

The Co-operative
11 High Street,
Fulbourn,
CB21 5DH

**Plant Noise
Impact Assessment**

On behalf of

 **Healy's**

Project Reference: 90425 | Revision: - | Date: 27th January 2022

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Executive Summary

Noise Solutions Limited has undertaken a noise impact assessment of replacement plant to be installed at an existing Co-operative store at 11 High Street, Fulbourn, Cambridge, CB21 5DH.

It should be noted that the survey referenced in this report was undertaken in December 2021, at a time when the coronavirus pandemic was causing minimal disruption to working patterns and other activity, with noise levels considered to be at a typical level.

The results of the assessment demonstrate that cumulative plant noise emissions from the proposed external plant will comply with the proposed limits.

In summary, the local authority should have no grounds to refuse the planning application in relation to fixed plant noise emissions.

1.0 Introduction

- 1.1. Noise Solutions Ltd (NSL) has been commissioned by Healy Refrigeration & Air Conditioning Services Ltd to undertake a Noise Impact Assessment of replacement plant to serve an existing Co-operative store at 11 High Street, Fulbourn, Cambridge, CB21 5DH.
- 1.2. An environmental sound survey has been undertaken to establish the prevailing background sound pressure levels at a location representative of the sound levels outside the nearest noise sensitive receptors to the site.
- 1.3. An assessment of potential noise impact has been undertaken based on the typical local authority requirements and the guidance provided in BS 4142:2014 '*Methods for rating and assessing industrial and commercial sound*'.
- 1.4. This report contains recommendations based on project information available at the time of the assessment and the results of the baseline noise survey.
- 1.5. To assist with the understanding of this report a glossary of acoustic terms can be found in **Appendix A**. An in-depth glossary of acoustic terms can be viewed online at www.acoustic-glossary.co.uk.

2.0 Details of development proposals

- 2.1. The Co-operative store is at 11 High Street, Fulbourn, Cambridge, CB21 5DH. Replacement refrigeration and air conditioning (AC) plant will be located externally within a yard at the rear of the store.
- 2.2. The AC plant will operate only when the store is open; the refrigeration plant will operate at all times but will typically run at reduced duty at night.
- 2.3. A site plan showing the site and surrounding area and the noise monitoring location used in this assessment is presented in **Appendix B**. A layout drawing for the proposed plant is given in **Appendix C**.

3.0 Nearest noise-sensitive receptors

- 3.1. The area surrounding the site is predominantly residential. The nearest residential receptor to the site (R1) is approximately 15m from the nearest plant item.

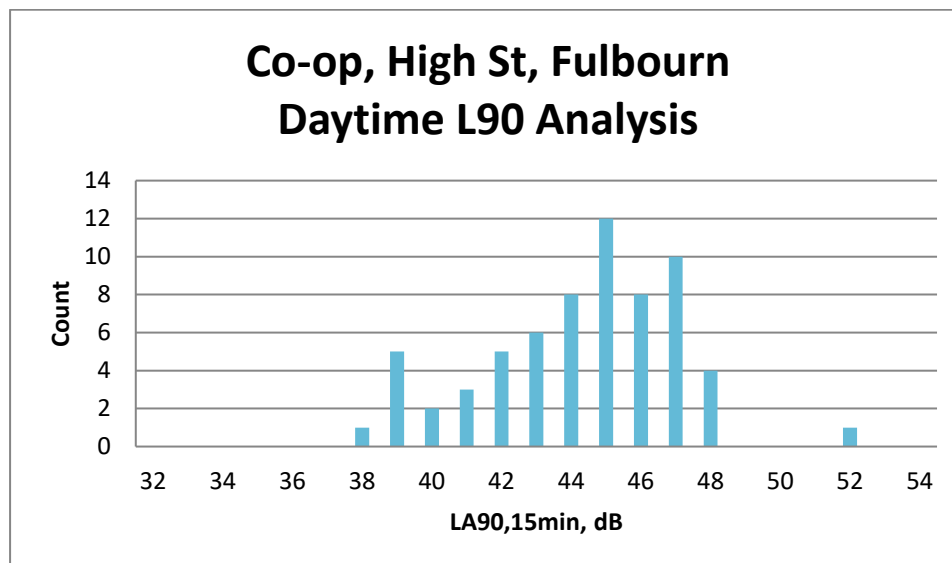
4.0 Existing noise climate

- 4.1. An environmental noise survey was undertaken to establish the typical background sound levels at a location representative of the noise climate outside the façades of the nearest noise sensitive receptors to the proposed plant area during the quietest times at which the plant will operate.
- 4.2. The results of the environmental sound survey are summarised in Table 1 below. The full set of measurement results and details of the survey methodology are presented in [Appendix D](#).

