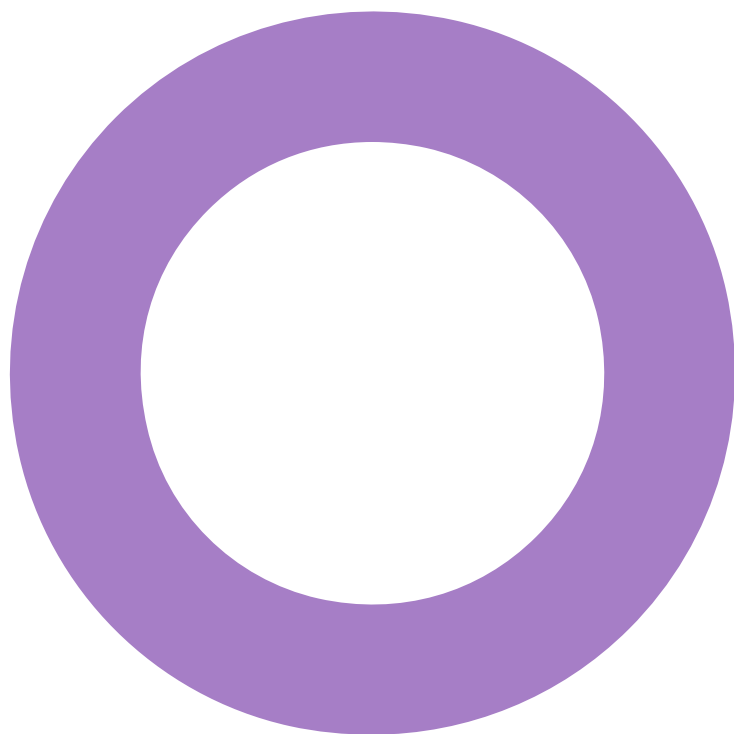


Space Studios Phase 3. Manchester. Manchester City Council.

ACOUSTICS
PLANNING REPORT

REVISION 00 – 06 JULY 2021



Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
00	06/07/2021	Pre-application draft issue	LR	PM	PM

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Executive summary.

Hoare Lea Acoustics have been appointed to undertake an acoustic assessment for the proposed Phase 3 works at the Space Studios in Manchester.

The proposed development comprises two purpose built sound stages with ancillary support spaces housing workshops and offices.

An environmental noise survey has been carried out between 13 and 18 June 2021 and a noise egress assessment undertaken in accordance with the requirements of Manchester City Council (MCC).

Based on the results of the noise survey, the typical existing background noise levels experienced at the nearest noise sensitive receptors along Wenlock Way are

- $L_{A90,5min}$ 41 dB during the daytime (07:00 to 23:00);
- $L_{A90,5min}$ 37 dB during the night (23:00 to 07:00).

Based on the requirements of MCC and BS4142:2014 guidance, cumulative plant noise limits have been set at 1m from the façade of the nearest noise sensitive premises as follows:

- $L_{Aeq,5min}$ 36 dB during the daytime (07:00 to 23:00);
- $L_{Aeq,5min}$ 31 dB during the night (23:00 to 07:00).

If the plant contains any tonal or attention catching characteristics, a further correction will be required.

Internal noise breakout from the workshop areas will be controlled to acceptable levels provided the façade elements meet the minimum sound insulation specifications detailed herein.

1. Introduction.

Hoare Lea Acoustics have been appointed to provide acoustic input to the planning submission for the proposed Phase 3 works of the Space Studios development in Manchester. The site is located within the jurisdiction of Manchester City Council (MCC).

An environmental noise survey has been carried out on site for a period of 5 days commencing on 13 June 2020. The aim of the survey was to determine the prevalent ambient and maximum noise levels incident upon the site as well as determine the typical representative background noise levels at the nearest noise sensitive receptors.

This report presents the findings of the noise survey and sets out the permissible maximum plant noise in accordance with MCC requirements.

2. Proposed development.

The proposed development comprises two purpose built sound stages with ancillary support spaces housing workshops and offices located within the south west of the Space Studios campus, with the proposed new-build facilities located along the Wenlock Way site boundary, as presented in Figure 1.

It is understood the new facilities are proposed to operate continuously throughout all periods of the day and night when in use.

As part of the new phase of works, new building services plant is proposed to ventilate and provide thermal control to the new Stages and ancillary areas.

