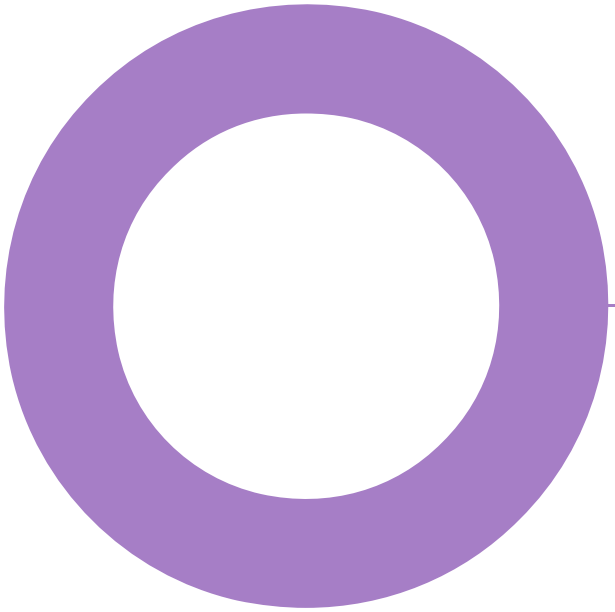
HOARE LEA

MMU Birley Fields Campus. Manchester.
MMU.

ACOUSTICS
ACOUSTIC PLANNING REPORT

REVISION 01 – 04 MARCH 2021



Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
00	27/11/2020	Initial issue	LR	AP	PM
01	04/03/2021	Revised to include assessment of proposed unit	AP	PM	PM

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Executive summary.

Hoare Lea Acoustics have been appointed to carry out an environmental noise survey and noise impact assessment in relation to the proposed new generator installations at the existing Birley Fields Campus, in Manchester.

An environmental noise survey has been carried out and a noise egress assessment undertaken in accordance with BS4142:2014/Manchester City Council (MCC) requirements. The survey was carried out out between 13 and 19 November 2020.

The representative background noise levels at the nearby sensitive receptors were $L_{A90,5min}$ 51 dB during the daytime (07:00 to 23:00 hrs) and $L_{A90,5min}$ 44 dB at night-time (23:00 to 07:00 hrs).

In line with MCC requirements for emergency standby generators, a noise limit of 10 dB above the above levels should apply. The generator should therefore not exceed L_{Aeq} 61 dB and L_{Aeq} 54 dB at the nearby sensitive receptors during the day and night respectively.

The proposed generator is predicted to meet these limits at the nearest dwellings (MMU Birley Halls and Dunham House student accommodation).

1. Introduction.

Hoare Lea Acoustics have been appointed by Manchester Metropolitan University (MMU) to carry out an environmental noise survey and noise impact assessment in relation to the proposed new generator plant installation at the Brooks and Birley Energy Building.

An environmental noise survey has been carried out at the site over 6 days commencing on 13 November 2020. The aim of the survey was to determine the existing noise levels around the site in order to set maximum noise egress limits for plant and machinery associated with the development.

This report presents the findings of the noise survey and sets out the permissible limits for new plant in accordance with Manchester City Council (MCC) criteria.

2. Site and development details.

2.1 Site and area description.

New generators are proposed to be installed within the existing MMU Birley Fields Campus, located to the south of Manchester city centre. The site is directly bound by Princess Road to the east and Stretford Road to the north, two main thoroughfares into and from the city centre. Quieter local roads, Old Birley Street, George Parr Road and Archway, bound the site to the west and south.

The nearest noise sensitive premises to the proposed generator locations comprise the existing MMU Birley Campus student halls of residence. The locations of the proposed generator sites in relation to the worst affected nearby premises are presented in Figure 1.

