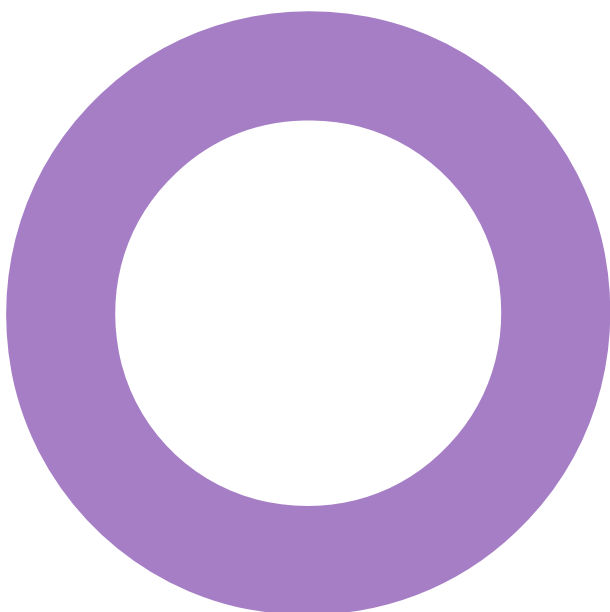


PrintCity, Manchester Technology Centre. Manchester. MMU.

ACOUSTICS

ACOUSTIC PLANNING REPORT

REVISION 01 – 19 MARCH 2021



Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
00	16/03/2021	Initial issue	AP	PM	PM
01	19/03/2021	Updated to incorporate Deloitte comments	AP	PM	PM

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Project number: 10/12575

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Executive summary.

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 plant installation at the Manchester Technology Centre building as part of the third floor MMU PrintCity fit-out.

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 between 26 February and 2 March 2021.

The representative background noise levels at the nearby sensitive receptors were $L_{A90,5min}$ 54 dB during the daytime (07:00 to 23:00 hrs) and $L_{A90,5min}$ 47 dB at night-time (23:00 to 07:00 hrs).

Based on MCC criteria, all plant, equipment and machinery associated with the development shall be controlled to ensure that the overall sound pressure levels at 1 m from the façade of the nearest noise sensitive premises (Vita Living) do not exceed $L_{Aeq,T}$ 49 dB during the daytime (07:00 to 23:00 hrs) and $L_{Aeq,T}$ 42 dB during the night (23:00 to 07:00 hrs). If the plant contains any tonal characteristics a further correction will be required.

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 plant installation at the Manchester Technology Centre building as part of the third floor MMU PrintCity fit-out.

An environmental noise survey has been carried out at the site over 4 days commencing on 26 February 2021. 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.

The scheme relates to the third floor fit-out of the Manchester Technology Centre (MTC) building to form new MMU PrintCity facilities. This includes the installation of new building services plant on the roof of the building.

The MTC Building is located to the south of Manchester city centre. The building is located on Oxford Road with a raised section of the Mancunian Way (A57(M) / inner ring road) passing directly to the south. Brancaster Road bounds the site to the north.

The nearest noise sensitive premises to the the location of the proposed plant is considered to be the Vita Living residential building located within the Circle Square masterplan approximately 65 m to the north east. The proposed plant location in relation to the worst affected nearby premises are presented in Figure 1.

