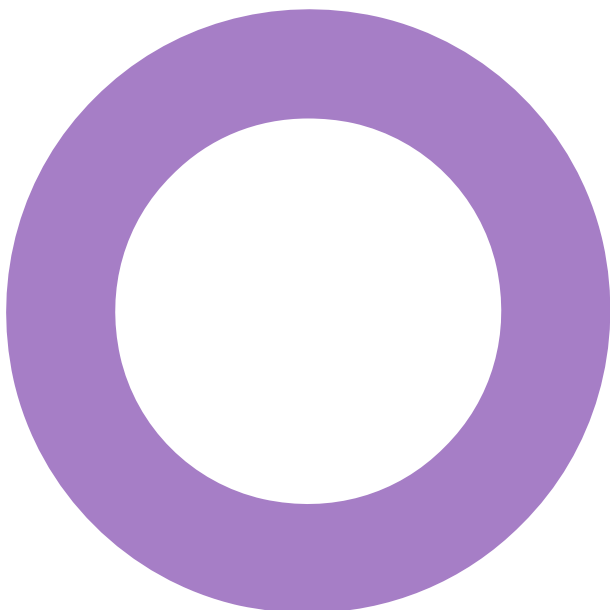


Argos Corner. Reading. Moorgarth.

ACOUSTICS

ARGOS CORNER PLANNING CONDITION 8 REPORT

REVISION 01 – 16 OCTOBER 2018



Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
01	16/10/18	Initial issue	LR	PM	PM

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Executive summary

Hoare Lea has been appointed to provide acoustic advice for the proposed partial refurbishment of Broad Street Mall, Reading for the purposes of assisting with the discharge of Reading Borough Council Planning Condition 8. The proposed works comprise the refurbishment of existing vacant premises within Broad Street Mall into six separate commercial units.

An environmental sound survey has been carried out around the site between Wednesday 13 June 2018 and Monday 18 June 2018.

A noise egress assessment has been undertaken in accordance with BS4142:2014 and in line with Reading City Council requirements, based on the results of the sound survey. Limits have been set based upon the data collected throughout the survey. If the plant contains any tonal characteristics a further correction will be required.

Indicative localised plant noise limits have been provided to guide tenant building services procurement and design, but compliance with the limits set at the nearest residential receivers shall remain the responsibility of future tenants.

1. Introduction

Hoare Lea has been appointed to provide acoustic advice for the proposed partial refurbishment of Broad Street Mall, Reading for the purposes of assisting the planning application. The proposed works comprise the refurbishment of existing vacant premises within Broad Street Mall into six separate units.

An environmental sound survey has been carried out on site over 6 days commencing on 13 June 2018. The aim of the survey is to determine the existing sound levels around the site, with the purpose of establishing the prevalent ambient and minimum background noise levels in order to set maximum noise egress limits for plant and machinery associated with the development.

This report presents the findings of the sound survey and sets out the permissible maximum plant noise egress limits in accordance with the Reading Borough Council's requirements and BS 4142:2014 guidance. An initial assessment of plant noise egress is also presented.

2. Site and development details

2.1 Site location

The proposed works are to refurbish the currently vacant premises located at the north western corner of the existing Mall complex, facing onto Oxford Road to the north and Queen's Walk to the west. The location of the site is indicated in Figure 1 by the area shaded in red.

