

16. Noise and Vibration

Appendix 16.1 - Acoustic Glossary

Appendix 16.1

Acoustic Glossary

Noise and the Decibel Scale

Noise is usually defined as unwanted sound. The perception of sound arises from small pressure fluctuations at the eardrum leading to the sense of hearing. Human ears can respond to sound in the frequency range of approximately 20 Hertz (Hz) (low pitch) to 20,000 Hz (high pitch). Whilst the level of sound could be described in terms of different pressures, the range of sensitivity of the human ear is very large and it is easier to use the unit of decibel (dB) to quantify sounds. The human ear can detect sounds in the approximate range of 0 dB (the threshold of perception) to 140 dB (commonly described as the threshold of pain).

The ear does not respond equally to sounds of the same magnitude at different frequencies, but, instead, it is more responsive to mid frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, an electronic weighting mechanism is used when sound is measured. This weighting reduces the importance of lower and higher frequencies, in a similar manner to the human ear. The most commonly used weighting mechanism that best corresponds to the response of the human ear is the 'A'-weighting scale. This is widely used for environmental noise measurement and assessment, and the levels are denoted as dB(A).

Whether sound is perceived as noise depends on a number of factors, which should be considered in any assessment. Generally, the extent of the impact and effect of noise depends upon:

- its level;
- the margin by which the particular source of noise exceeds the prevailing baseline level;
- the character of the source in relation to the character of the baseline noise environment;
- how the sound varies over a given period of time;
- when the sound occurs, i.e. during the day, evening or night; or at weekdays or weekends; and
- the acoustic features of the source (such as its general frequency content, whether it has tonal qualities or whether the source is impulsive in nature).

The decibel scale is logarithmic. This means that if two sources of the same sound pressure level are combined, this doubling of the sound energy gives a resultant level 3 dB higher than the decibel value of the single source.

Subjectively, experiments have shown that in general a 10 dB increase is regarded as a doubling of perceived loudness, and a change in sound level of 3 dB is generally the minimum difference that can be perceived under normal listening conditions.

Sound levels are rarely constant, and a range of indicators are used to describe the varying sounds that occur. A description of the main indicators used in the UK is given below, along with some other technical terms that tend to be used in noise impact assessments.

Common Metrics to Describe Noise (all relating to decibel values)

$L_{Aeq,T}$ The equivalent continuous A-weighted sound or noise level over the time period (T). This is the A-weighted sound pressure level of a continuous, steady sound that, over the given time period (T), contains the same sound energy as the actual fluctuating sound over the same time period.

L_{A90,T}	This is the 'A' weighted noise level exceeded for 90% of the measurement period, T. This is often described the background sound or noise level, and used to quantify the underlying level of sound which is usually governed by continuous or semi-continuous sounds.
L_{A10,T}	This is the 'A' weighted noise level exceeded for just 10 % of the measurement period, T.
L_{A10,18h}	This is the arithmetic average of the hourly (L _{A10,1h}) values for each of the eighteen one-hour periods between 06:00 and 24:00 hours. In the UK, this indicator is normally used to describe road traffic noise.
L_{Amax,T}	This is the maximum 'A' weighted noise level that occurs during the measurement period, T. It is used to show the highest noise level that occurred in that time period from a single event or "one-off" sound. In some situations, the effect of noise is more associated with the maximum value than, for example, the L _{Aeq,T} indicator.

Terms Relating to the Location of Measured or Predicted Noise Levels

Façade Level: The sound level at a position 1 m in front of a reflecting façade of a building. The façade noise level is assumed to be 3 dB(A) higher than the level measured or predicted at the same position but without the influence of the reflecting façade.

Free-field Level: The sound level in an open area well away from any buildings or other sound reflecting surfaces other than the ground. Generally, the minimum distance from building facades required for free-field measurements is 3.5 m.

BS 4142:2014+A1:2019 Terminology

Background Sound Level: The A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval. Expressed as L_{A90,T} and generally considered to be the average minimum noise level.

Ambient Sound Level: Totally encompassing sound in a given situation at any given time, usually composed of sound from many sources near and far. Usually expressed in terms of L_{Aeq,T} and includes the residual and specific sound when present.