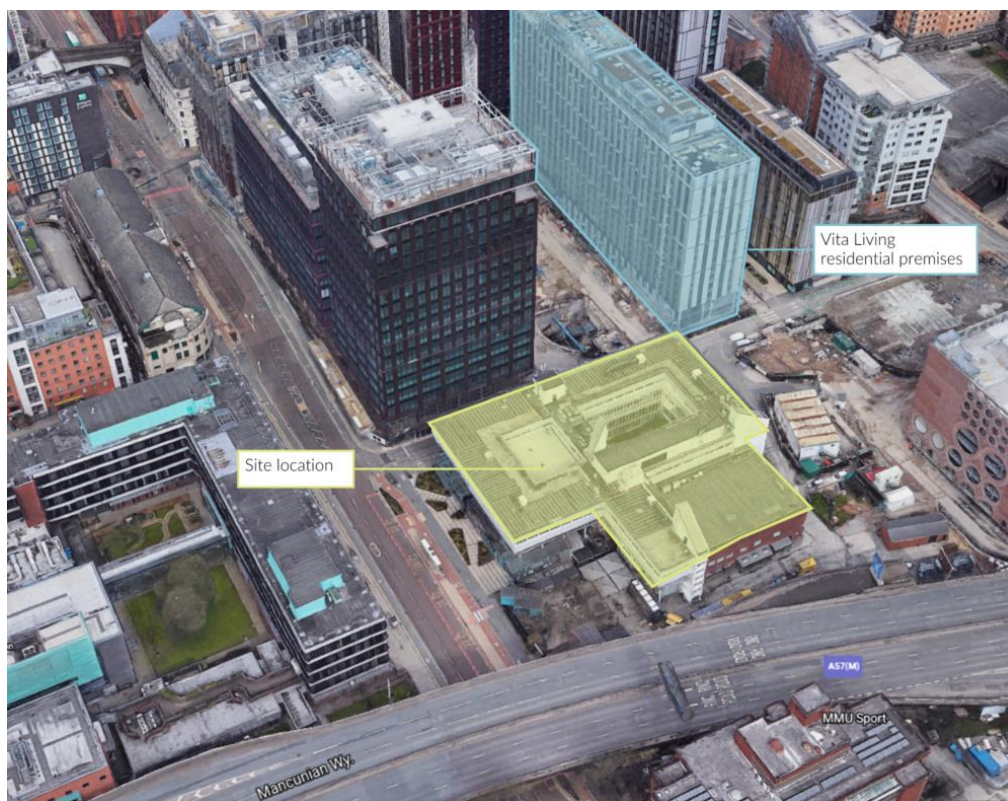


Figure 1 Annotated 3D aerial render indicating site location (courtesy of Google Earth)

2.2 Local noise climate.

The local noise climate during site visits was dominated by constant road traffic noise along the raised section of the Mancunian Way. Some traffic noise associated with the roads at ground level was also audible during brief lulls in the traffic along Mancunian Way.

3. Acoustic criteria.

3.1 Local Authority requirements

The Manchester City Council 'Planning & Noise: Technical Guidance' document dated December 2015 states the following with regards to the control of noise emissions from new plant:

"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"

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 4 days between 26 February 2021 and 2 March 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.

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 below. These are based on the 10th and 20th percentile of measured levels for daytime and night-time respectively.

- Daytime (07:00 - 23:00) - $L_{A90,5min}$ 57 dB
- Night-time (23:00 - 07:00) - $L_{A90,5min}$ 50 dB.

As these background noise levels were driven by road traffic along the Mancunian Way, a correction has been applied to give representative background noise levels outside the Vita Living premises. These are as follows considering a 3 dB correction due to the approximate doubling of distance from the Mancunian Way:

- Daytime (07:00 - 23:00) - $L_{A90,5min}$ 54 dB
- Night-time (23:00 - 07:00) - $L_{A90,5min}$ 47 dB.

5. Plant noise egress.

5.1 Plant noise limits.

Based on the criteria set out in Section 3 and the noise survey results, the cumulative maximum sound pressure levels for fixed plant, equipment and machinery associated with the development 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	49
23:00 to 07:00 hours	42

*A further correction would be applicable if the plant contains distinguishing features.

5.2 Assessment.

5.2.1 Proposed plant.

The following new external plant is proposed to the rooftop plant area:

- 2x AHUs
- 9x condenser units
- 1x LEV extract fan

Two existing AHUs are also proposed to be removed as part of the scheme.

5.2.2 Noise levels.

The currently proposed items of plant are as follows:

- 2x Systemair Geniox 16 AHUs. It is assumed that atmosphere side attenuators will be provided to adequately control noise emissions via the intake / exhaust connections.
- 4x Mitsubishi PUZ-ZM250YKA condenser units
- 2x Mitsubishi PUZ-ZM200YKA condenser units
- 3x Mitsubishi PURY-EM300YNW condenser units
- 1x Axair S30/250 LEV extract fan (up to 1450 /min).

Plant is understood to operate at a maximum duty of 75% during the night time period (23:00 - 07:00) with the LEV extract fan either not operational or operating at a lower speed of 930 /min.

The predicted noise level at the worst affected sensitive premises based on this are L_{Aeq} 47 dB during the daytime and L_{Aeq} 38 dB during the night. This is compliant with the noise limits set out above.