Table 1 Summary of survey results

Measurement period	Range of recorded sound pressure levels (dB)			
	L _{Aeq} (15mins)	L _{Amax} (15mins)	L _{A10} (15mins)	L _{A90} (15mins)
Daytime (07.00 – 23.00 hours)	43-64	58-87	45-67	38-52
Night-time (23.00 – 07.00 hours)	37-56	42-83	39-52	35-44

Figure 1 Histogram of daytime L_{A90} background sound pressure levels



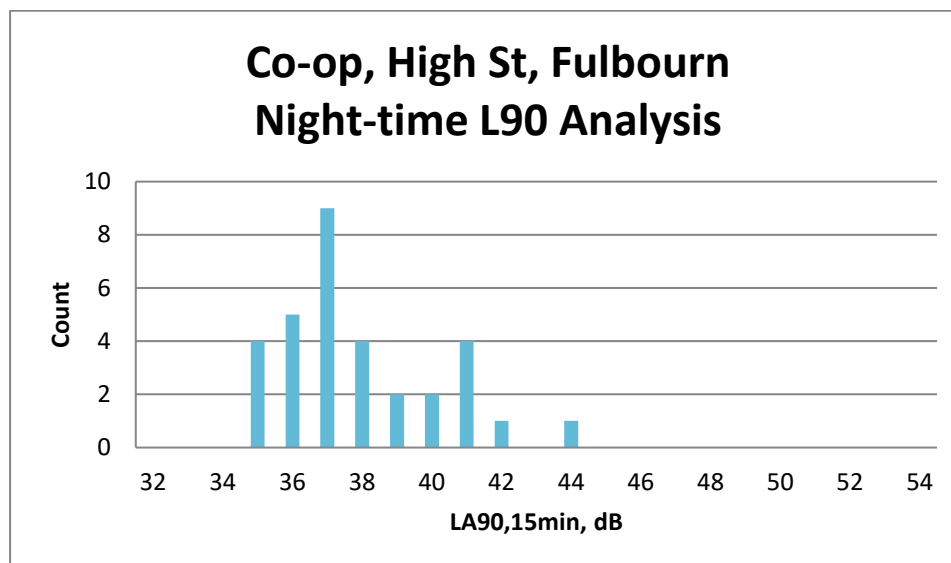
- 4.3. Further statistical analysis has been carried out on the data; the mean, modal and median values are shown in Table 2 below.

Table 2 Statistical analysis of L_{A90,15min} levels during the daytime period

dB, L _{A90} daytime period	
mean	44
modal	45
median	45

- 4.4. From review of the time history chart, 39 dBA has been selected to be a robust representation of the background noise level during the daytime period.

Figure 2 Histogram of night-time L_{A90} background sound pressure levels



- 4.5. Further statistical analysis has been carried out on the data; the mean, modal and median values are shown in Table 3 below.

Table 3 Statistical analysis of $L_{A90,15min}$ levels during the night-time period

dB, L_{A90} night-time period	
mean	38
modal	37
median	37

- 4.6. Again, from the time history chart, 35dBA has been selected to be a robust representation of the background sound level during the night-time period.
- 4.7. Therefore, the following values are considered representative of the existing background sound pressure levels at nearby noise sensitive premises:

- 39dB L_{A90} during the daytime period; and
- 35dB L_{A90} during the night-time period.

Covid-19

- 4.8. It should be noted that the environmental noise survey discussed in this report was undertaken in December 2021, at a time when the coronavirus pandemic was causing potentially very minor disruption to typical working patterns and other activity. It is therefore possible that recorded sound levels are slightly lower than would otherwise be expected where dominated by road or

air traffic. While the data should therefore be treated with an element of caution, where it has been used to establish background sound levels the only potential effect of these conditions is a possible underestimate of the existing background sound levels, resulting in a more stringent, robust assessment.

5.0 Plant noise design criteria and guidance

South Cambridgeshire District Council

- 5.1. Cambridge City Council and South Cambridgeshire District Council adopted the Greater Cambridge Sustainable Design and Construction Supplementary Planning Document¹ in January 2020. Cambridge City Council Policy 35 Noise states:

Development will be permitted where it is demonstrated that:

a. it will not lead to significant adverse effects and impacts, including cumulative effects and construction phase impacts wherever applicable, on health and quality of life/amenity from noise and vibration; and

b. adverse noise effects/impacts can be minimised by appropriate reduction and/or mitigation measures secured through the use of conditions or planning obligations, as appropriate (prevention through high quality acoustic design is preferable to mitigation).

- 5.2. For *Noise Generating Development*, which includes such services plant that may affect neighbouring properties, the SPD adopts a five-stage approach as follows:

Stage 1 – Background noise assessment

Stage 2 – Measure/predict specific noise

Stage 3 – Apply SPD external noise requirements

Stage 4 – Apply SPD internal noise requirements

Stage 5 – Acoustic report and acoustic design statement. Noise report including good acoustic design and mitigation

- 5.3. Table 3.11 within the SPD sets out six categories of “noise significance risk” – “none”, “minimal”, “low”, “medium”, “high” and “very high”.