No amplified music, live audience events or high level reproduced sound is to be pursued within the proposed Sound Stages.

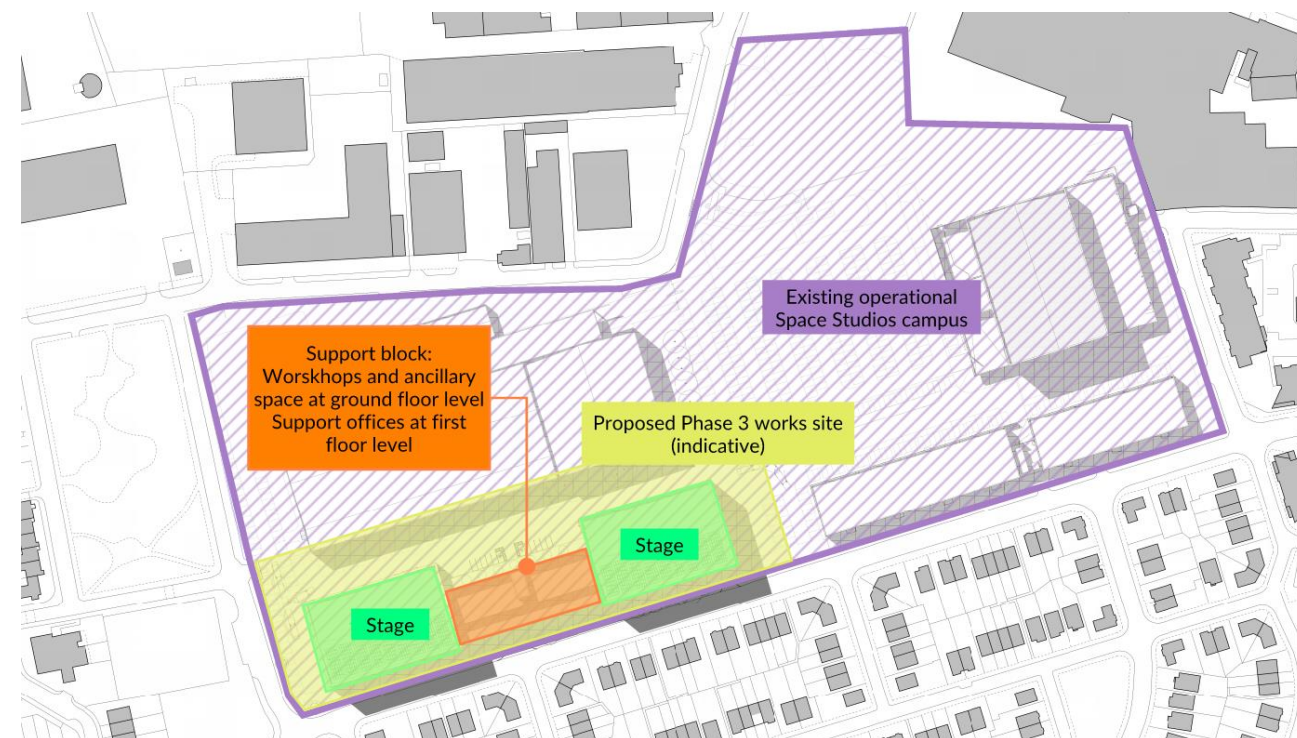


Figure 1 Mark up of site plan denoting location of Phase 3 works within wider Space Studios campus

3. Site appraisal.

3.1 Site location and surrounding area.

The proposed site for development is located within the West Gordon ward of Manchester. The scheme is bound to the south by Wenlock Way, to the West by Reabrook Avenue, and to the North and East by the existing Space Studios campus.

The immediate vicinity of the development site comprises primarily residential blocks to the west and south along Wenlock Way and Reabrook Avenue. The location of the site is indicated in Figure 2 with the nearest sensitive receptors highlighted by the areas shaded in blue.



Figure 2 Annotated 3D rendered image showing development location and context (courtesy of Google Earth)

3.2 Local noise climate.

In general terms, the noise climate comprises road traffic along Wenlock Way, inclusive of regular buses driving by, stopping and pulling away from bus stops. Less dominant noise sources comprise residual road traffic noise from the local road network, aircraft overhead, and pedestrian activity.

4. Local Authority planning context.

Criteria for plant noise egress is provided in the Manchester City Council (MCC) “Planning & Noise Technical Guidance (December 2015)” document. This is referenced in the subsequent sections.