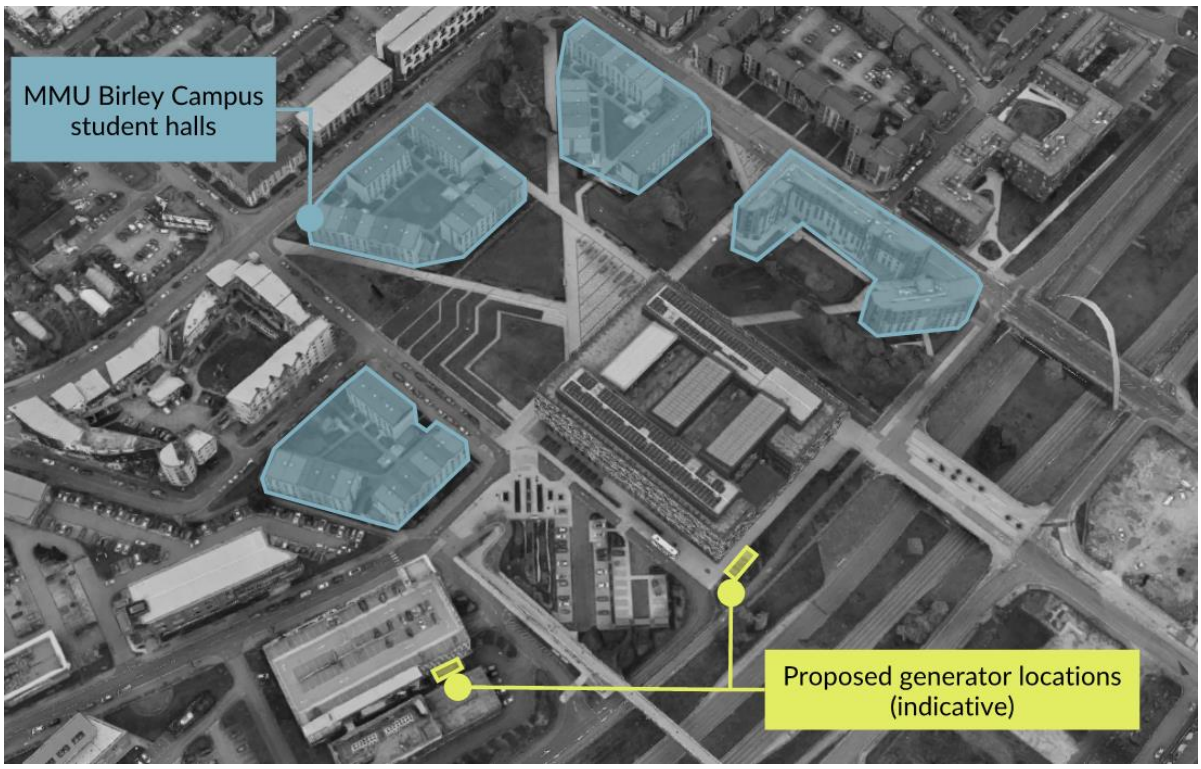


Figure 1 Annotated 3D aerial render indicating site location (courtesy of Google Earth)

2.2 Local noise climate.

The local noise climate during site visits was dominated by relatively constant road traffic noise along Princess Road, and distant road traffic noise from the surrounding road network.

3. Acoustic criteria.

3.1 Local Authority requirements

Following on from discussions with Lisa Jones of Manchester City Council in the meeting of 9 December 2020, it is understood that MCC require noise from standby generators to not exceed a level of 10 dB (L_{Aeq}) above the existing typical background noise level (L_{A90}) at the nearest noise sensitive receptor.

3.2 BS 4142:2014 guidance.

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.

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 noise survey.

4.1 Summary.

The environmental noise survey was carried out on site over a period of 6 days between 13 November 2020 and 19 November 2020. 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 position is presented in Figure 2, indicated as Position L1.