¹ Referred to henceforth in this report as “the SPD”

Table 4 Table 3.11 in Greater Cambridge SPD New noise generating development - external noise standards for "non-anonymous noise"

Noise Significance Risk	Noise Significance of Effect	BS 4142 Outcome. Rating level ($L_{A,r,T}$) – background level (L_{A90})	Planning advice
None	NOEL	$L_{A,r,T} - L_{A90,T} \leq -10$	Sound is likely to be inaudible and have no discernible impact on health or quality of life. No objection from a noise perspective and no specific noise measures required.
Minimal	NOEL to LOAEL	$L_{A,r,T} - L_{A90,T} > -10$ and ≤ -5	Where the rating level of noise is below the background noise level by at least 5dB, this indicates that the proposed NGD is likely to be acceptable from a noise perspective. The LPA will seek this level of compliance in most noise sensitive areas and/or where there is a requirement to mitigate creeping background effects.
Low	NOEL to LOAEL	$L_{A,r,T} - L_{A90,T} > -5$ and ≤ 0	Where the rating level of noise is equal to, or below the background noise level by up to 5dB, this indicates that the proposed NGD may be acceptable from a noise perspective but will be more context dependent, i.e. extent and effect on noise sensitive receivers (externally and internally). Compliance within this range is more applicable to less sensitive sites or where there is no requirement to mitigate creeping background effects.
Medium	LOAEL to SOEL	$L_{A,r,T} - L_{A90,T} > 0$ and ≤ 5	Where the rating level of noise is equal to, or above the background noise level by up to 5dB, this indicates that the proposed NGD is less likely to be acceptable from a noise perspective and will be context dependent, i.e. extent and effect on noise sensitive receivers (externally and internally). Compliance within this range is typically only applicable to non-sensitive sites or where there are overriding other reasons why development should be considered. It will typically be necessary for the applicant to confirm how adverse impacts from the NGD will be mitigated and minimised. It is less likely that planning consent will be granted. Acceptable only if there are overriding economic or social reasons for development to proceed
High	SOEL	$L_{A,r,T} - L_{A90,T} > 5$ and ≤ 10	Where the rating level of noise is above the background noise level by more than 5dB, this indicates that the proposed NGD is unlikely to be acceptable from a noise perspective and planning consent is likely to be refused on noise grounds.

Noise Significance Risk	Noise Significance of Effect	BS 4142 Outcome. Rating level (L_{A,r,T_r}) – background level (L_{A90})	Planning advice
Very high	SOEL and unacceptable	$L_{A,r,T_r} - L_{A90,T} > 10$	Where the rating level of noise is above the background noise level by more than 10dB, this indicates that the proposed NGD is unacceptable from a noise perspective and planning consent shall be refused on noise grounds.

- 5.4. Paragraph 3.6.108 of the SPD seeks to limit creeping ambient noise levels, and includes the following general requirement for operational noise from all operational plant and equipment:

the rating level (in accordance with BS4142:2014) from all plant, equipment and vents etc. (collectively) associated with this application should be less than or equal to the existing background level (L_{90}) at the boundary of the premises subject to the application and having regard to noise sensitive premises.

Tonal/impulsive sound frequencies should be eliminated or at least considered in any assessment and should carry an additional correction in accordance with BS4142:2014. This is to prevent unreasonable disturbance to other premises. This requirement applies both during the day (07:00 to 23:00 hrs over any one hour period) and night time (23:00 to 07:00 hrs over any one 15 minute period).

It is recommended that the agent/applicant submits an acoustic prediction survey/report in accordance with the principles of BS4142: 2014 "Methods for rating and assessing industrial and commercial sound" or similar, concerning the effects on amenity rather than likelihood for complaints. Noise levels shall be predicted at the application site boundary having regard to neighbouring premises.

National Planning Policy Framework

- 5.5. A new edition of NPPF was published in July 2021 and came into effect immediately. The original National Planning Policy Framework (NPPF²) was published in March 2012, with revisions in July 2018 and February 2019 - this document replaced the existing Planning Policy Guidance Note 24 (PPG 24) "Planning and Noise." The 2021 revised edition contains no new directions or guidance with respect to noise, and hence, all previous references remain extant. The paragraph references quoted below relate to the July 2021 edition.

² National Planning Policy Framework, DCLG, March 2012

- 5.6. Paragraph 174 of the NPPF states that the planning system should contribute to and enhance the natural and local environment by (amongst others) *“preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, water or noise pollution or land stability.”*
- 5.7. The NPPF goes on to state in Paragraph 185:
- “planning policies and decisions 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 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 ...*
- 5.8. The NPPF document does not refer to any other documents or British Standards regarding noise other than the Noise Policy Statement for England (NPSE³).
- 5.9. Paragraph 2 of the NPPF states that “planning law requires that applications for planning permission must be determined in accordance with the development plan unless material considerations indicate otherwise.”
- 5.10. Paragraph 12 of the NPPF states that “The presumption in favour of sustainable development does not change the statutory status of the development plan as the starting point for decision making. Where a planning application conflicts with an up-to-date development plan (including any neighbourhood plans that form part of the development plan), permission should not usually be granted. Local planning authorities may take decisions that depart from an up-to-date development plan, but only if material considerations in a particular case indicate that the plan should not be followed”.
- 5.11. Paragraph 119 states that “Planning policies and decisions should promote an effective use of land in meeting the need for homes and other uses, while safeguarding and improving the environment and ensuring safe and healthy living conditions. Strategic policies should set out a clear strategy for accommodating objectively assessed needs, in a way that makes as much use as possible of previously-developed or ‘brownfield’ land”.

