Co-operative Store
Mariner Public House
South Shields

Noise Impact Assessment Report

22870/NIA Rev1

27 November 2017

For:
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Document Control

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This report has been prepared by Hann Tucker Associates Limited (HTA) with all reasonable skill, care and diligence in accordance with generally accepted acoustic consultancy principles and the purposes and terms agreed between HTA and our Client. Any information provided by third parties and referred to herein may not have been checked or verified by HTA unless expressly stated otherwise. This document contains confidential and commercially sensitive information and shall not be disclosed to third parties. Any third party relies upon this document at their own risk.

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1.0 Introduction

Hann Tucker Associates have been instructed to assist in matters of noise impact related to the Co Operative store in South Shields.

The concerns with regards to noise impact include noise generated by delivery vehicles operating to the store through the delivery area.

Hann Tucker Associates have been requested to undertake an environmental noise survey and an assessment of the noise impact of these activities with regard to the existing noise climate.

This document contains the results of our assessment at the worst affected and nearest residential location and discusses the predicted subjective impact to the local noise environment.

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 carry out an assessment of the noise transfer to residential areas through the purpose built canopy within the delivery area.

3.0 Site Description

3.1 Location

The site is located on Mortimer Road, South Shields as shown on the Location Map below.



Location Map (Map Data ©2016 Google)

3.2 Description

The site is located in a predominantly residential area with residential properties been located on all sides. To the north is Cauldwell Avenue and to the east is Mortimer Road. Further to the east is Mortimer Primary School.

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 Nathan Green BSc (Hons) AMIOA.

5.1 Procedure

Fully automated environmental noise monitoring was undertaken from approximately 17:00 hours on Wednesday 10 February 2016 to 10:15 hours on Thursday 11 February 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 located at first floor level attached to a tripod approximately 5 metres above ground level.

The position is shown on the plan below.



Plan Showing Unmanned Measurement Position (Imagery ©2016 Bluesky, Getmapping plc, 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	3824	07/01/2015
Type 1 Calibrator	Larson Davis	CAL200	3083	20/04/2015

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 22870/TH1 enclosed, presenting the 15 minute A-weighted (dBA) L_{90} and L_{eq} levels at the measurement position throughout the duration of the survey.

The lowest $L_{A90\ (15\ min)}$ measurements recorded during the survey are presented in the table below:

Lowest Measured $L_{A90\ (15\ mins)}$ (dB re $2x10^{-5}$ Pa)	
Daytime (07:00 – 23:00 hours)	**Night-time (23:00 – 07:00 hours)**
42 dBA	41 dBA

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 Mortimer Road and Cauldwell Avenue.