Final Contractor plant selections will need to comply with the limits provided in Section 5.1.

Appendix A: Survey and equipment details.

Unattended noise measurements were carried out between 11:45 on 26 February 2021 and 14:50 on 2 March 2021.

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. Although a further distance correction was deemed appropriate as set out in Section 4.3

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.

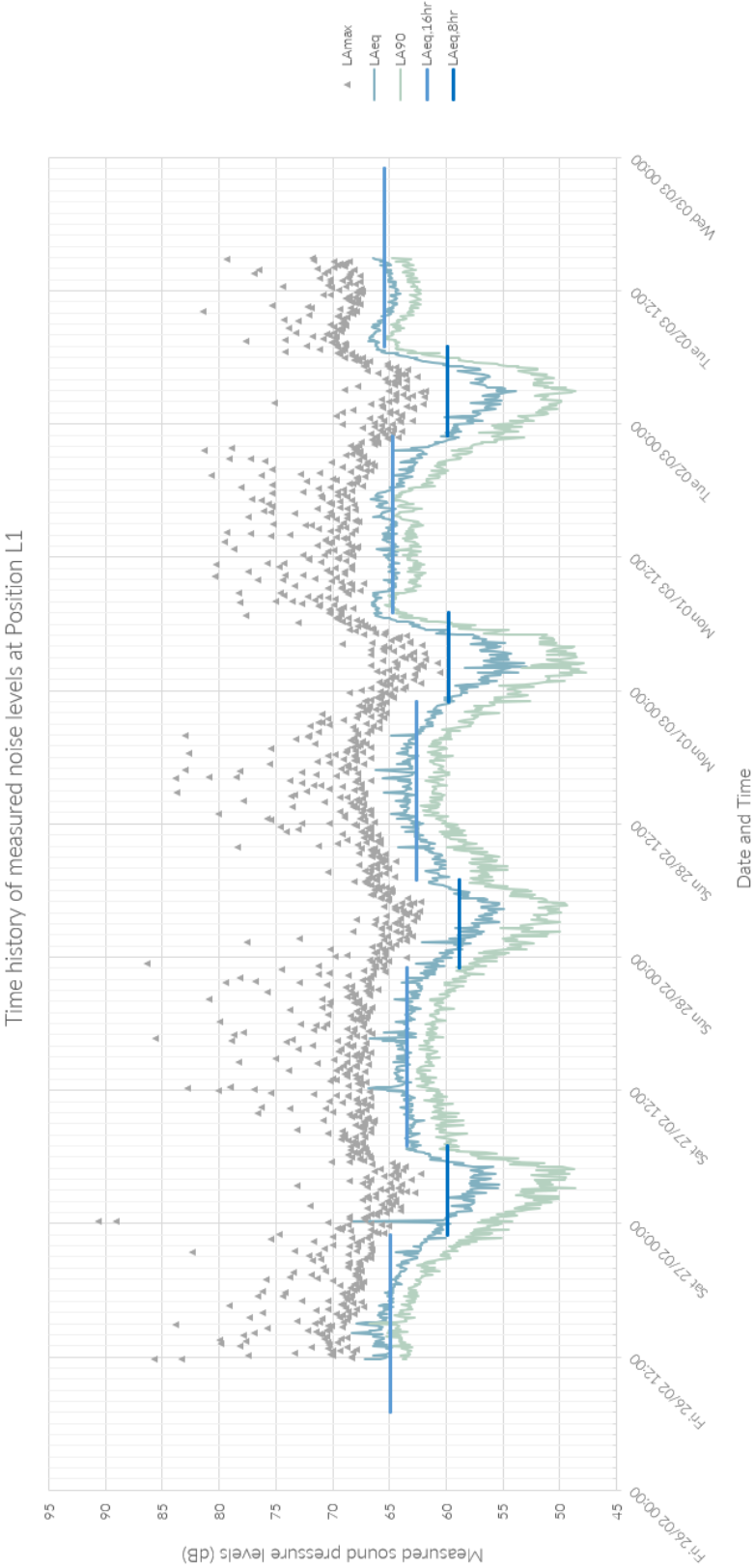
Table B1 Equipment used during environmental noise survey

