

The Co-operative
Cromwell Road
Newport
NP19 0HT

**Plant Noise
Impact Assessment Report**

On behalf of



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For and on behalf of Noise Solutions Ltd				

Revision	Date	Description	Prepared	Reviewed/ Approved

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1.0 Introduction

- 1.1. Noise Solutions Ltd (NSL) has been commissioned by Epta UK to provide a noise impact assessment for new plant serving an existing Co-operative store located along Cromwell Road in Newport.
- 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. Plant noise levels have been predicted at the nearest noise-sensitive premises and assessed against the local authority's usual requirements.
- 1.4. 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 occupies an existing dedicated building along Cromwell Road in Newport.
- 2.2. New refrigeration and air conditioning (AC) plant will be installed externally along the southern elevation of the store. The AC unit will operate only when the store is open, while the refrigeration gas cooler will operate 24 hours but generally at a reduced duty at night when cooling demands are lower.
- 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**.

3.0 Nearest noise-sensitive receptors

- 3.1. The area surrounding the site is mixed residential and commercial in nature.
- 3.2. The nearest noise sensitive receptors will be the residential dwelling west of the store (Reference R1) at a distance of approximately 30m from the closest proposed plant.

4.0 Existing noise climate

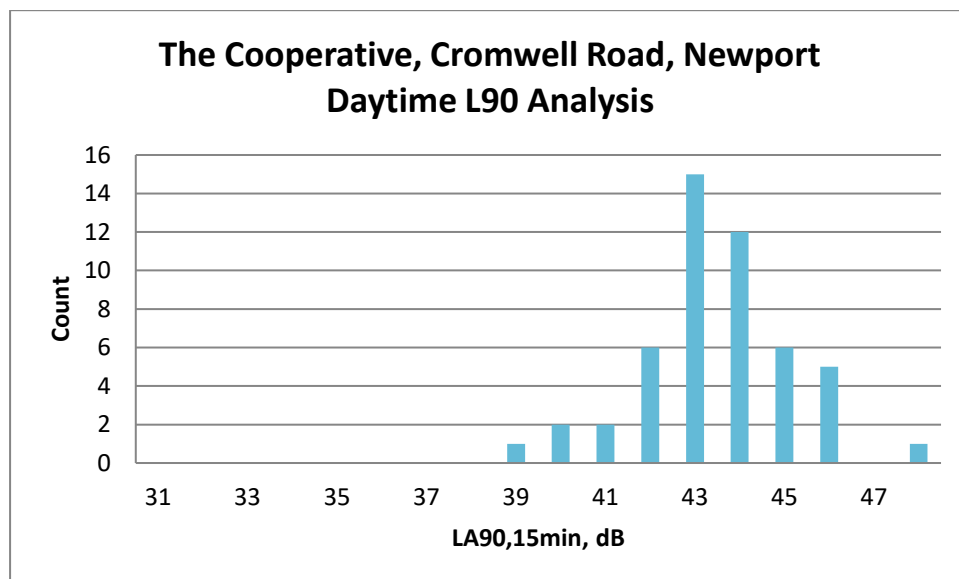
- 4.1. An environmental noise survey was undertaken to establish the typical background sound levels at a location representative of the noise climate outside the façades of the nearest noise sensitive receptors to the proposed plant area during the quietest times at which the plant will operate.

- 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 C](#).

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)	46-66	60-95	47-61	39-48
Night-time (23.00 – 07.00 hours)	35-52	52-85	36-52	31-45

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



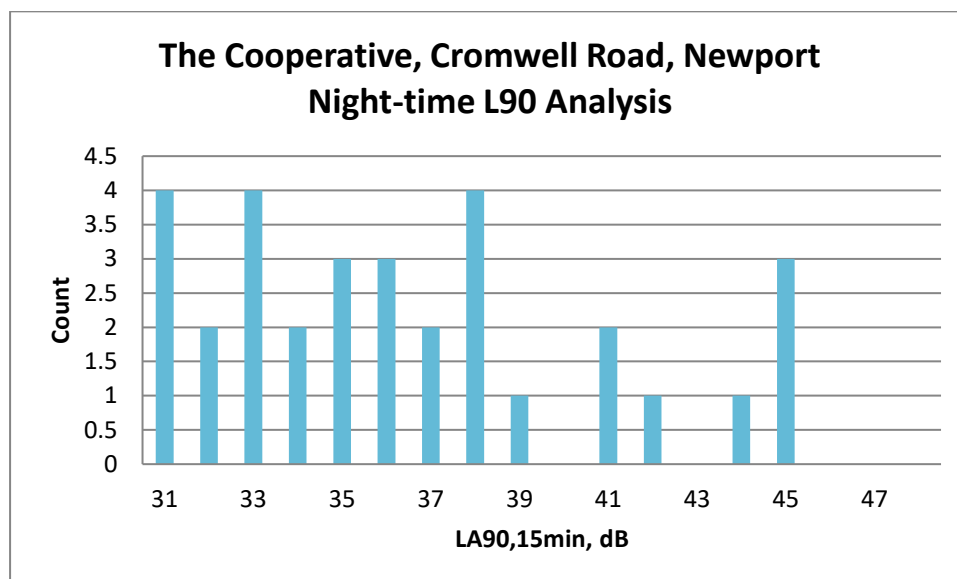
- 4.3. Further statistical analysis has been carried out on the data; the mean, modal and median values are shown in Table 2 below.