³ Noise Policy Statement for England, DEFRA, March 2010

BS 4142:2014 Methods for rating and assessing industrial and commercial sound

- 5.12. BS 4142:2014 is intended to be used to assess the likely effects of sound on people residing in nearby dwellings. The scope of BS 4142:2014 includes "sound from fixed plant installations which comprise mechanical and electrical plant and equipment".
- 5.13. The procedure contained in BS 4142:2014 is to quantify the "specific sound level", which is the measured or predicted level of sound from the source in question over a one hour period for the daytime and a 15 minute period for the night-time. Daytime is defined in the standard as 07:00 to 23:00 hours, and night-time as 23:00 to 07:00 hours.
- 5.14. The specific sound level is converted to a rating level by adding penalties on a sliding scale to account for either potentially tonal or impulsive elements. The standard sets out objective methods for determining the presence of tones or impulsive elements, but notes that it is acceptable to subjectively determine these effects.
- 5.15. The penalty for tonal elements is between 0dB and 6dB, and the standard notes: "Subjectively, this can be converted to a penalty of 2 dB for a tone which is just perceptible at the noise receptor, 4 dB where it is clearly perceptible, and 6 dB where it is highly perceptible."
- 5.16. The penalty for impulsive elements is between 0dB and 9dB, and the standard notes: "Subjectively, this can be converted to a penalty of 3 dB for impulsivity which is just perceptible at the noise receptor, 6 dB where it is clearly perceptible, and 9 dB where it is highly perceptible."
- 5.17. The assessment outcome results from a comparison of the rating level with the background sound level. The standard states:
- Typically, the greater this difference, the greater the magnitude of the impact.
 - A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context;
 - A difference of around +5 dB 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.

- 5.18. The standard does state that “adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.”
- 5.19. The standard goes on to note that: “Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.”
- 5.20. In addition to the margin by which the Rating Level of the specific sound source exceeds the Background Sound Level, the 2014 edition places emphasis upon an appreciation of the context, as follows:
- “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.”
- 5.21. BS 4142:2014 requires uncertainties in the assessment to be considered, and where the uncertainty is likely to affect the outcome of the assessment, steps should be taken to reduce the uncertainty.

Summary of criteria

- 5.22. The Council’s usual requirements are set out in Table 4 of this report. For design purposes, it is considered appropriate to use the “low” risk category, i.e. the BS 4142:2014 rating level at the nearest residential receptors is no higher than the existing representative background sound level.
- 5.23. The cumulative noise level for the proposed plant at the nearest residential receptors should not therefore exceed the limits shown in the table below:

Table 5 Proposed plant noise emissions level limits at noise sensitive residential receptors

Period	Cumulative plant noise level, dB(A)
Daytime (07.00 – 23.00 hours)	39
Night-time (23.00 – 07.00 hours)	35

6.0 Plant noise impact assessment

- 6.1. The cumulative plant noise levels at the most potentially affected noise sensitive receptor has been calculated, and the potential impact of the installed plant assessed.

- 6.2. It should be noted that the proposed plant is not anticipated to exhibit any tonal or impulsive characteristics provided it is well maintained. All proposed plant will be inverter driven and, therefore, will gently ramp up and down depending on the demands on the various systems. In order to be robust, however, a +3dB feature correction has been applied to the noise level predictions as advised in BS 4142:2014.
- 6.3. Table 6, below, summarises the results of the assessment at the nearest noise-sensitive receptor. All other receptors benefit from increased distance/screening to the plant. The full set of calculations can be found in [Appendix F](#).

Table 6 Plant noise impact assessment

Receptor	Period	Predicted rating levels at receptor window, L_{Aeq} (dB)	Noise criterion at receptor window (dB)	Difference (dB)
R1. House to north	Daytime (07.00 - 23.00 hours)	32	39	-7
	Night-time (23.00 - 07.00 hours)	28	35	-7

- 6.4. The predictions demonstrate that cumulative noise emissions from the proposed plant will comply with the proposed limits.
- 6.5. As BS 4142:2014 advises, the impact must be considered within the context of the site and the surrounding acoustic environment. The following must, therefore, also be taken into consideration when determining the potential impact that may be experienced:
- The assessment is undertaken at representative, nearest residential windows. The impact on all other nearby residential windows will be lower due to screening and distance attenuation.

Assessment of uncertainties

- 6.6. Where possible uncertainty in this assessment has been minimised by taking the following steps:
- The measurement of the background sound levels was undertaken over a period including the quietest times of the day and night.
 - The sound level meter and calibrator used have a traceable laboratory calibration and the meter was field calibrated before and after the measurements.

-
- Uncertainty in the calculated impact has been reduced by the use of a well-established calculation method.
 - Care was taken to ensure that the measurement position was representative of the noise climate outside the nearby residential dwellings and not at a position where higher noise levels are present.