Item	Description	Serial Number	Calibration Date
Unattended sound level meter	Sound Level Meter type NL-52 Microphone type UC-59 Pre-Amplifier type NH-25	s/n 00297868 s/n 14887 s/n 88079	08/04/2019

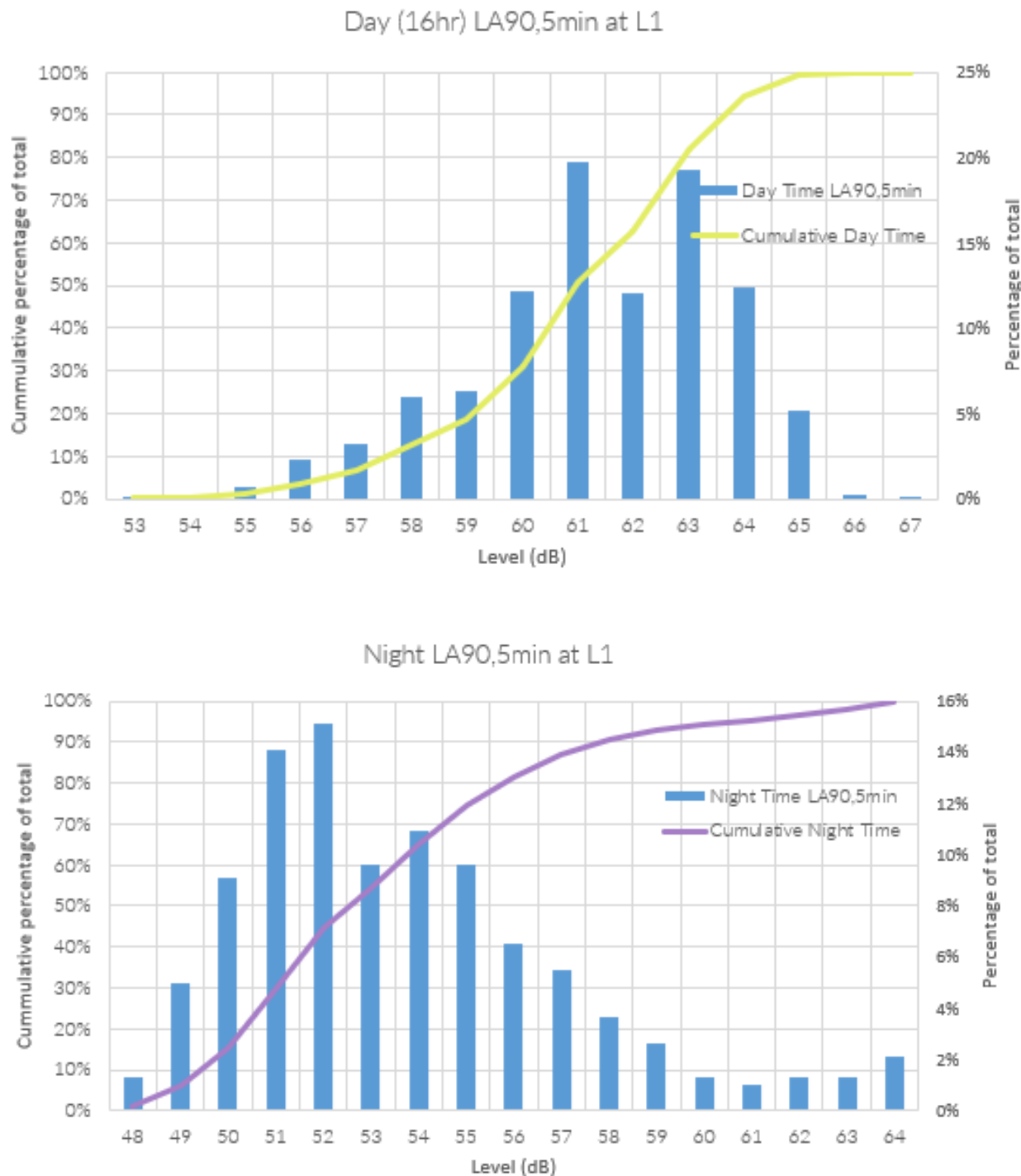
Weather information.

Weather reports for the area indicate that temperatures ranged between 2 °C to 11 °C. Wind speeds and rain were minimal 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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