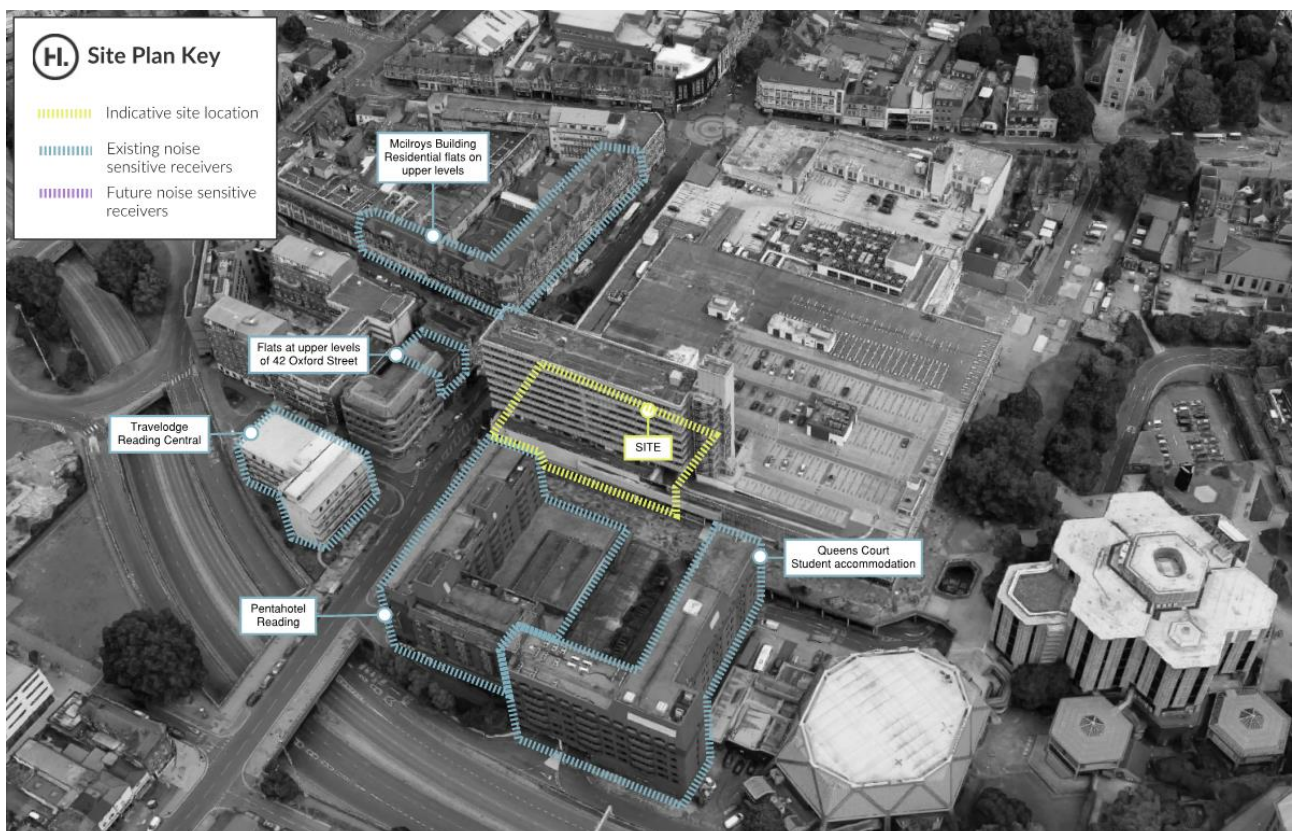


Figure 1 Annotated 3D rendered image showing development location and context (courtesy of Google Maps)

2.2 Surrounding area and nearest noise sensitive receptors

The site is located within a predominantly commercial area of Reading city centre with some residential and hotel developments nearby.

The nearest residences have been identified as apartments on the upper levels of 42 Oxford Road and the Mcilroys Building to the north, and Queens Court student accommodation to the west. These are indicated by the areas shaded in purple in Figure 1.

The site is also in close proximity to two hotels, Travelodge Reading Central and Pentahotel Reading, the areas shaded in blue in Figure 1.

2.3 Local noise climate

Noise levels around the site are currently dominated by road traffic along Oxford Road, as well as distant traffic from the surrounding road network. Towards the rear of the site, along Queen's Walk, the noise climate is quieter.

3. Acoustic criteria

3.1 Planning Condition 8

In providing full planning permission for the scheme, RBC set out the following requirements regarding new building services noise control at the nearest sensitive receptors:

"8. No mechanical plant shall be installed until a noise assessment of the proposed mechanical plant has been submitted and approved by this Council. The assessment shall be carried out in accordance with the relevant recommendations of appropriate British Standards or other recognised Codes of Good Practice. The predicted rating level, LA_r,Tr (specific sound level plus any adjustment for the characteristic features of the sound) as measured at a point 1 metre external to sensitive facades shall be at least 10dB below the existing background sound level, LA_{90,T} when all plant/equipment (or any part of it) is in operation. The plant shall only be installed in accordance with the assessment and shall thereafter be maintained so that it operates to the same standard.