4.1 Plant noise egress.

With regards to noise from fixed plant/equipment, MCC refers to BS 4142:2014 and also states the following:

“Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location.”

4.2 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.

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.

5. Environmental noise survey.

The noise survey was carried out on site over a period of 5 days between 13 and 18 June 2021. 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. A graph showing the results from the unattended logging survey are provided in Appendix B.

The survey measurement position is presented in Figure 3 by the ‘L1’ marker.

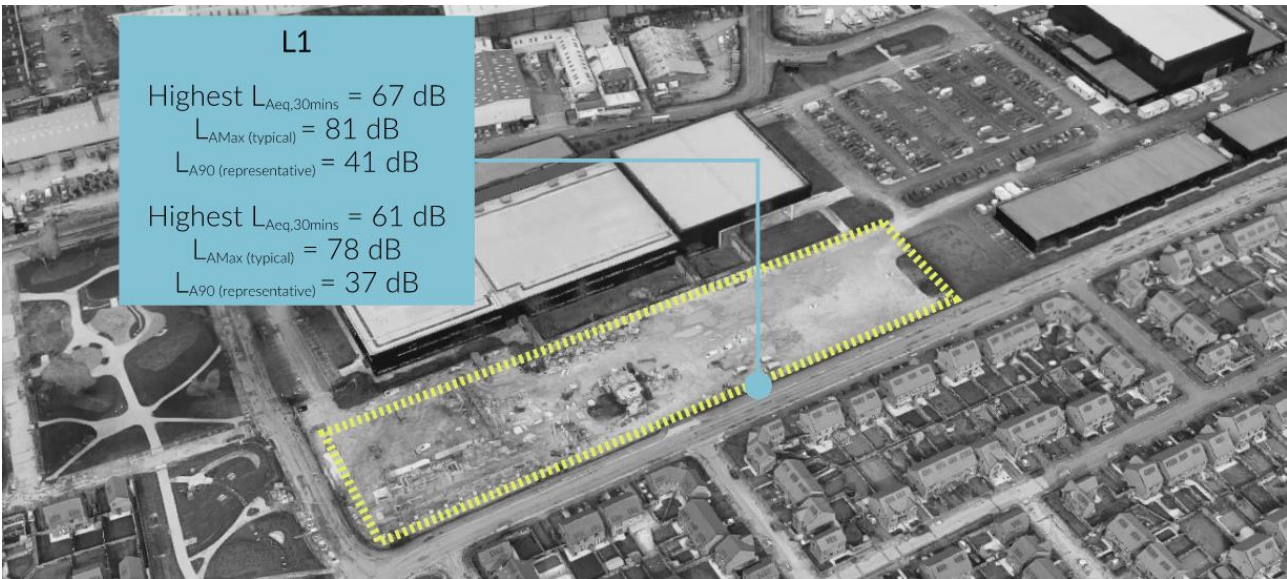


Figure 3 Annotated 3D render image indicating measurement position (courtesy of Google Earth)

5.1 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, based on the 20th percentile of measured background noise levels, were as follows:

- Daytime (07:00 - 23:00) - L_{A90,5min} 41 dB;
- Night-time (23:00 - 07:00) - L_{A90,5min} 37 dB.

6. Plant noise egress.

6.1 Plant noise limits.

External noise emissions from fixed plant will need to be controlled as presented in Table 1 at 1m from the nearest noise sensitive receivers so as to comply with Manchester City Council (MCC) criteria.

Table 1 Maximum plant sound pressure level at 1 m from the nearest residential facades

Time of day	Maximum permissible plant rating level at 1 m from the nearest noise sensitive receptor window (L _{Aeq,15mins} , dB)
Daytime (07:00 to 23:00 hrs)	36
Night (23:00 to 07:00 hrs)	32

Should plant noise contain any tonal characteristics further corrections shall be applied in accordance with BS4142:2014 guidance.

6.2 Initial guidance on mitigation measures.

At this stage, the design is not sufficiently advanced to determine specific attenuation measures and will need to be assessed in detail as the design progresses. However, all noise generating plant and equipment associated with the development should be designed 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.

7. Impact from workshop activity.

7.1 Workshop activity summary.

It is understood that the proposed workshop areas within the Phase 3 works shall be used for similar purposes and activities as the completed and operational Space Studios units located along Wenlock Way.