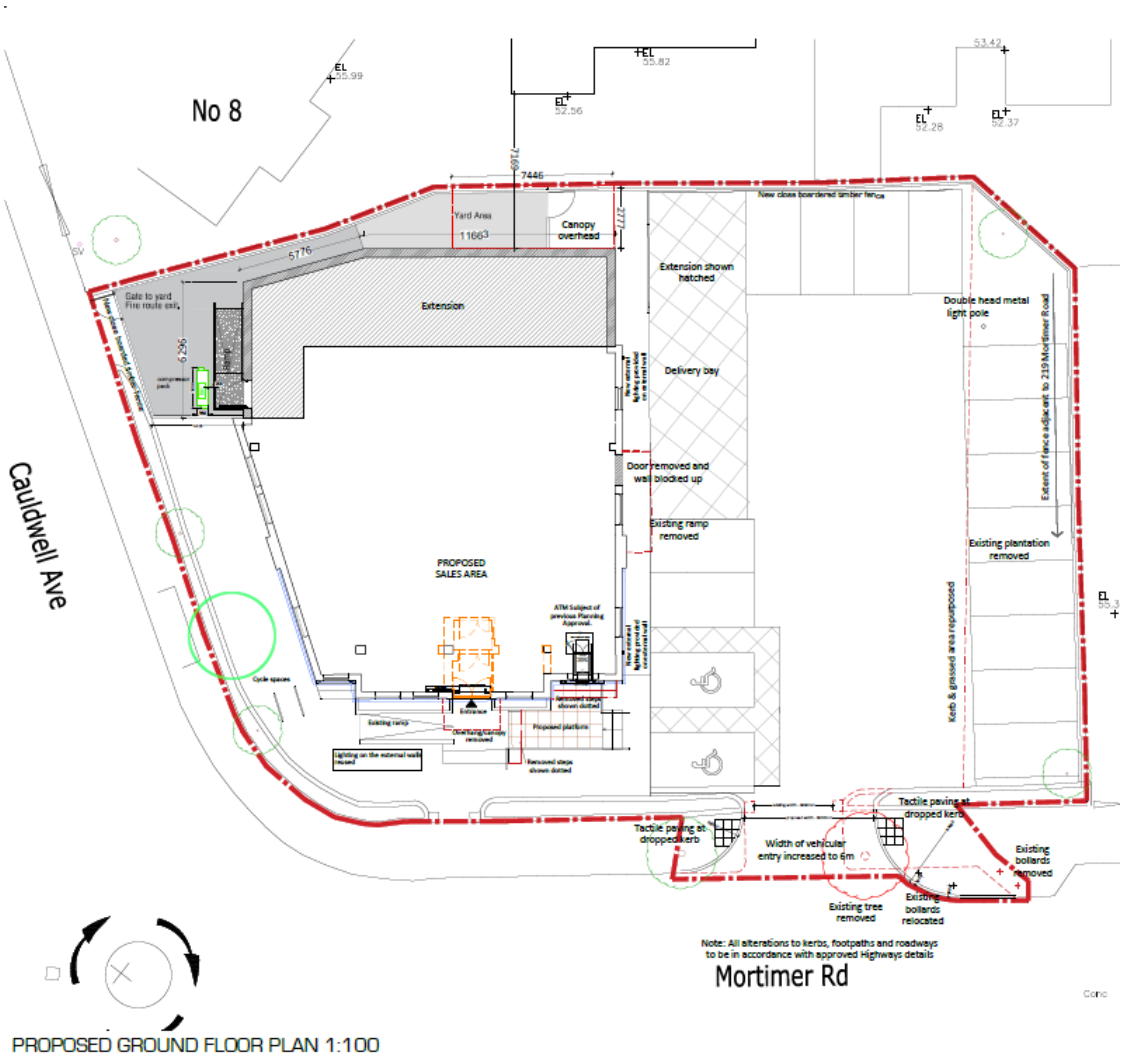
8.0 Project Proposals

8.1 Operating Hours

It is understood that the site is proposed to operate within typical supermarket hours, 7 days per week with customer vehicle movements throughout and deliveries occurring within specific windows during the daytime.

8.2 Drawings

The acoustic analyses reported herein has been based on the following drawing provided by AMCA Architects.



8.3 Site Operation

We understand that delivery vehicles will arrive from Mortimer Road via the entrance at the south of the site and drive directly to the delivery bay where they will unload goods into the building through the yard area underneath the canopy. They will then leave via the same entrance back onto Mortimer Road.

9.0 Acoustic Standards and Guidelines

9.1 Noise Policy Statement for England

The Government's Noise Policy Statement for England (NPSE, March 2010) sets out the long term vision for Government noise policy, which is to "*Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development*".

The NPSE includes three primary aims to be achieved through effective management of environmental, neighbour and neighbourhood noise; (1) avoid ”significant adverse” impacts on health and quality of life, (2) mitigate and minimise ”adverse” impacts on health and quality of life, and (3) where possible, contribute to the improvement of health and quality of life.

9.2 National Planning Policy Framework

The National Planning Policy Framework (NPPF, March 2012) sets out the Government's planning policies for England and how these are expected to be applied. It sets out the Government's requirements for the planning system only to the extent that it is relevant, proportionate and necessary to do so. It provides a framework within which local people and their accountable councils can produce their own distinctive local and neighbourhood plans, which reflect the needs and priorities of their communities.

The planning system should prevent both new and existing development from contributing to, or being put at, unacceptable risk from environmental factors including noise.

Planning policies and decisions should aim to avoid noise giving rise to significant adverse impacts on health and quality of life as a result of new development. Conditions may be used to mitigate and reduce noise to a minimum so that adverse impacts on health and quality of life are minimised.

Reference is made to the Government's Noise Policy Statement for England (NPSE, March 2010) which sets out the long term vision for Government noise policy, which is to "*Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development*".