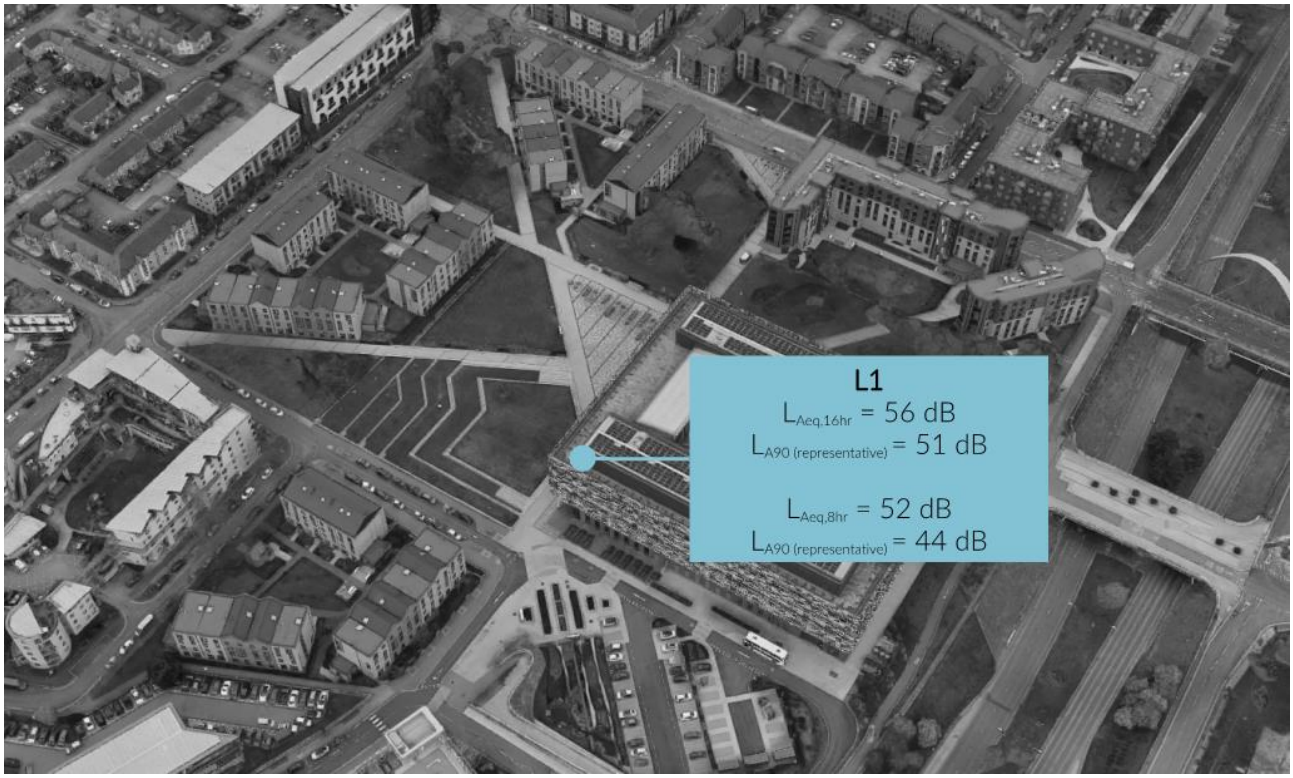


Figure 2 Annotated 3D aerial render indicating measurement position (courtesy of Google Earth)

4.2 Observations.

As set out in Section 2.2, the noise climate in the site vicinity was driven by road traffic noise.

4.3 Typical background noise levels.

In line with BS 4142:2014, for the purpose of analysis and establishing representative background noise levels during the periods of interest, the background noise levels have been quantified using statistical analysis from the continuous logging measurements. These are presented in Appendix C.

From the analysis carried out, the representative background noise levels measured during the survey were as follows:

- Daytime (07:00 - 23:00) - $L_{A90,5min}$ 51 dB
- Night-time (23:00 - 07:00) - $L_{A90,5min}$ 44 dB.

These levels are based on the 20th percentile of measured background noise levels.

5. Plant noise egress.

5.1 Emergency generator noise limits.

Based on the criteria set out in Section 3 and the noise survey results, the cumulative maximum sound pressure levels for the new standby generator shall not exceed the levels presented in Table 1 at 1 m from the nearest noise sensitive premises.

Table 1 Maximum permissible sound pressure levels at 1m from the nearest noise sensitive premises

Time of day	Maximum sound pressure level at 1m from the nearest noise sensitive premises (L_{Aeq}, dB)
07:00 to 23:00 hours	61
23:00 to 07:00 hours	54

5.2 Assessment of proposed generator.

It is understood that the proposed generator set produces a noise level of L_{Aeq} 75 dB measured at distance of 1 m. Calculations have been carried out to predict the noise level at the nearby sensitive receptors while the unit operates considering distance attenuation and screening. This is summarised below.

Brooks Building generator.

The worst affected residential receptor is the Dunham House MMU student accommodation.

A noise level of L_{Aeq} 54 dB is predicted at the worst affected facade of Dalton House. This complies with the proposed emergency plant noise limit provided in Section 5.1.

Energy Centre Generator.

The worst affected residential receptor is the Birley Halls MMU student accommodation.