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

dB, L _{A90} daytime period	
mean	43
modal	43
median	43

- 4.4. From the histogram analysis, 42dB 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	37
modal	38
median	36

- 4.6. Again, from the histogram analysis, 31dB 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 to be the lowest existing background sound pressure levels at nearby noise sensitive premises:
- 42dB L_{A90} during the daytime period; and
 - 31dB L_{A90} during the night-time period.

5.0 Plant noise design criteria

Planning Policy Wales and TAN 11

- 5.1. Planning Policy Wales (PPW) sets out the land use planning policies for the Welsh Government.

- 5.2. Paragraph 13.15.1 of the PPW states that: *"Noise can be a material planning consideration, for example in proposals to use or develop land near an existing source of noise or where a proposed new development is likely to generate noise. Local planning authorities should make a careful assessment of likely noise levels and have regard to any relevant Noise Action Plan before determining such planning applications and in some circumstances it will be necessary for a technical noise assessment to be provided by the developer."*
- 5.3. PPW refers to *Technical Advice Note (Wales) 11 – Noise* (TAN 11) for specific guidance regarding noise assessments. TAN 11 was updated by a Policy Clarification Letter CL-01-15 to refer to the latest British Standards BS 4142:2014 and BS 8233:2014.

Newport City Council

- 5.4. The Newport Local Development Plan 2011-26, adopted January 2015, sets out Newport City Council's strategic requirements for a number of policy areas, including *Small Scale Retail Proposals* (Policy R8). This states:
- 5.5. *Proposals for new local retail facilities ... will be permitted where ... there would be no unacceptable effect on the local residential amenities or the general character of the area in terms of noise*

BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound.

- 5.6. BS 4142:2014+A1:2019 is intended to be used to assess the likely effects of sound on people residing in nearby dwellings. The scope of BS 4142:2014+A1:2019 includes *"sound from fixed plant installations which comprise mechanical and electrical plant and equipment"*.
- 5.7. The procedure contained in BS 4142:2014+A1:2019 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.
- 5.8. 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.
- 5.9. 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."*

- 5.10. 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."*
- 5.11. 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.*
- 5.12. 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."*
- 5.13. 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."*
- 5.14. 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."*
- 5.15. BS 4142:2014+A1:2019 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

- 5.16. In the absence of specific local requirements, it is proposed to limit noise from the new plant such that external plant noise rating levels should be no higher than the existing representative background sound level at the nearest residences:

Table 4 Proposed plant sound level limits at nearest residential receptors

Receptor	Period	Plant rating level (dB)
Residential	Daytime (07.00 – 23.00 hours)	42
	Night-time (23.00 – 07.00 hours)	31

6.0 Plant noise impact assessment

- 6.1. The cumulative plant sound level at the most affected noise sensitive receptors has been predicted. The assessment has taken into consideration distance attenuation and directivity corrections.
- 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 external plant will be inverter driven and, therefore, will gently ramp up and down depending on the demands on the various systems. To provide a robust assessment, a 3dB acoustic feature correction as described in BS 4142:2014+A1:2019 for the possible presence of "...characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment...".
- 6.3. Table 5 summarises the results of the assessment outside the nearest noise-sensitive dwellings. All other nearby receptors benefit from increased distance/screening to the plant such that resulting noise levels will be lower than at the receptors considered. The full calculations are presented in [Appendix E](#).