9.3 Planning Practice Guidance

The Department for Communities and Local Government's Planning Practice Guidance (PPG) website was launched in 2014 and provides guidance on 'Noise' for new developments in line with NPPF policies.

Notably, the website provides a table to help recognise when noise could be a concern relevant to the NOEL, LOAEL and SOAEL effect levels described in NPSE, as below:-

- Significant observed adverse effect level: This is the level of noise exposure above which significant adverse effects on health and quality of life occur.
- Lowest observed adverse effect level: this is the level of noise exposure above which adverse effects on health and quality of life can be detected.

- No observed effect level: this is the level of noise exposure below which no effect at all on health or quality of life can be detected.

However, there are no numeric values to reference in this guide; everything is descriptive and so cannot inform an objective assessment of noise.

9.4 Local Authority Requirements

The site lies within the jurisdiction of South Tyneside Council. We are not aware of their requirements for the assessment of delivery noise and therefore our assessment shall be carried out in general accordance with the relevant British Standard (BS4142:2014) as outlined below.

9.5 British Standard (BS) 4142:2014

BS 4142:2014 'Method for Rating industrial noise affecting mixed residential and industrial areas' describes methods for rating and assessing the effects of outdoor sound levels, of an industrial and/or a commercial nature, *"on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident".*

The impact of a specific sound is indicated by subtracting the existing background noise level from the rating level (i.e. noise level from the proposed items of plant/machinery/etc. plus any acoustic feature corrections).

The noise from the new development is expressed in terms of a rating level and given as a $L_{Aeq,T}$ noise level. The existing background noise level is expressed in terms of a $L_{A90,T}$ noise level.

T is the assessment time interval, which is 1-hour for operations during daytime hours (07:00 to 23:00 hours) and 15-minutes for operations during night-time hours (23:00 to 07:00 hours).

A penalty should apply to plant emitting noise of a tonal, irregular or impulsive nature.

The standard 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."*

10.0 BS 4142:2014 Assessment

An assessment has been undertaken in general accordance with the methodology outlined in BS 4142:2014. For a detailed breakdown of our assessment, please refer to Appendix B at the end of this report.

We understand the main proposed source of noise generation to be due to delivery vehicles and associated unloading activities. These sources have therefore been included in the assessment.

10.1 Noise Data

In order to inform our assessment, we have used the following noise levels previously measured by Hann Tucker at existing supermarket stores (deliveries). Further details of the survey are available upon request.

Event	Duration	Measurement Distance	Sound Pressure Level (dB re $2*10^{-5}$Pa)
			L_{Aeq}
Goods Vehicle entering site	10 seconds	5m	73
Goods Vehicle manoeuvring, reversing & door slam	20 seconds	5m	72
General Loading/Unloading	15 minutes	5m	61
Goods Vehicle departing site	10 seconds	5m	73

Since the above activities are noted to be operational only during the agreed periods of the daytime. The relevant BS4142 assessment period is 1 hour. The equivalent $L_{Aeq,1hr}$ sound levels are presented below.

Event	Measurement Distance	Equivalent Sound Pressure Level $L_{Aeq,1hr}$ (dB re $2*10^{-5}$Pa) over reference interval
Delivery Noise (including both vehicle movement and unloading)	5	57

10.2 Assumptions

We understand that operational information for the proposed store is part of the agreed service delivery agreement and this will include:

- Up to 1No. delivery after 16:30 hours from a 8.5m long lorry.
- Up to 2No. deliveries after 16:30 hours from a transit van.
- Materials to be delivered will from the lorry will be transferred on wheeled trollies.

10.3 Assessment Summary

Our assessment, details of which are provided in Appendix B, is summarised in the following table:

Operation	Rating Level	Excess of Rating Level over Background Sound Level	Impact
Deliveries	44 dBA	0 dBA	low
Unloading	34 dBA	-10 dBA	Negligible
Cumulative effect[2]	**44 dBA**	**0 dBA**	low

Note 1 – We understand that the entrance area to the yard area has a canopy and the resultant rating level is therefore likely to be less than indicated above.

Our assessment indicates that cumulative noise from deliveries at the proposed supermarket Store in Mortimer Road, South Shields are predicted to have a low impact upon the potentially worst affected noise sensitive properties at the rear of the site.