A noise level of L_{Aeq} 36 dB is predicted at the worst affected facade of Birley Halls. This complies with the proposed emergency plant noise limit provided in Section 5.1.

Appendix A: Survey and equipment details.

Unattended noise measurements were carried out between 12:00 on 13 November 2020 and 13:00 on 19 November 2020.

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 nearby residential premises. The chosen logger position at position L1 was deemed to be representative of the noise levels at the nearest noise sensitive premises.

The microphone was fitted with a windshield. The meter was calibrated before and after the survey and no significant drift was noted. An image of the equipment in position is provided below.

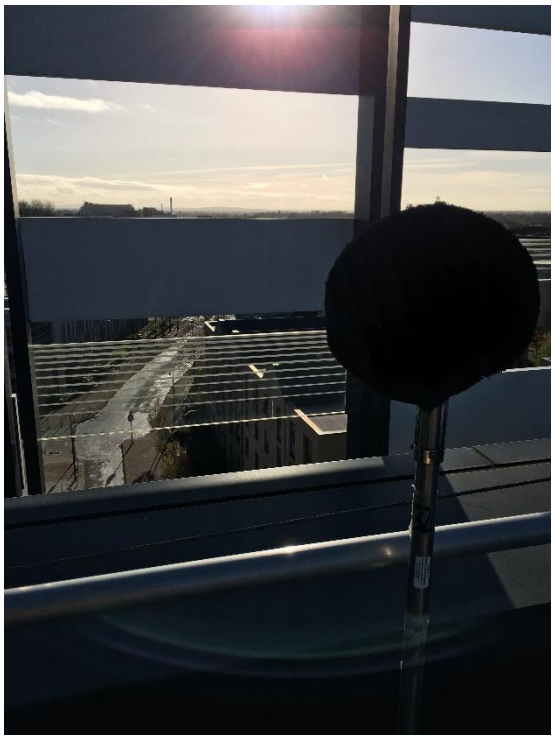


Figure A1 Microphone at position L1

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.

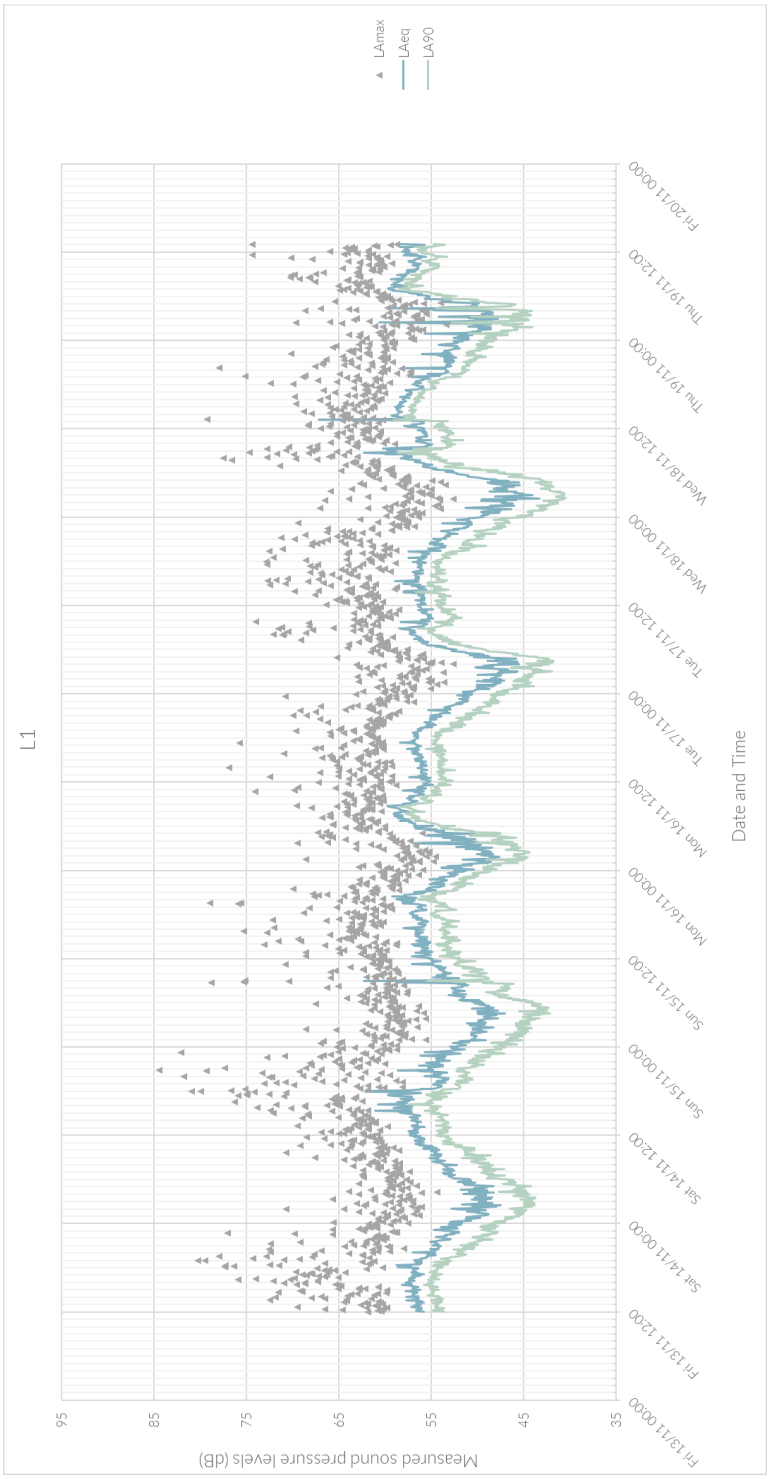
Table B1 Equipment used during environmental noise survey