Residual Noise Level: The ambient noise remaining at the assessment location when the specific noise source is suppressed to such a degree that it does not contribute to the ambient noise. Expressed in terms of L_{Aeq,T}.

Specific Sound Level: The equivalent continuous A-weighted sound pressure level produced by the specific sound source (being assessed) at the assessment position over a given reference time interval (L_{Aeq,Tr}).

Rating Level: The specific sound level plus any adjustment for the characteristic features of the sound. Expressed in terms of L_{Ar,Tr}.

Noise Policy Statement for England (NPSE) Terminology

No Observed Effect Level (NOEL): This is the level below which no effect can be detected. In simple terms, below this level, the sound has no effect at all (e.g. it is inaudible).

Lowest Observed Adverse Effect Level (LOAEL): This is the level above which adverse effects on health and quality of life can be detected.

Appendix 16.2 - Planning Policy

National Planning Policy

National Planning Policy Framework (NPPF)¹

The National Planning Policy Framework (NPPF), last amended in December 2024, sets out the Government's planning policy for England. At its heart is an intention to promote more sustainable development.

The relevant paragraphs concerning noise in the NPPF are:

Paragraph 187e: "Planning policies and decisions should contribute to and enhance the local and national environment by, preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by unacceptable levels of noise pollution". Furthermore, development should, wherever possible, help to improve local environmental conditions."

Paragraph 198 "Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or wider area to impacts that could arise from the development. In doing so they should:

- A) Mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and quality of life;"

Paragraph 200 "Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed."

The NPPF makes direct reference to the Noise Policy Statement for England for advice on the achievement of these policy aims.

Noise Policy Statement for England 2010²

The Noise Policy Statement for England (NPSE) sets out the government's overall policy on noise management. It aims to promote good health and a good quality of life through the effective management of noise in the context of government policy on sustainable development.

It uses the previously established concepts of No Observed Effect Level (NOEL) and Lowest Observed Adverse Effect Level (LOAEL) and extends these concepts by introducing Significant Observed Adverse Effect Level (SOAEL). This is the level above which significant

¹ Ministry of Housing, Communities and Local Government (2024), National Planning Policy Framework

² DEFRA, 2010, Noise Policy Statement for England

adverse effects on health and quality of life are likely to occur. However, the explanatory note to the NPSE states that it is not possible to identify a single objective value to define SOAEL that is applicable to all sources of noise in all situations. It is likely to be different for different noise sources, for different receptors and at different times.

The NPSE sets out the following long-term vision of noise policy and supporting aims in paragraphs 1.6 and 1.7:

Noise Policy Vision

Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.

Noise Policy Aims

Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

Avoid significant adverse impacts on health and quality of life;

Mitigate and minimise adverse impacts on health and quality of life; and

Where possible, contribute to the improvement of health and quality of life.’

The second aim of the NPSE refers to noise impacts that lie somewhere between LOAEL and SOAEL; while these may be considered as adverse effects, they are not considered as significant.

The NPSE asserts that, while all reasonable steps should be taken to mitigate and minimise adverse effects, this does not mean that such adverse effects cannot occur.

Planning Practice Guidance: Noise³

Further government guidance on the consideration of noise for planning has been published as the Planning Practice Guidance for Noise (PPG:N), last revised in July 2019. The PPG:N supports the NPPF by providing a range of advice. It includes a noise exposure hierarchy table, and again makes reference to the NPSE.

The hierarchy table (replicated in Table 1 below), provides descriptive (i.e. non-numerical) guidance on the potential effects of noise exposure at levels corresponding to the NOEL, LOAEL and SOAEL as described in the NPSE, and confirms that adverse effects (between LOAEL and SOAEL) should be mitigated and reduced to a minimum, and significant adverse effects (above SOAEL) should be avoided, taking account of the economic and social benefit of the activity causing or affected by the noise.

³ Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government (2019), Planning Practice Guidance: Noise. <https://www.gov.uk/guidance/noise--2>

Table 1 PPG:N Noise Exposure Hierarchy Table

Response	Examples of outcomes	Increasing effect level	Action
<i>No Observed Effect Level</i>			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life	No Observed Effect	No specific measures required
<i>No Observed Adverse Effect Level</i>			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
<i>Lowest Observed Adverse Effect Level</i>			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
<i>Significant Observed Adverse Effect Level</i>			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

Local Planning Policy

Manchester Core Strategy (2012)

Manchester City Council's local policies with regard to planning are defined within the Manchester Core Strategy.

In relation to noise, Policy DM 1 of the Core Strategy which deals with development management, states the following:

"All development should have regard to the following specific issues for which more detailed guidance may be given within a supplementary planning document:

Effects on amenity, including privacy, light, noise, vibration, air quality, odours, litter, vermin, birds, road safety and traffic generation. This could also include proposals which would be sensitive to existing environmental conditions, such as noise."

In relation to 'Leisure and the Evening Economy', Policy C 10 states the following:

"New development and redevelopment that supports the evening economy, contributes to the vitality of district centres and supports a balanced and socially inclusive evening/night-time economy will be permitted, subject to the following considerations:

Residential amenity – the proposed use should not create an unacceptable impact on neighbouring uses in terms of noise, traffic and disturbance"

Addendum to Manchester Core Strategy 2024

As the Site Boundary is within 150m of the Depot Mayfield entertainment venue home to the Warehouse Project events, consideration has been made towards the agent of change principle highlighted in Policy JP-P3: Cultural Facilities

We will proactively develop and support cultural businesses and attractions in our cities and towns through a range of measures, where appropriate, including:

8] Supporting a mix of uses which derive mutual benefits from, and do not compromise, the creative industries and cultural facilities in the Creative Improvement District in line with the Agent of Change principle. If development would potentially result in conflict between a cultural activity and another use, especially in terms of noise, then the development responsible for the change must secure the implementation of appropriate mitigation before it is completed.

Appendix 16.3 - Environmental Noise Survey Report (WSP, 2024)

Appendix 16.3

Environmental Noise Assessment Report



Mayfield Medlock Limited

MAYFIELD PHASE 1B- RESIDENTIAL

Environmental noise survey report





Mayfield Medlock Limited

MAYFIELD PHASE 1B- RESIDENTIAL

Environmental noise survey report

ENVIRONMENTAL NOISE SURVEY REPORT (REV 02) PUBLIC

PROJECT NO. 70117910

OUR REF. NO. 70117910-WSP-1B-XX-RP-AC-00001

DATE: DECEMBER 2024

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APPENDICES

APPENDIX A

SUMMARY OF UNATTENDED NOISE MONITORING TO DETERMINE
REPRESENTATIVE BACKGROUND

APPENDIX B

SUMMARY OF EQUIPMENT USED FOR NOISE SURVEYS

APPENDIX C

LIMITATIONS OF THIS REPORT

1 INTRODUCTION

WSP has been appointed to provide acoustic advice in relation to the Phase 1b residential development, Mayfield, Manchester (herein referred to as Phase 1b).

The development consists of the phased redevelopment of Mayfield Phase 1b comprising of site remediation and reprofiling, followed by the erection of two residential blocks (Use Class C3) with 878 no. residential units contained within four buildings. The buildings range from 7 to 24 storeys in height (Plot J) and 7 to 27 storeys in height (Plot K). They include ground and first floor commercial spaces comprising of restaurant and/or retail units (Use Class E(b) and/or E(a)), and/ or indoor sports facilities (Use Class F2), together with highway works, access, servicing, rooftop plant, cycle parking and back of house. In addition it includes the delivery of associated public realm and other associated works for each relevant phase.

This report sets out the results of the environmental noise survey carried out at the site along with guidance on meeting Manchester City Council's internal and external noise criteria. It is to be read in conjunction with the Noise & Vibration Chapter of the EIA for the scheme (prepared by others).

2 SITE DESCRIPTION & PROPOSED DEVELOPMENT

The proposed Phase 1b site boundary is shown outlined in red in Figure 2-1.