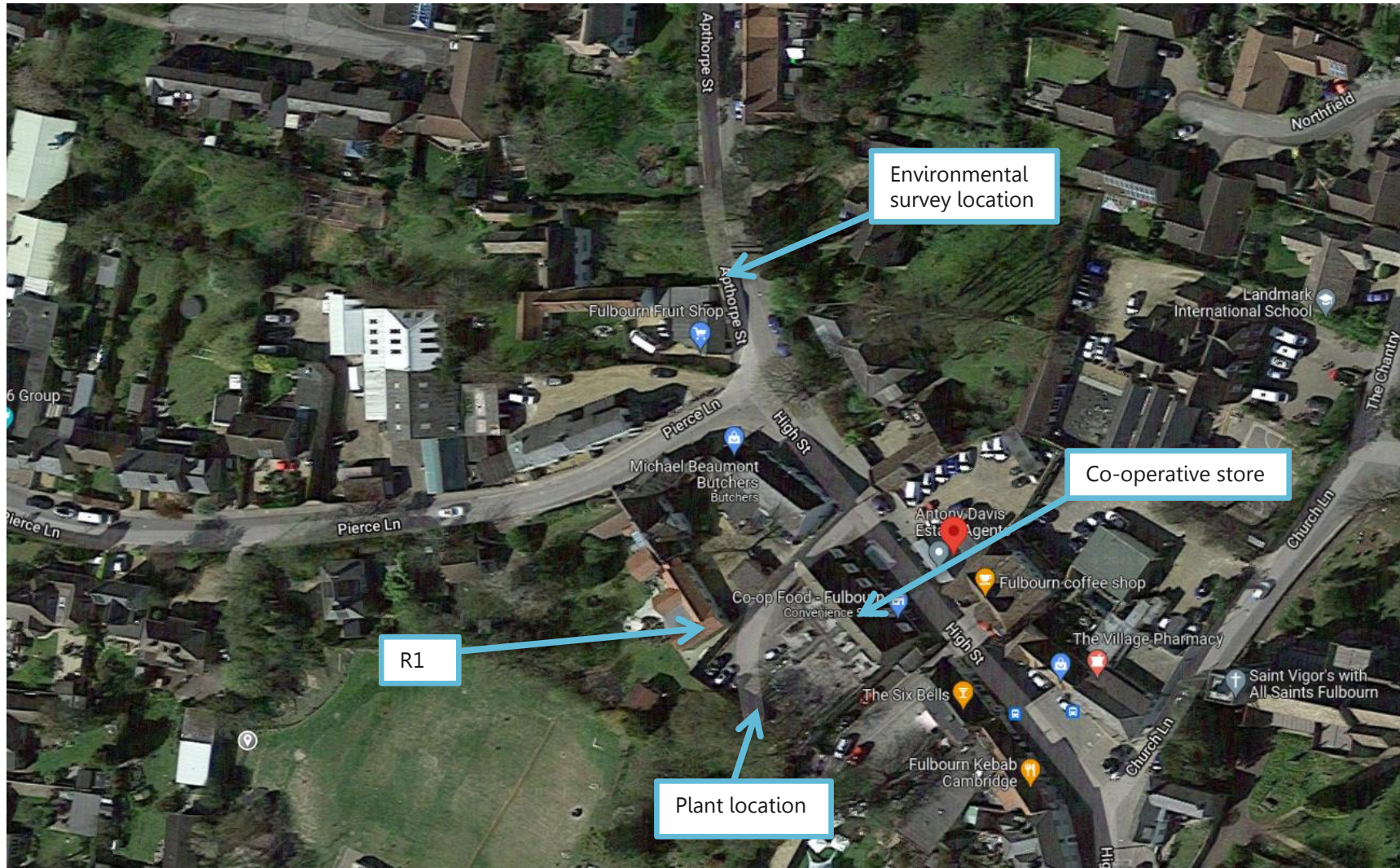
7.0 Summary

- 7.1. Noise Solutions Ltd has been commissioned by Healy Refrigeration & Air Conditioning Services Ltd to provide a guidance on the maximum noise emissions for new plant serving a Co-operative store at 11 High Street, Fulbourn, Cambridge, CB21 5DH.
- 7.2. An environmental noise survey has been undertaken to establish the existing prevailing noise levels at a location representative of the noise climate outside the nearest noise sensitive receptors to the site.
- 7.3. Noise levels due to the proposed plant have been predicted for the most potentially affected noise sensitive receptors and assessed using the typical South Cambridgeshire District Council requirements and the guidance provided in BS 4142:2014 *'Methods for rating and assessing industrial and commercial sound'*.
- 7.4. The results of the assessment demonstrate that noise levels at the most affected noise sensitive receptors will meet the proposed criteria.
- 7.5. Noise from the proposed plant should not, therefore, be reason for refusal of planning permission.