10.4 Canopy Construction

In the above section we have referred to a canopy at the site that is to be installed. This is to be as detailed within the attached AMCA Architects drawing sk100 dated March 2016. We understand that the roof of the canopy is to be a double skinned steel panel construction with

100mm of glasswool quilt inside. The underside panel is to be perforated in order to absorb sound.

We have not been supplied with any acoustic data for this construction as this canopy is a bespoke construction but our in house database of similar constructions indicates that it should have the following minimum acoustic performance:

Minimum Sound Reduction Index (dB) at Octave Band Centre Frequency (Hz)					
125	**250**	**500**	**1k**	**2k**	**4k**
18	25	34	41	48	52

We understand that this canopy is to be installed up to a close boarded fence as detailed within Section A-A in the AMCA drawing.

When considering the noise transfer from activities underneath the canopy to the nearest noise sensitive receiver at the back of the site our calculations indicate that a minimum airborne noise reduction of approximately 25dBA should be achieved.

10.5 Noise Control Guidance

Whilst the assessment indicates that specific mitigation measures are not required, the following management and control measures should be employed in order to ensure that noise levels due to operational activities are minimised:

- Vehicle reversing alarms should be set to the minimum required for safe and efficient operations (white-noise alerts preferred to beeps).
- Vehicle engines should be turned off whilst stationary for prolonged periods.
- Restrict drop heights during lorry loading to the minimum required for safe and efficient operations.
- Use of speed humps to control vehicle speed should be avoided due to impact noise, however a site speed limit of up to 15mph should be enforced.
- Care should be taken to ensure the surface of the site used by vehicles is as smooth as possible. E.g. no raised manhole covers, maintenance of surface to ensure no pot holes or similar steep changes in surface level.
- Playing of radios and undue shouting should be prohibited.
- The setup of lines of communication between the Client and sensitive neighbours to avoid/deal with possible complaints should be considered.
- Rapid and thorough investigation of any noise complaint, identification of the causes, and implementation of remedial measures to rectify the situation.

11.0 Conclusions

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

This report assesses the delivery noise levels for deliveries going into the Co Operative store on Mortimer Road in South Shields via the goods delivery bay within the car park.

Based on survey results and the requirements of the Local Authority we have assessed noise from deliveries in accordance with BS 4142:2014. Since detailed information regarding vehicle movements is not yet available for this site, assumptions detailed in Section 10.2 have been made based on previous assessments.

Our assessment indicates that based on these typical operational assumptions, delivery noise from the proposed supermarket store in Mortimer Road are predicted to have a low impact upon the potentially worst affected noise sensitive properties to the rear through the proposed canopy within the yard area, and further mitigation measures should not therefore be required.

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*.

SEL — Sound Exposure Level – The constant sound level that has the same amount of energy in one second as the original event.

Appendix B

Results		Relevant clause	Commentary
Measured Specific sound level	$L_{Aeq\ (1\ hour)}$ = 57 dB	7.3.4	Measured at 5m distance. Calculated by correcting to the reference period of 1hour. Residual sound was not considered to have influenced the measurement.
Background sound level	$L_{A90\ (15\ min)}$ = 42 dB	8.1.1 8.1.3 8.3	Established as per Part 6.0
Assessment made during the daytime so reference period is 1 hour		7.2	
Calculated Distance Attenuation (45m)	20log(8/5) = - 4dB	-	
Screening loss from canopy	-15dB		Calculated from screen construction and location in Yard Area
Acoustic feature correction	+ 6 dB	9.2	This is an estimated correction of +3 dB for impulsivity and a further + 3 dB for intermittency
Rating level	44 dB	9.2	Calculated by subtracting distance attenuation from specific sound level and adding feature correction
Background sound level	$L_{A90\ (15\ min)}$ = 42 dB	8.3	
Excess of rating over background sound level	(44 – 42) dB = 2 dB	11	
Assessment provides an indication of low impact		11	The context is daytime when the likelihood of low impact is slightly reduced
Uncertainty of the assessment		10	The assessment is based on the results of the background noise survey, there is potential for the residual levels to be more varied than during our survey period. We do not consider that this would significantly affect the assessment as the typical, rather than minimum background noise level is higher during the delivery periods.