Item	Description	Serial Number	Calibration Date
Unattended sound level meter	Rion - Microphone: UC-53A Rion - Pre-amplifier: NH-21 Rion - Sound Level Meter: NL-32	313610 25572 19781	02/07/2019

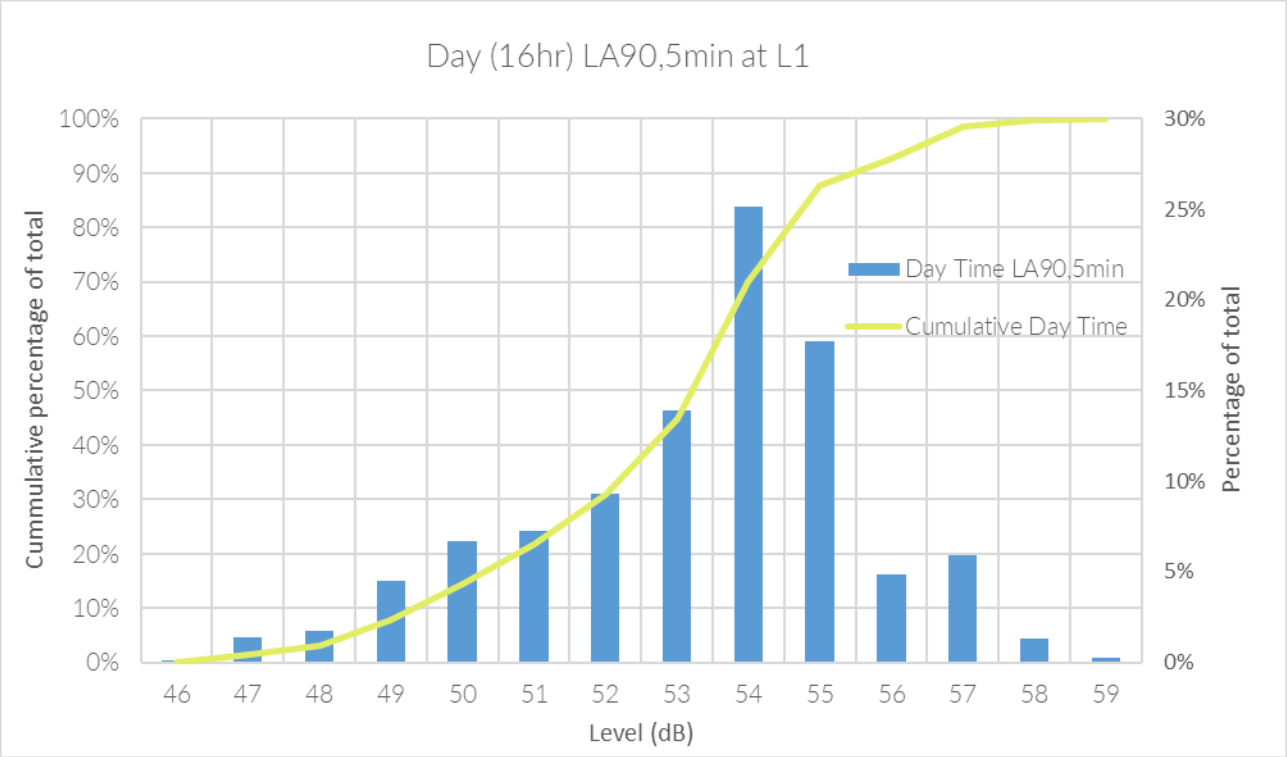
Weather information.