Reason: To safeguard the amenities of the adjoining premises and the area generally, in accordance with Policy CS34 of the Reading Borough LDF Core Strategy 2008 (Altered 2015) and Policy DM4 of the Reading Borough LDF Sites and Detailed Policies Document 2012 (Altered 2015)."

3.2 BS 4142:2014

The general principle of the BS 4142 assessment criteria is that noise nuisance can be avoided provided there is no significant change in the prevailing background noise conditions at any surrounding noise sensitive premises once the new equipment is operational.

Where the assessment indicates that the noise rating level of new plant would be 10 dB or greater above the background noise level, the standard judges that sound to be of significant adverse impact. A difference of 5dB is considered to result in adverse impact. Where the rating noise level of the plant is equal to or below background noise, there is likely to be low impact.

As such, noise egress from any plant, machinery and operational noise associated with the development should not cause disturbance at the nearby houses, and the rating level of noise shall not exceed the existing background noise level at the nearest noise sensitive receivers.

Further corrections should be applied if the plant noise contains tonal, intermittent and/or impulsive characteristics. The magnitude of these corrections is dependent upon the subjective perceptibility of the tones/impulses present.

4. Environmental sound survey

The environmental sound survey was carried out on site over a period of 6 days between 13 June 2018 and 18 June 2018. During this time, long-term unattended measurements were carried out. Full details of the method and equipment used, as well as weather information are provided in Appendix A.

The survey measurement positions and prevalent sound levels around the site are summarised in the annotated 3D rendered aerial photograph presented in Figure 2.



Figure 2 Aerial photograph indicating unattended measurement positions and background sound level summary (courtesy of Google Earth)

4.1 Observations

The dominant noise source has been identified as road traffic along Oxford Road at both survey locations. Other, less predominant sources noted included local pedestrian activity.

4.2 Unattended measurement results

The results of the unattended noise measurements are presented to follow. A graph showing the results from the unattended logging survey is provided in Appendix B in addition to tables showing daily variation.

In line with BS 4142:2014, for the purpose of analysis and establishing representative background sound levels during the periods of interest, typical levels have been quantified using statistical analysis from the continuous logging measurements. The statistical analysis associated with these two values is presented in Appendix C.

These are taken to be $LA_{90,15min}$ 62 dB during the daytime period, and $LA_{90,15min}$ 50 dB during the night-time period at position L1, and $LA_{90,15min}$ 57 dB during the daytime period, and $LA_{90,15min}$ 49 dB during the night-time period at position L2.

5. Planning Condition 8 discharge assessment

5.1 Basis of plant noise limits

The new building services plant locations and atmospheric terminations can be expected to be located within existing and refurbished second floor plant rooms and on the rooftop, resulting in a wide spatial spread between the individual schemes to be provided across the site.

In addition to RBC requirements, the limits presented below for the new building services plant include an allowance for contributions from the six schemes to ensure the cumulative noise level from the new schemes does not result in an increase of the existing background level.

5.2 Plant noise limits

Based on the criteria set out in Section 3 and the survey results, the cumulative maximum sound pressure levels for fixed plant, equipment and machinery associated with each tenant plant scheme shall not exceed the levels presented in Table 1 at 1 m from the nearest noise sensitive premises.

Table 1 Maximum plant sound pressure level at 1 m from the nearest noise sensitive premises

Location	Maximum permissible plant noise level for each tenant plant scheme at 1m from the nearest noise sensitive receptor window, $L_{Aeq,15min}$ (dB) *	
	Daytime (07:00 – 23:00)	Night (23:00 – 07:00)
Elevations facing Oxford Road	44	32
Elevations facing Queen's Walk	39	31

*If plant noise contains any attention catching characteristics further corrections shall be applied.

5.3 Plant noise assessment

New building services plant is understood to be proposed for the six new commercial units to be formed as part of the refurbishment works, although no details regarding these are available. These schemes will be designed and installed by future tenants but shall comply with the plant noise limits provided above as part of the landlord requirements.