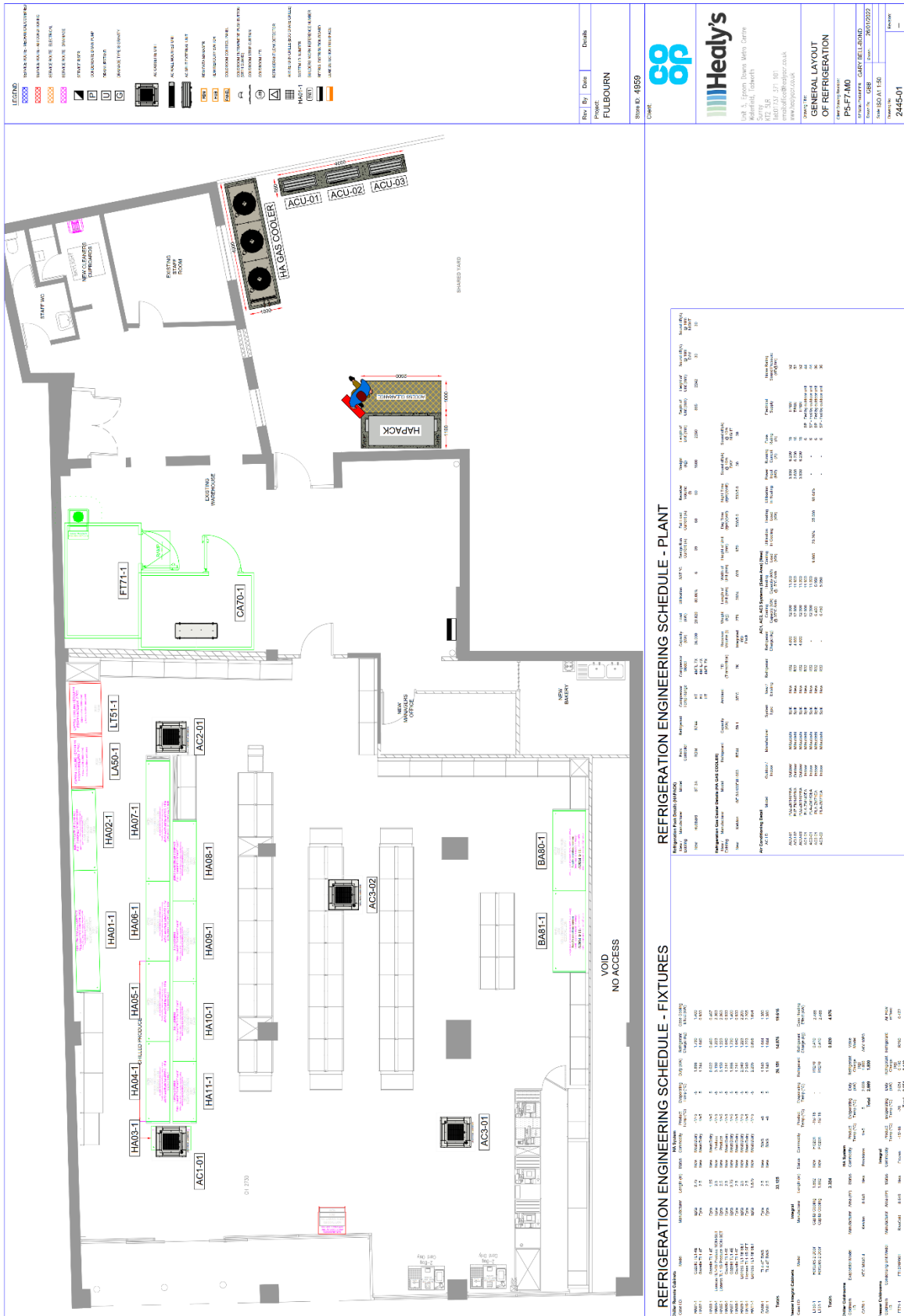
Appendix A Acoustic terminology

Parameter	Description
Ambient Noise Level	The totally encompassing sound in a given situation at a given time, usually composed of a sound from many sources both distant and near ($L_{Aeq,T}$).
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s_1 and s_2 is given by $20 \log_{10} (s_1/s_2)$. The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is $20\mu\text{Pa}$. The threshold of normal hearing is in the region of 0 dB and 140 dB is the threshold of pain. A change of 1 dB is only perceptible under controlled conditions.
dB(A), L_{Ax}	Decibels measured on a sound level meter incorporating a frequency weighting (A weighting) which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Measurements in dB(A) broadly agree with people's assessment of loudness. A change of 3 dB(A) is the minimum perceptible under normal conditions, and a change of 10 dB(A) corresponds roughly to halving or doubling the loudness of a sound. The background noise in a living room may be about 30 dB(A); normal conversation about 60 dB(A) at 1 metre; heavy road traffic about 80 dB(A) at 10 metres; the level near a pneumatic drill about 100 dB(A).
Fast Time Weighting	Setting on sound level meter, denoted by a subscript F, that determines the speed at which the instrument responds to changes in the amplitude of any measured signal. The fast time weighting can lead to higher values than the slow time weighting when rapidly changing signals are measured. The average time constant for the fast response setting is 0.125 (1/8) seconds.
Free-field	Sound pressure level measured outside, far away from reflecting surfaces (except the ground), usually taken to mean at least 3.5 metres
Façade	Sound pressure level measured at a distance of 1 metre in front of a large sound reflecting object such as a building façade.
$L_{Aeq,T}$	A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
$L_{max,T}$	A noise level index defined as the maximum noise level recorded during a noise event with a period T. L_{max} is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
$L_{10,T}$	A noise level index. The noise level exceeded for 10% of the time over the period T. L_{10} can be considered to be the "average maximum" noise level. Generally used to describe road traffic noise. $L_{A10,18h}$ is the A-weighted arithmetic average of the 18 hourly $L_{A10,1h}$ values from 06:00-24:00.
$L_{90,T}$	A noise level index. The noise level exceeded for 90% of the time over the period T. Generally used to describe background noise level.