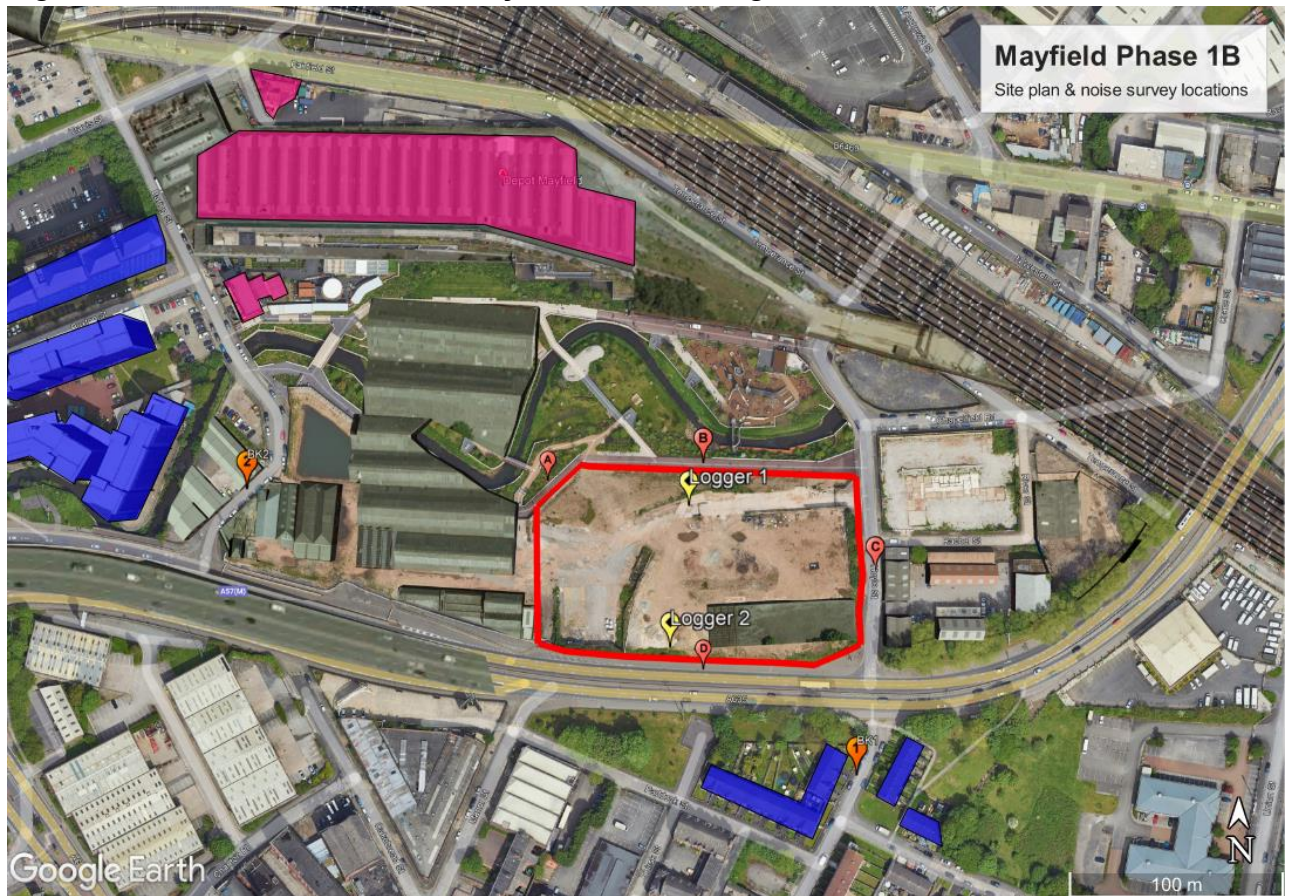
The site is located adjacent to the north of the Mancunian Way, to the south and Mayfield Park, to the west of Hoyle Street and to the east of Mayfield Phase 1a, with Baring Street beyond. In addition, there is an elevated train line leading into Piccadilly to the east and north.

The site is undergoing redevelopment, with a commercial office building (Mayfield Republic) proposed on the adjacent plot.