All noise generating plant and equipment associated with the new units will be designed by the tenants to ensure that the noise egress limits specified above are achieved. The specific attenuation measures will depend on the type and location of the plant items but typical measures to be considered include in-duct attenuation, acoustic screening or enclosures, low noise equipment, acoustic lagging, and acoustically rated louvres.

Indicative maximum permissible sound pressure levels at 1 m from each tenant plant area are provided below for guidance. Ultimate design responsibility for each scheme shall reside with each of the future tenants.

- D2 units: $L_{Aeq,15min}$ no more than 70 dB during the daytime and $L_{Aeq,15min}$ no more than 58 dB during the night at 1 m from each of the tenant plant areas;
- All other units: $L_{Aeq,15min}$ no more than 65 dB during the daytime and $L_{Aeq,15min}$ no more than 57 dB during the night at 1 m from each of the tenant plant areas.

On the basis the above measures are implemented, the requirements of Planning Condition 8 will be met.

Appendix A: Survey and equipment details

Unattended noise measurements were carried out between 12:15 hrs on 13 June 2018 and 13:00 hrs on 18 June 2018.

Prior to commencement of the unattended survey, a subjective assessment of the noise climate was undertaken and compared to that of the immediate vicinity of the surrounding residential premises to the north and west. The chosen logger positions were deemed to be representative of the noise levels at the nearest noise sensitive premises. The positions chosen were also not unduly affected by existing building services plant.

The microphones were fitted with a windshield. The meters were calibrated before and after the survey and no significant drift was noted. A photograph showing unattended monitoring position L1 is presented in Figure A1 and the measurement locations are indicated as positions L1 and L2 in Figure 2.



Figure A1 Unattended measurement in position L1



Figure A2 Unattended measurement in position L2

Equipment details

Table B1 summarises the details of the equipment used during the environmental noise survey. All equipment used was within dates of calibration and calibration certificates are available on request.

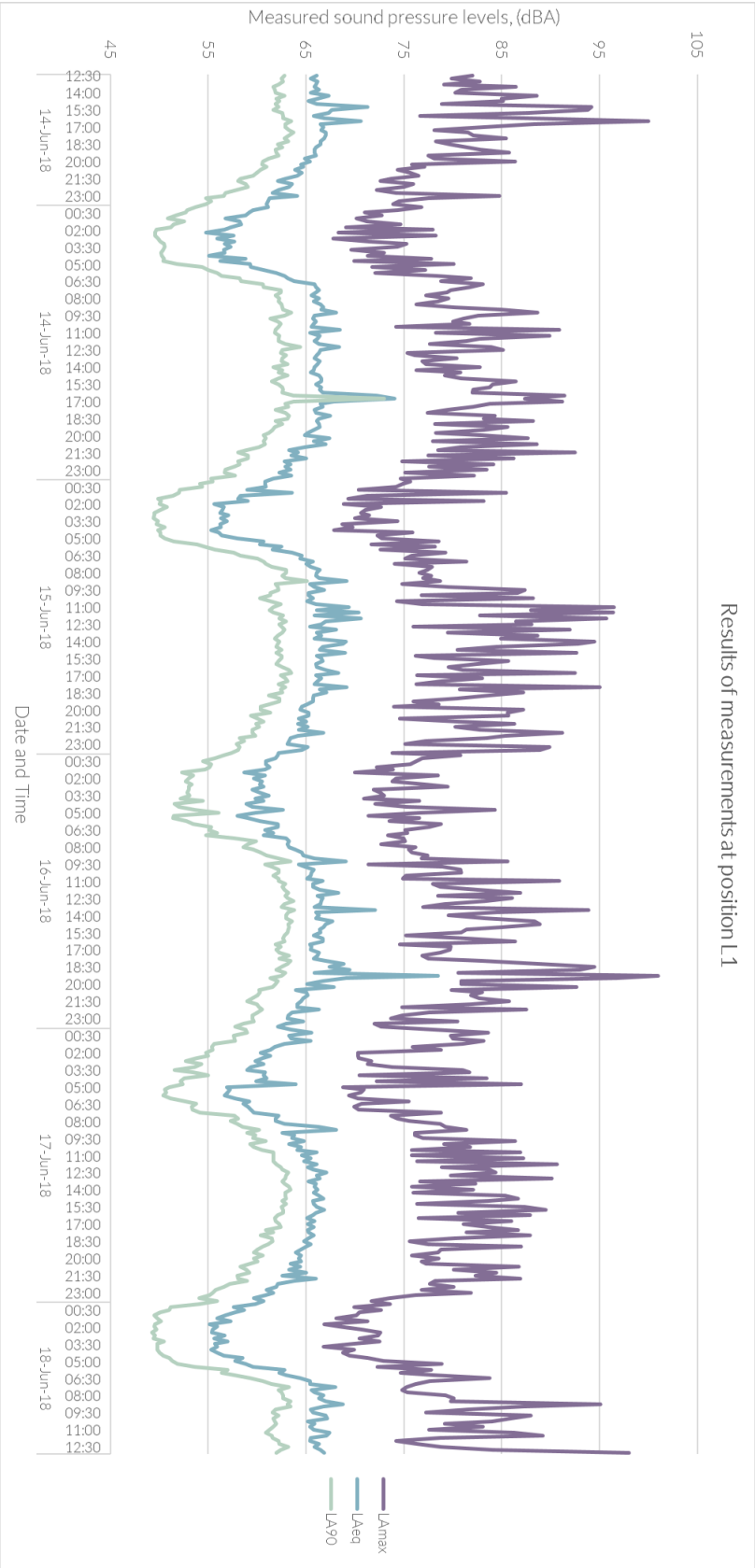
Table B1 Equipment used during environmental noise survey