Measurements were previously carried out within set-assembly areas in the existing Space Project to determine typical internal noise levels within these areas. Highest levels of noise were generated by fixed-base plant items (jigsaw / rip saw / mitre saw). The highest noise generating device was the rip-saw with broadband maximum levels of 92 dB(A). The spectrum of this plant item is provided below in Table 2.

Table 2: Internal noise spectrum for set-assembly areas used in the assessment

	Octave Band Centre Frequency (Hz)								Broadband Level L _{max,F} (dB)
	31.5	63	125	250	500	1k	2k	4k	
Set-Assembly Internal Noise Levels L _{max,F} (dB)	57	62	67	76	80	87	88	84	92

7.2 Façade sound insulation to workshops.

Based on the measured external noise levels and anticipated internal noise levels within the workshops remaining consistent with previously delivered workshops within the Space Studios campus, as set out above, typical external wall constructions achieving a minimum sound insulation reduction of **R_w 40 dB** are expected to suitably control noise break-out from the workshops to the nearest noise sensitive receivers.

8. Conclusion.

An environmental noise survey has been carried out between 13 and 18 June 2021 to establish typical ambient and background sound pressure levels on and around the site.

Plant noise limits for the scheme have been set based on the survey results and on MCC requirements, If the plant contains any tonal or attention catching characteristics, a further correction will be required.

A minimum sound insulation performance for the building envelope of the proposed workshop spaces has been provided, based on worst-case internal noise measurements carried out within the existing operational workshop areas within the existing Space Studios site.

Appendix A: Noise survey details and results.

Unattended Measurements

Unattended noise measurements were carried out between 10:10 on 13 May 2021 and 16:00 on 18 May 2021. The location of the unattended noise measurements is indicated in Figure 2 by the marker 'L1'.
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 dwellings. The chosen logger position was deemed to be representative of the noise levels at the nearest noise sensitive premises as well as incident noise levels at the proposed scheme elevations. A photograph of the unattended monitoring position is presented in Figure A1.



Figure A1 Photograph of position L1

The microphone was fitted with a windshield. The meter was calibrated before and after the survey and no significant drift was noted.