Table 5 Assessment of plant rating levels

Receptor	Period	Predicted plant rating level at receptor, L_{Aeq} (dB)	Proposed design criterion (dB)	Difference (dB)
R1	Daytime (07.00 – 23.00 hours)	36	42	-6
	Night-time (23.00 – 07.00 hours)	27	31	-4

Assessment of uncertainties

- 6.4. 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 (NSL) has been commissioned by Epta UK to provide a noise impact assessment for new plant serving an existing Co-operative store located along Cromwell Road in Newport.
- 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 proposed site.
- 7.3. The cumulative rating levels for the proposed plant have been predicted at the most affected noise sensitive receptor locations and assessed taking into consideration the typical requirements of Newport City Council and other recognised standards. Therefore, sound from the plant proposals should not be a 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 Environmental sound survey

Details of environmental sound survey

- C.1 Measurements of the existing environmental sound levels were undertaken between 14.45 hours on Wednesday 23rd April and 11.15 hours on Thursday 24th April 2025.
- C.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

- C.3 The representative measurement position was located on a lamp post along Somerton Park. This location is approximately representative of the levels of road traffic noise at the closest receptor. The approximate location of the microphone is indicated on the plan in [Appendix B](#).
- C.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

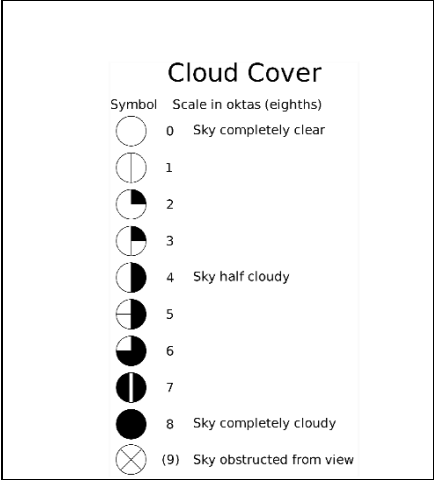
- C.5 Details of the equipment used during the survey are provided in the table below. The sound level meter was calibrated before and after the survey; no significant change (+/-0.2 dB) in the calibration level was noted.

Environmental noise survey

Description	Model / serial no.	Calibration date	Calibration certificate no.
Class 1 Sound level meter	Svantek 977D / 99472	07/02/2024	Factory conformation certificate
Condenser microphone	Microtech MK255 / 26247		
Preamplifier	Svantek SV12L / 144643		
Calibrator	Svantek SV33B / 148015	10/03/2025	1511553-1

Weather conditions

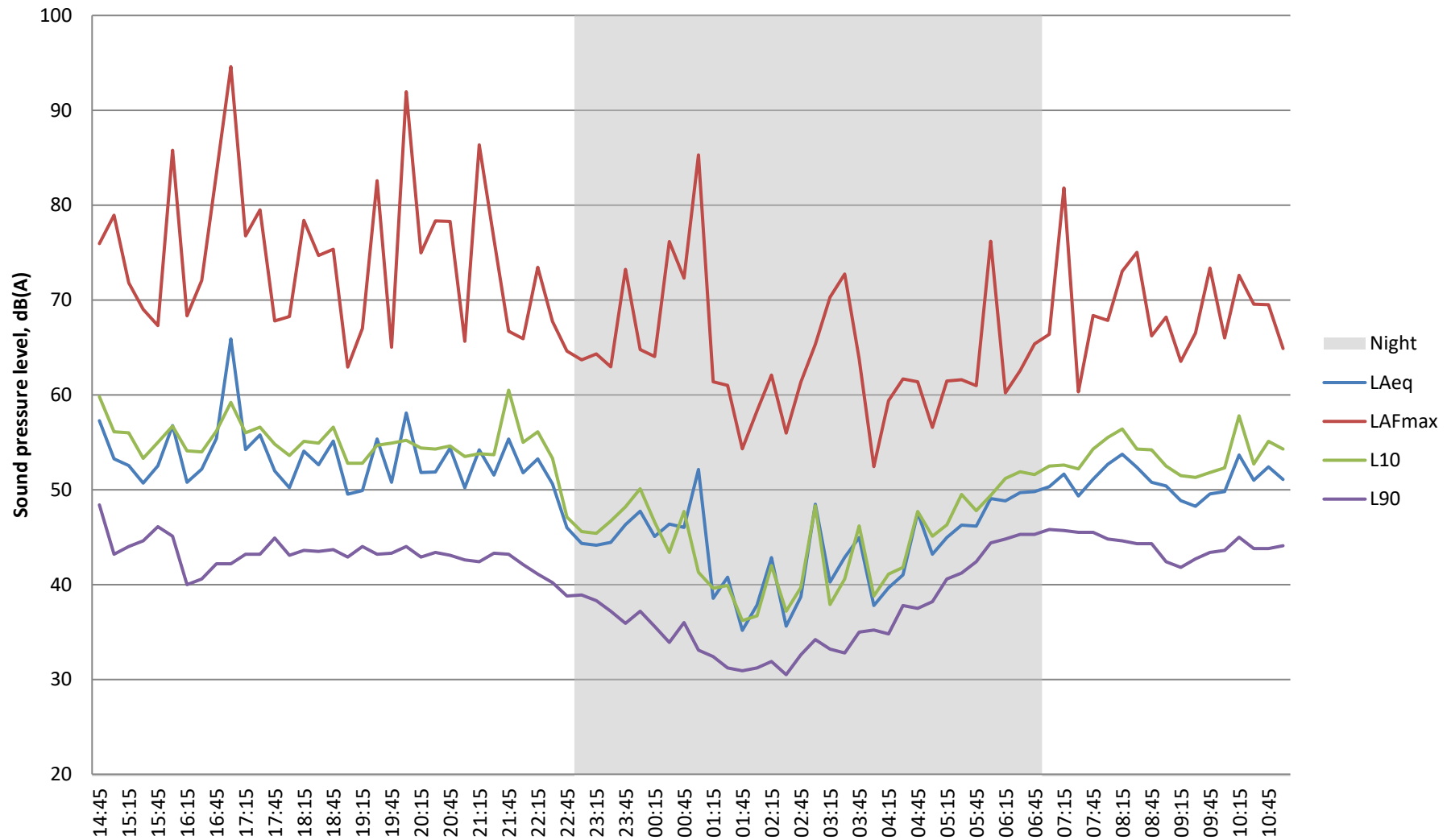
- C.6 Weather conditions were determined both at the start and on completion of the survey. It is considered that the meteorological conditions were appropriate for environmental noise measurements. The table below presents the weather conditions recorded on site at the beginning and end of the survey.