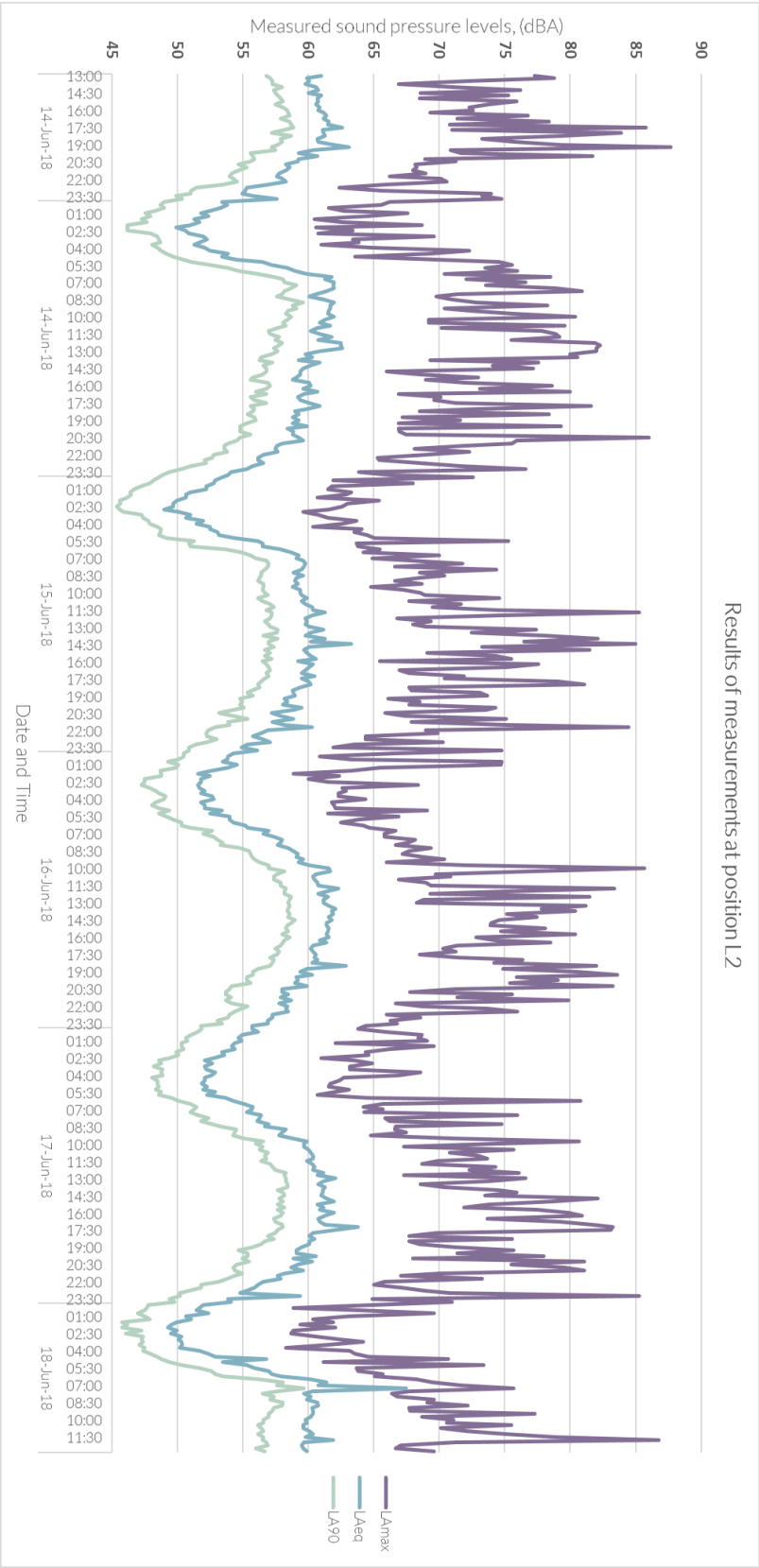
Location	Description	Serial Number	Calibration Date
L1	Rion - Sound Level Meter: NL-52 Rion - Microphone: UC-59 Rion - Pre-amplifier: NH25	00832246 05473 32274	10/10/2017
L2	Rion - Sound Level Meter: NL-52 Rion - Microphone: UC-59 Rion - Pre-amplifier: NH25	00632045 05212 32073	15/08/2017