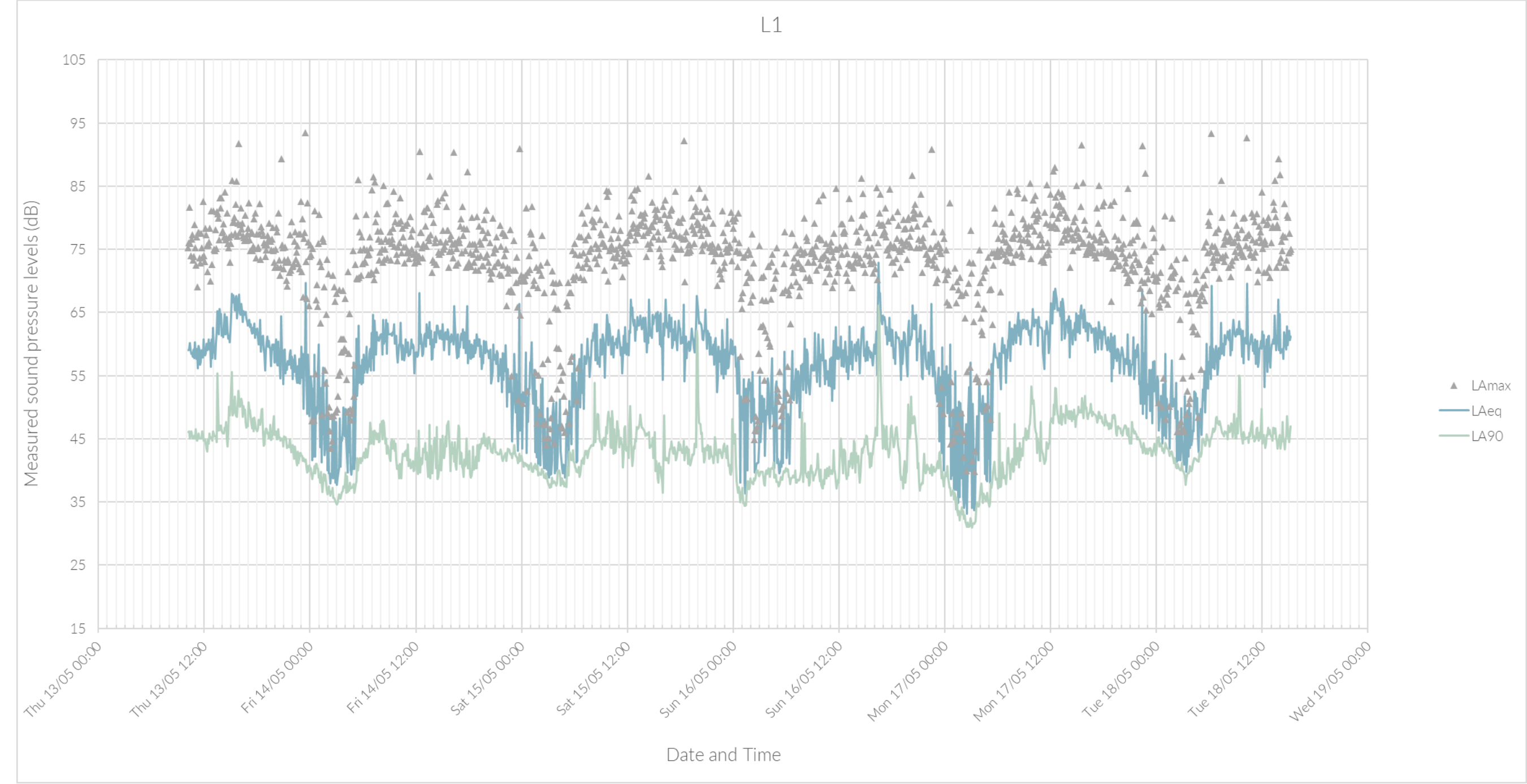
Equipment details

Table A1 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.