Weather Conditions				
Measurement Location	Date/Time	Description	Beginning of Survey	End of Survey
As indicated on Appendix B	14.45 23/4/25 - 11.15 24/4/25	Temperature (°C)	13	12
 Cloud Cover Symbol Scale in oktas (eighths) 0 Sky completely clear 1 2 3 4 Sky half cloudy 5 6 7 8 Sky completely cloudy (9) Sky obstructed from view		Precipitation:	No	No
		Cloud cover (oktas - see guide)	8	8
		Presence of fog/snow/ice	No	No
		Presence of damp roads/wet ground	No	No
		Wind Speed (m/s)	1	2
		Wind Direction	Easterly	Northerly
		Conditions that may cause temperature inversion (i.e. calm nights with no cloud)	No	No

Results

- C.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. The predominant noise source affecting the area was local traffic. The results of the survey are presented in a time history graph overleaf.

The Cooperative, Cromwell Road, Newport Wednesday 23 - Thursday 24 Apr 2025



Appendix D Manufacturer's Noise Data

Plant	Unit/Model	No. of units	Description	Level (dBA)
Gas cooler	Coolers and Condensers/GFHA-1.2-123AMg-EC63.H3	1	Sound pressure level at 10m	19
Pack	Space Engineering	1	Sound pressure level at 1m	30
ACU1	Mitsubishi/PUZ-ZM200YKA2	1	Sound pressure level at 1m	62

Receptor R1 – Daytime

Receptor R1 – Night-time

Plant	PLANT NOISE LEVEL AT SOURCE		DISTANCE		Directivity	Screening	BS4142 FEATURE	Rating Level at Receptor (dB)
	Noise level (dBA)	Distance (m)	Distance (m)	Correction (dB)	Correction (dB)	Correction (dB)	Correction (dB)	
Gas Cooler	19	10	30	-10	3	0	3	15
Pack	30	10	30	-10	3	0	3	26
Combined rating level at receptor								27

Notes/Legend

- Do Not Scale.
- Calculated loading and dimensions are based on customer information.
- All dimensions are to be checked on site prior to installation.
- Cabinet, Coodrooms and Filter installers are to check site access prior to installation.
- Refrigeration layout, pipework and drainage requirements are indicative only and subject to change to reflect updated layouts and on site conditions.

Task Lighting by MC (Indicative Locations)

CP CPC Panel

TS Test Button

SB Refrigeration Distribution Board

PA Personnel Trap Alarm Beacon, Manual Control, Alarm Cutdown Door

SS Saver - COI

SD Sounder/Smoke Detection Beacon

LD Leak Detection Beacon

Drop Drops fixed by MC

CD Civil Room Drainage required (Drainage required (Single 50mm upstand) Service Penetration)

Revision Details

Rev	21/05/20	Drawn/Checked	REH/MAU
First issue			

Un-Controlled Document

Preliminary

Drawing No.	Rev	Scale (A2)
30000000000000000000	1	1:50

Client

Co-Op

Sortment Newport 2025 Refit

CR3 Plant Layout

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