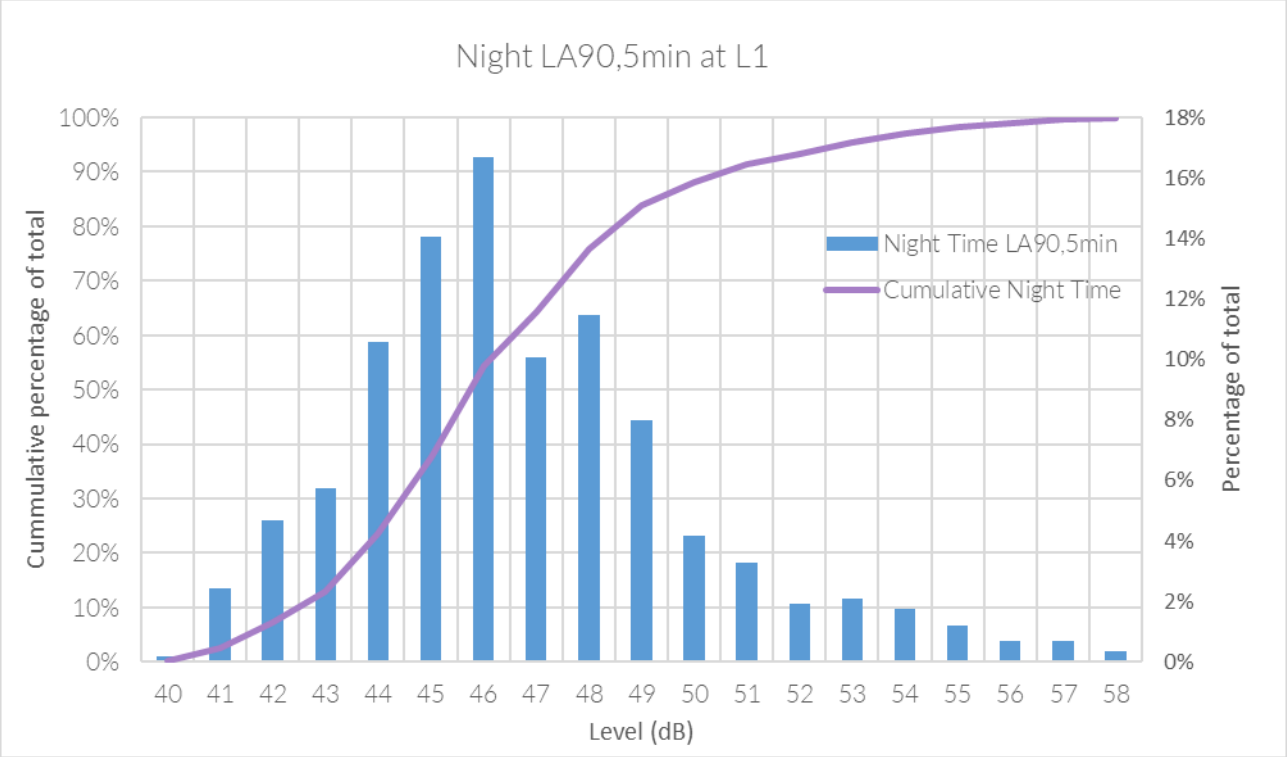
Weather reports for the area indicate that temperatures ranged between 3 °C to 15 °C. Wind speeds and rain and not expected to contribute adversely, therefore the measured data is considered suitable as being representative of typical conditions.

Appendix B: Time history of unattended measurements.



Appendix C: Statistical analysis of background sound levels.





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