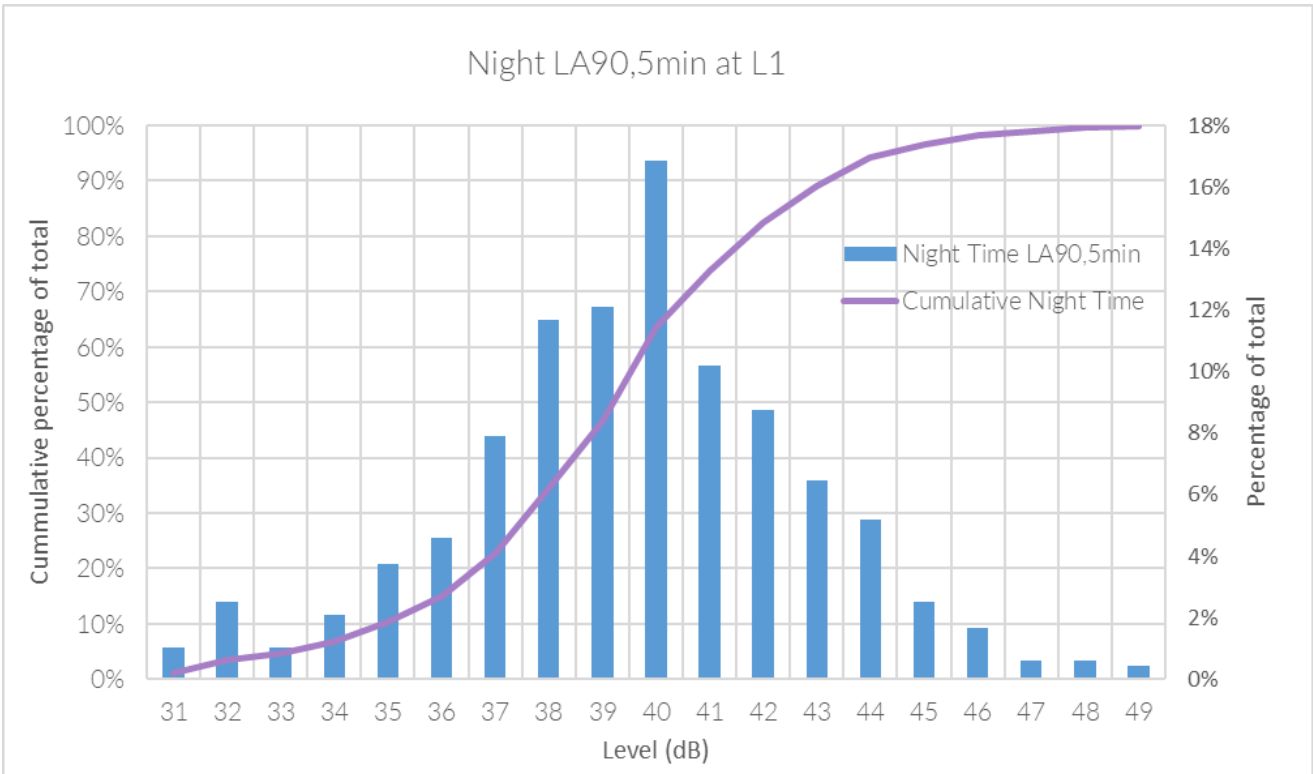
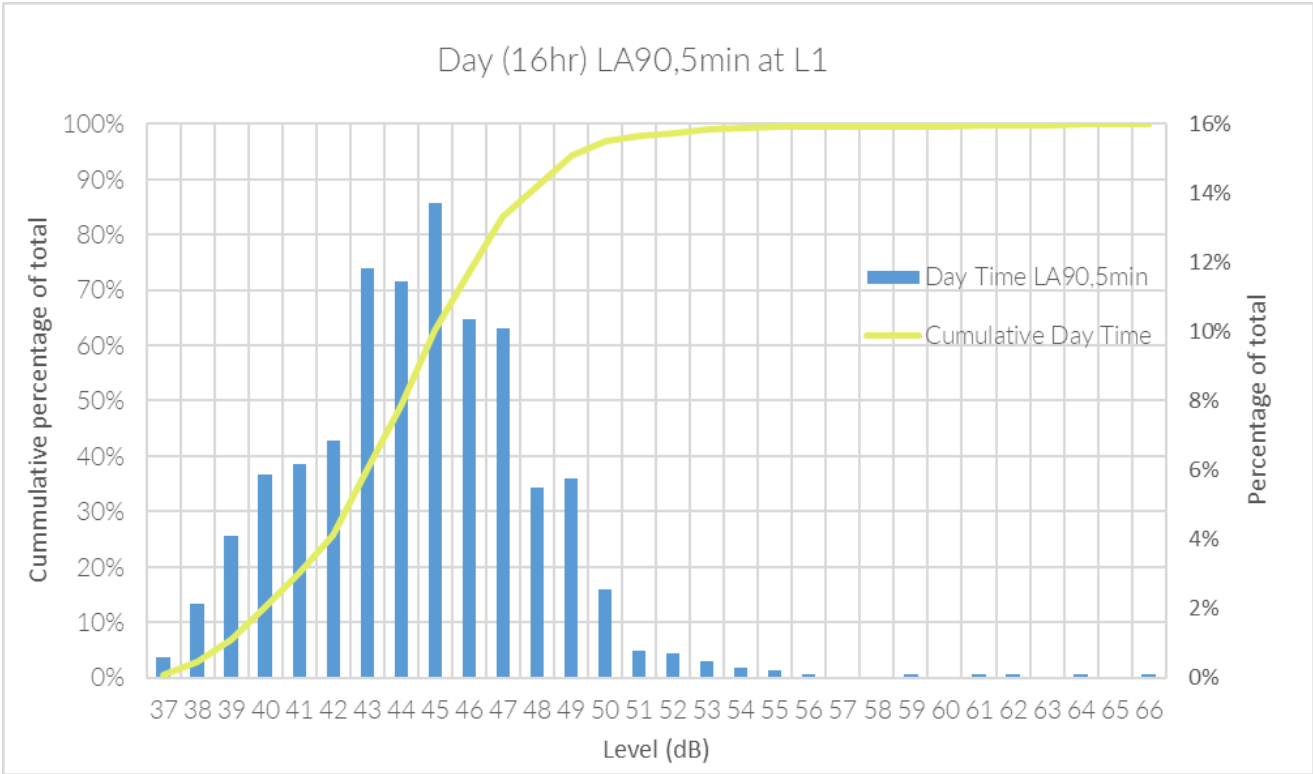
Table A1 Equipment used during environmental noise survey

Description	Serial Number	Calibration Date
Rion - Sound Level Meter: NL-52 Rion - Microphone: UC-59 Rion - Pre-amplifier: NH-25	00732162 16798 32190	02/03/2020

Appendix B: Time history of unattended measurements.



Appendix C: Statistical analysis of background noise levels.





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