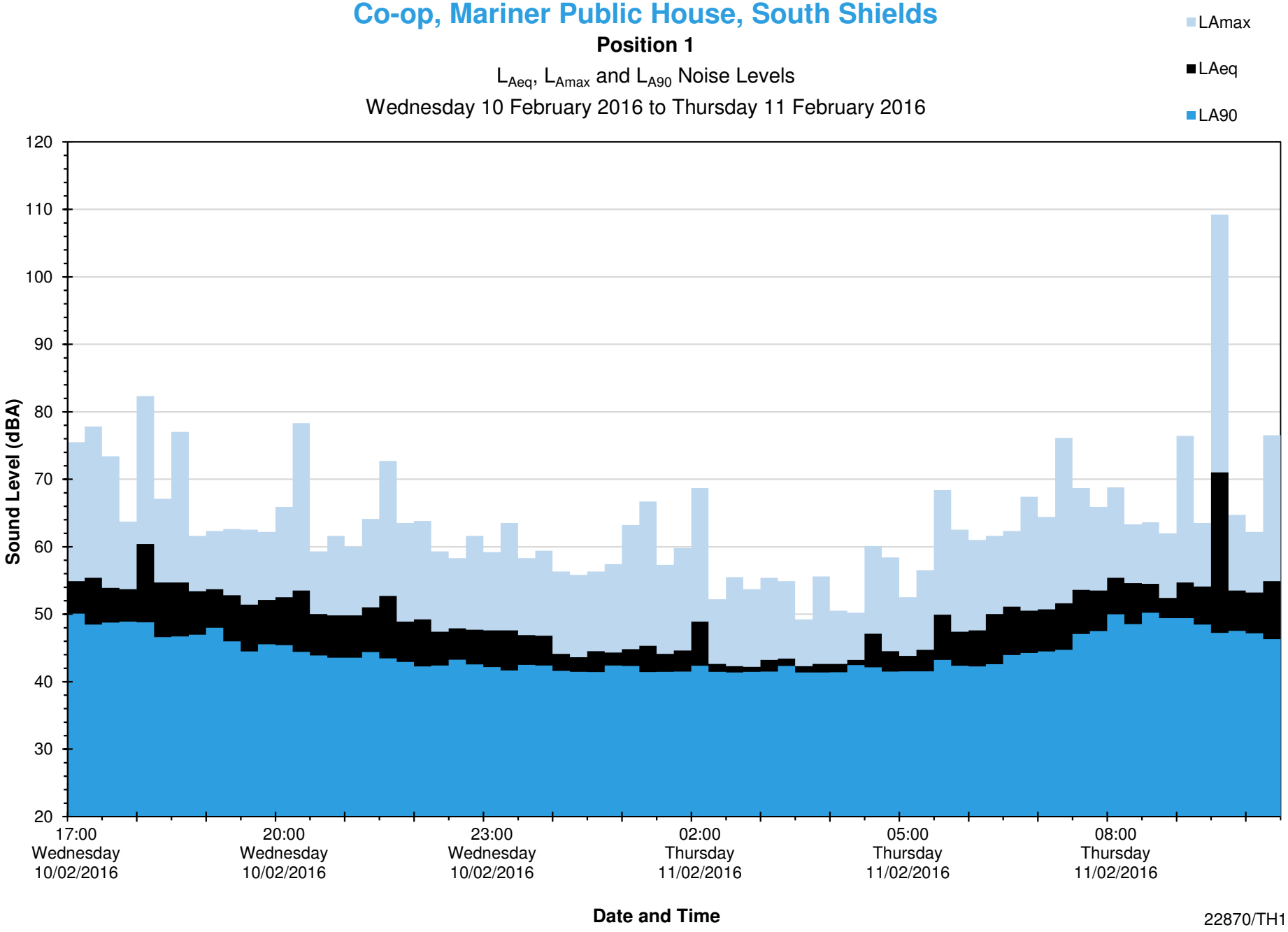
Appendix C

Co-op, Mariner Public House, South Shields

Position 1

L_{Aeq}, L_{Amax} and L_{A90} Noise Levels

Wednesday 10 February 2016 to Thursday 11 February 2016



22870/TH1