Appendix B Photograph of site showing areas of interest



Appendix C Proposed plant locations



Appendix D Environmental sound survey

Details of environmental sound survey

- D.1 Measurements of the existing background sound levels were undertaken between the times as shown in the table overleaf.
- D.2 The sound level meter was programmed to record the A-weighted L_{eq} , L_{90} , L_{10} and L_{max} noise indices for consecutive fifteen-minute sample periods for the duration of the survey.

Measurement position

- D.3 The sound level meter was positioned on a lamppost on Apthorpe Street. The approximate location of the microphone is indicated on the plan in [Appendix B](#).
- D.4 In accordance with BS 7445-2:1991 'Description and measurement of environmental noise – Part 2: Guide to the acquisition of data pertinent to land use', the measurements were undertaken under free-field conditions.

Equipment

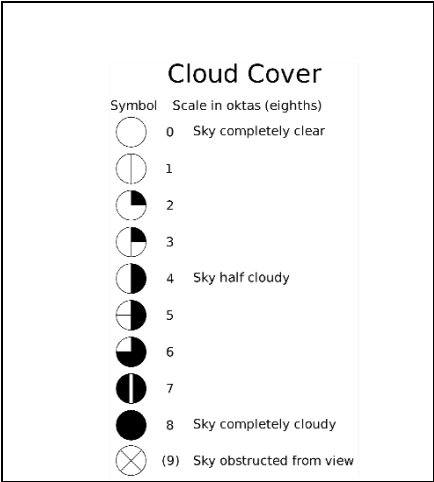
- D.5 Details of the equipment used during the survey are provided in the table below. The sound level meter was calibrated before and after the survey; no significant change (+/-0.2 dB) in the calibration level was noted.

Environmental noise survey

Description	Model / serial no.	Calibration date	Calibration certificate no.
Type 1 Sound level meter	Svantek 977/ 69747	20/08/2020	14015672
Condenser microphone	ACO Pacific 7052E / 70829		
Preamplifier	Svantek SV12L / 73687		
Calibrator	Svantek SV 40A / 10843	29/07/2021	1500732-1

Weather conditions

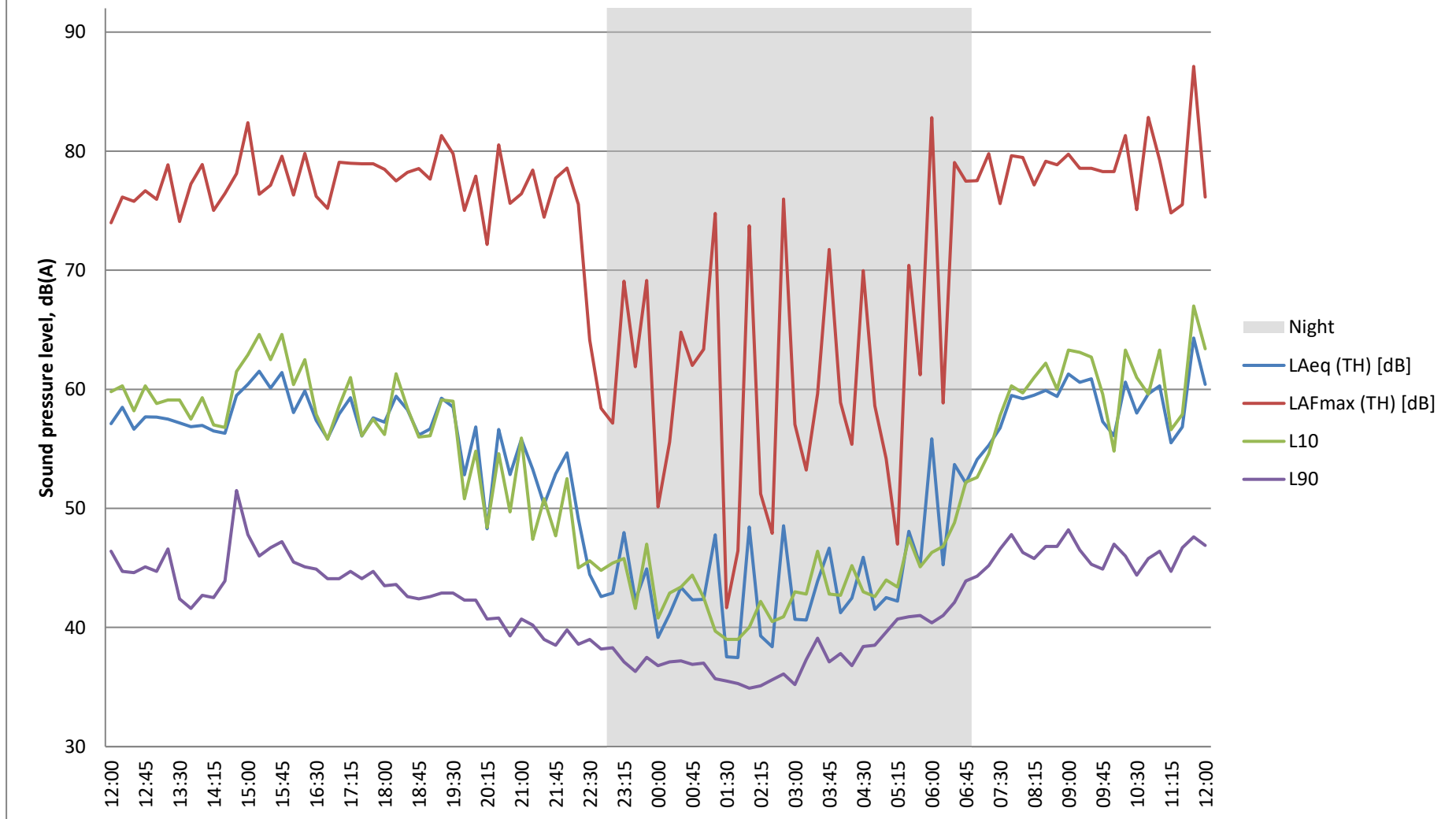
- D.6 Weather conditions were determined both at the start and on completion of the survey. It is considered that the meteorological conditions were appropriate for environmental noise measurements. The table below presents the weather conditions recorded on site at the beginning and end of the survey.