Weather information

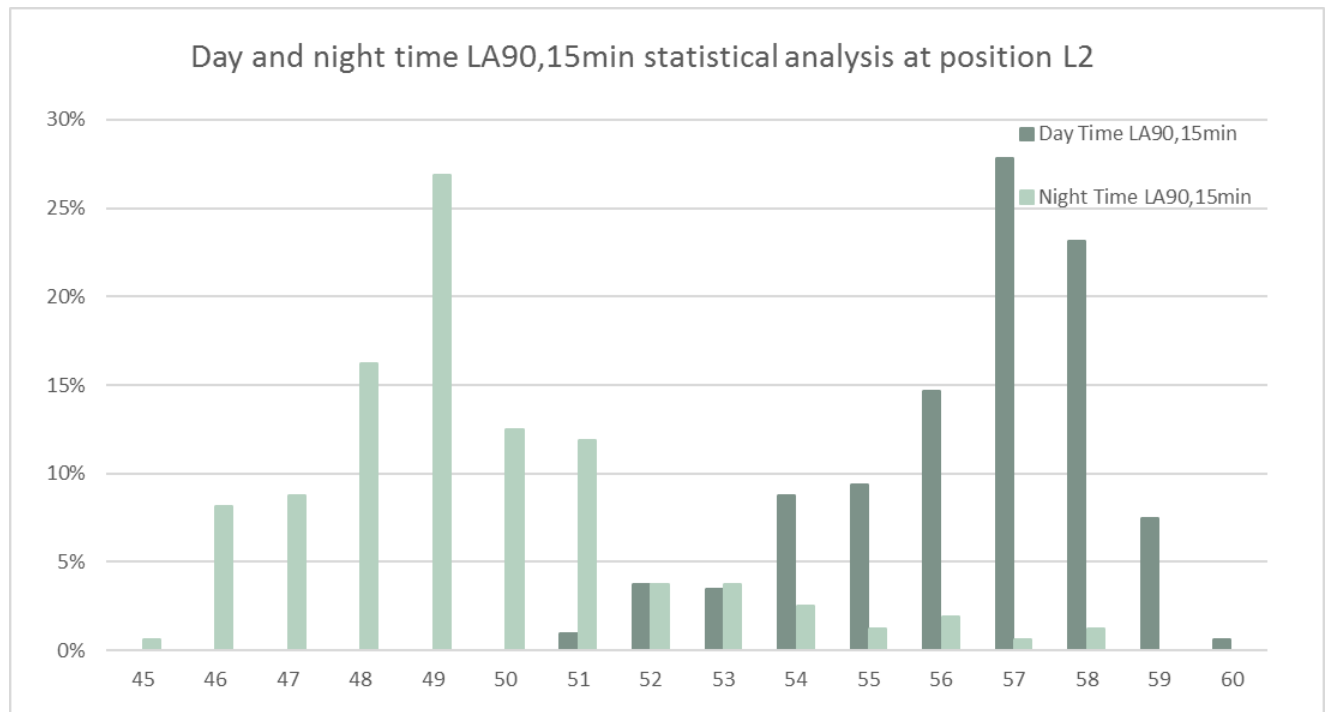
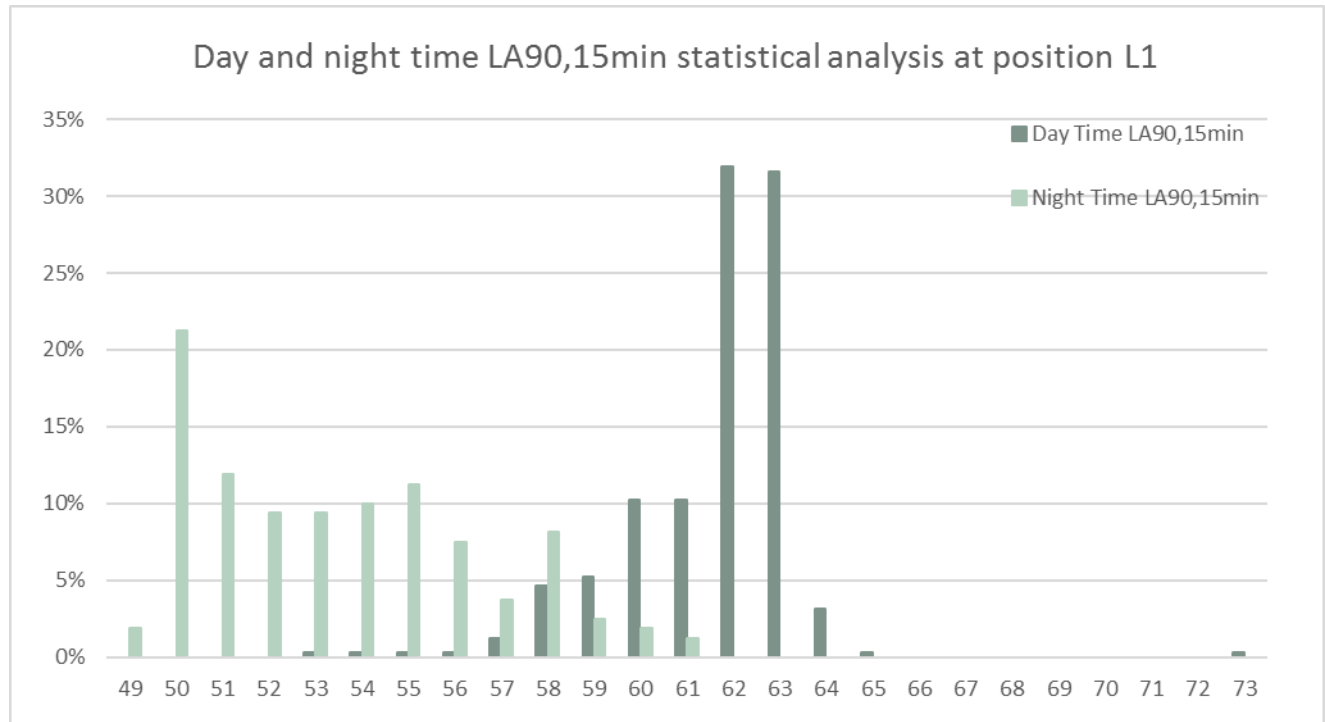
Weather reports for the area indicate that temperatures ranged between 6 °C to 23 °C. There was no rain over the measurement period and wind speeds were consistently low. This is not expected to contribute adversely, therefore the measured data is considered suitable as being representative of typical conditions.

Appendix B: Time History graphs of unattended measurements





Appendix C: Statistical analysis of background sound levels





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