016	01:45	31	45.3	29.64
19/01/2016	02:00	31.1	60.8	29.672
19/01/2016	02:15	30.8	43.6	29.672
19/01/2016	02:30	34	54.6	29.64
19/01/2016	02:45	35.5	58.6	29.672
19/01/2016	03:00	30.8	47.6	29.578
19/01/2016	03:15	35.3	48.5	29.672
19/01/2016	03:30	34.3	48.9	29.64
19/01/2016	03:45	30.9	43.9	29.703
19/01/2016	04:00	31.2	47.6	29.609
19/01/2016	04:15	32.8	55.5	30.015
19/01/2016	04:30	32.8	46.1	30.101
19/01/2016	04:45	34.8	49.5	30.195
19/01/2016	05:00	32.5	46.1	30.094
19/01/2016	05:15	33.8	47.4	30.265
19/01/2016	05:30	38.7	54.9	31.734
19/01/2016	05:45	37	53.4	32.242
19/01/2016	06:00	38.1	54.1	32.476
19/01/2016	06:15	40.5	53.7	33.43
19/01/2016	06:30	39.9	52.1	34.484
19/01/2016	06:45	40.4	50.1	35.758
19/01/2016	07:00	42.4	55.3	37.055
19/01/2016	07:15	45.4	62.3	38.742
19/01/2016	07:30	43.1	61.2	39.68
19/01/2016	07:45	43.4	54.8	39.773
19/01/2016	08:00	42.9	52.3	40.281
19/01/2016	08:15	43.3	54.2	40.375
19/01/2016	08:30	42.7	52.1	40.344
19/01/2016	08:45	43.9	58.3	39.953
19/01/2016	09:00	43	57.6	39.492
19/01/2016	09:15	42.2	56.3	38.187
19/01/2016	09:30	43.4	66.8	38.07
19/01/2016	09:45	41.9	64.1	36.258
19/01/2016	10:00	43.8	60.3	41.461
19/01/2016	10:15	43.3	56.8	41.351
19/01/2016	10:30	42.9	58.1	37.312
19/01/2016	10:45	41.1	63.7	33.578
19/01/2016	11:00	41.9	59.2	34.805
19/01/2016	11:15	42.4	67.1	34.271
19/01/2016	11:30	42.1	57.7	34.844


Co-op, South Cerney - Gloucs
Position 1
L_{Aeq}, L_{Amax} and L_{A90} Noise Levels
Monday 18 January 2016 to Tuesday 19 January 2016
LAmax
LAeq
LA90
Sound Level (dBA)
80
70
60
50
40
30
20
10
0
13:00 Monday 18/01/2016
16:00 Monday 18/01/2016
19:00 Monday 18/01/2016
22:00 Monday 18/01/2016
01:00 Tuesday 19/01/2016
04:00 Tuesday 19/01/2016
07:00 Tuesday 19/01/2016
10:00 Tuesday 19/01/2016
Date and Time
22838/THX1