Weather Conditions				
Measurement Location	Date/Time	Description	Beginning of Survey	End of Survey
As indicated on Appendix B	12.00 1 st Dec - 12.15 2 nd Dec 2021	Temperature (°C)	9	3.5
 <p>Cloud Cover</p> <p>Symbol Scale in oktas (eighths)</p> <p>0 Sky completely clear</p> <p>1</p> <p>2</p> <p>3</p> <p>4 Sky half cloudy</p> <p>5</p> <p>6</p> <p>7</p> <p>8 Sky completely cloudy</p> <p>(9) Sky obstructed from view</p>		Precipitation:	No	No
		Cloud cover (oktas - see guide)	6	1
		Presence of fog/snow/ice	No	No
		Presence of damp roads/wet ground	No	No
		Wind Speed (m/s)	2.5	4.0
		Wind Direction	E	N
		Conditions that may cause temperature inversion (i.e. calm nights with no cloud)	No	No

Results

- D.7 The results of the environmental survey are considered to be representative of the background sound pressure levels at the façades of the nearest noise sensitive receptors during the quietest times at which the plant will operate.
- D.8 The predominant noise sources noted at the start of the survey included local traffic, church bells and construction noise.
- D.9 At the end of the survey, local traffic, voices and bird calls were audible.
- D.10 The results of the survey are presented in a time history graph overleaf.

Co-op, High St, Fulbourn Wednesday 01 - Thursday 02 Dec 2021



Appendix E Manufacturer plant noise emissions

Ref / Item	Manufacturer / Model	No. of units	Description	dBA
Pack	Hubbard ST-3A	1	Sound pressure level @10m Day/Night	30
GC	Kelvion GF-SA103F4H-063	1	Sound pressure level @10m Day/Night	30
AC units ACU-01, 02 and 03	Mitsubishi PUZ-ZM140YKA	3	Sound pressure level @1m Day	52

Appendix F Plant noise impact assessment

RECEPTOR R1 House to north

Daytime

Plant	Plant noise level at source		DISTANCE		DIRECTIVITY	SCREENING	BS4142 FEATURE		RESULTANT AT RECEPTOR (dB)
	Noise level (dBA)	Distance (m)	(m)	Correction (dB)	Correction (dB)	Correction (dB)	Applicable (Y/N)	Correction (dB)	
Gas cooler	30	10	19.5	-6	3	-5	y	3	25
Pack	30	10	14.5	-3	0	-5	y	3	25
ACU-01	52	1	16	-24	0	-5	y	3	26
ACU-02	52	1	17.5	-25	0	-5	y	3	25
ACU-03	52	1	19	-26	0	-5	y	3	24
CUMULATIVE:									32

Night-time

Plant	Plant noise level at source		DISTANCE		DIRECTIVITY	SCREENING	BS4142 FEATURE		RESULTANT AT RECEPTOR (dB)
	Noise level (dBA)	Distance (m)	(m)	Correction (dB)	Correction (dB)	Correction (dB)	Applicable (Y/N)	Correction (dB)	
Gas cooler	30	10	19.5	-6	3	-5	y	3	25
Pack	30	10	14.5	-3	0	-5	y	3	25
CUMULATIVE:									28