Freight Island bar and venue is located along the northern boundary of the Mayfield Park. The Star & Garter pub, which is also a live music venue is located behind Freight Island along Fairfield Street. Mayfield Depot, which is located between these two venues is used for a variety of activities including RHS Flower Show and live music events such as The Warehouse Project. These venues are highlighted in pink in Figure 2-1.

The nearest noise sensitive receptors are considered to be the apartments and student accommodation to the west of the site on Baring Street and the houses and apartments on Potter Street and Cotter Street to the south, highlighted in blue in Figure 2-1.

Figure 2-1 – Aerial view of wider Mayfield site showing location of Phase 1b



3 CRITERIA

3.1 MANCHESTER CITY COUNCIL CRITERIA

3.1.1 EXTERNAL PLANT NOISE LIMITS

Manchester City Council's (MCC) *Planning & Noise Technical Guidance (October 2022)* requires that:

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 5 dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location.

It notes that the rating level is to be determined based on the methodology set out in BS 4142:2014.

3.1.2 EMERGENCY PLANT NOISE LIMITS

For emergency plant items, that will only operate outside an emergency for short periods to be tested, a higher noise limit is typically permitted. It is understood that MCC permit a level 10 dB above the existing background sound level (L_{A90}) at the nearest noise sensitive location.

3.1.3 MAXIMUM OPERATIONAL NOISE LIMITS

MCC specifies that:

Entertainment noise ($L_{Aeq,5min}$) should be controlled to 5 dB below the typical background noise level (L_{A90}), in each octave band at the nearest noise sensitive location.

3.1.4 VIBRATION CRITERIA

MCC guidance notes that a vibration assessment is required where railway/tram lines are within 20 m of a proposed development site. Phase 1b is more than 80 m from the elevated train line leading to Piccadilly Station. As such, no vibration assessment is needed

3.1.5 INTERNAL NOISE CRITERIA

Refer to Section 7.1.

3.2 BS4142:2014 METHODS FOR RATING AND ASSESSING INDUSTRIAL AND COMMERCIAL SOUND (+A1:2019)

BS 4142:2014 *Methods for rating and assessing industrial and commercial sound* (+A1:2019, herein referred to as BS4142:2014) provides typical guidance for assessing noise emissions from new items of building services plant against the existing background noise level at the nearest noise sensitive receptors.

It suggests that if the noise rating level is ≥ 10 dB higher than the existing background noise level (L_{A90} dB), it provides a likely indication of a significant adverse impact. If the level is 5 dB above the existing background noise level, it provides a likely indication of an adverse impact. Where the level doesn't exceed the background noise level it is an indication of having a low impact.

It also identifies that where noise contains 'attention catching features' such as bangs, whistles, etc or is intermittent, penalties should be applied in the noise assessment.

4 ENVIRONMENTAL NOISE SURVEYS

4.1 OVERVIEW

An environmental noise survey was carried out between Thursday 15 February 2024 until Monday 26 February 2024, comprising of attended and unattended measurements. The results of these measurements are included in this document.

In addition, a noise survey was carried out previously at the site in 2019. A summary of these noise measurements is also provided.

The existing site and measurement locations are shown on Figure 2-1.

4.2 FEBRUARY 2024 SURVEY

4.2.1 FEBRUARY 2024 UNATTENDED MEASUREMENTS

Unattended noise monitoring equipment was left to continually record noise from 10:15 hrs on Thursday 15 February 2024 until 13:15 hrs on Monday 26 February 2024.

Two sound level meters were installed, one along the Mancunian Way boundary and one along the Mayfield Park Boundary, shown as locations Logger 2 and Logger 1 in Figure 2-1. respectively.

There is currently solid hoarding around the site so the microphones were extended approximately 4 m above ground level to give a clear line of sight to the Mancunian Way and Mayfield Park.

4.2.2 FEBRUARY 2024 ATTENDED MEASUREMENTS

As Freight Island and Star & Garter both hold events with live and amplified music, attended measurements were carried out at times when events were known to be on at each. The attended measurements and events are:

- Wednesday 21 February 21:20 hrs - 00:20 hrs Cultura Tres perform at Star & Garter
- Saturday 24 February 21:20 hrs - 00:20 hrs Mirror Ball, Taylor Swift Disco at Freight Island

Attended measurements were made around the proposed site at positions A-C and Positions 1-2 on Figure 2-1. The microphone was mounted on a tripod approximately 1.5 m above ground level and at least 1 m from any other surface. At positions A and B the microphone was behind the solid screening around the proposed site. Position B was screened from the Mancunian Way and position A was partially screened.

Positions 1 and 2 were chosen as being representative of the nearest existing noise sensitive receptors (residential properties).

During the event at Star & Garter, no amplified music or sound was audible at any location.

During the event at Freight Island, music was audible at positions A and B, though subjectively it did not dominate over road traffic noise.

4.2.3 FEBRUARY 2024 WEATHER CONDITIONS

There was moderate-heavy rainfall on at periods during the unattended measurements and these periods have been omitted from the assessment.

Weather for the remainder of the noise survey was clear. Weather reports for the area during the unattended measurements noted that the temperature ranged from -2° C to 12° C at night, and 2° C to 14° C during the day. Wind speeds were ≤ 5 m/s for the duration of the survey, with occasional gusts of up to 7 m/s.

Weather during the attended night-time measurements was clear and dry, and no rainfall occurred. Temperatures ranged from was 8-10° C with windspeeds ≤ 4 m/s for the duration of the survey on Wednesday 21 February. On Saturday 24 February temperatures ranged from 0-2° C with windspeeds ≤ 3 m/s.

4.2.4 FEBRUARY 2024 MEASUREMENT EQUIPMENT & PERSONNEL

Details of the measurement equipment is provided in Appendix B.

Unattended noise monitoring equipment was installed and collected by Michael Ridley and Luis Vargas Crespo.

Attended measurements were carried out by Luis Vargas Crespo and Zijiang Yang.

4.2.5 FEBRUARY 2024 MEASUREMENT RESULTS

4.2.5.1 February 2024 Unattended noise survey results

A summary of the ambient noise levels during the unattended measurements is provided in Table 4-6 and Table 4-2.

Table 4-1 – Summary of 2024 ambient & maximum noise levels at Logger 1 (Mayfield Park)

Position (see Figure 2-1)	Date	$L_{Aeq,16hrs}$ (dB) Daytime (07:00-23:00)	$L_{Aeq,8hrs}$ (dB) Night-time (23:00-07:00)	L_{AFmax} (dB)** Daytime (07:00-23:00)	Night-time L_{AFmax} (dB)** Night-time (23:00-07:00)
Logger 1	15/02/2024*	64	61	74	71
	16/02/2024	65	62	74	71
	17/02/2024	65	62	74	71
	18/02/2024	64	60	75	70
	19/02/2024	65	61	75	70
	20/02/2024	65	60	74	70
	21/02/2024	65	60	73	69
	22/02/2024	65	62	75	70
	23/02/2024	64	61	74	72
	24/02/2024	64	61	75	72
	25/02/2024	60	58	75	71
	26/02/2024*	63	-	75	-

Table 4-2 – Summary of 2024 ambient & maximum noise levels at Logger 2 (Mancunian Way)

Position (see Figure 2-1)	Date	$L_{Aeq,16hrs}$ (dB) Daytime (07:00-23:00)	$L_{Aeq,8hrs}$ (dB) Night-time (23:00-07:00)	L_{AFmax} (dB)** Daytime (07:00-23:00)	Night-time L_{AFmax} (dB)** Night-time (23:00-07:00)
Logger 2	15/02/2024*	71	68	89	81
	16/02/2024	72	69	88	79
	17/02/2024	72	69	89	79
	18/02/2024	70	66	89	80
	19/02/2024	71	68	89	80
	20/02/2024	72	67	89	78
	21/02/2024	71	66	88	79
	22/02/2024	72	69	89	80
	23/02/2024	72	68	88	81
	24/02/2024	71	68	89	81
	25/02/2024	69	66	89	81
	26/02/2024*	71	-	88	-

*Not over entire 16-hour due to measurement start & finish times

** L_{AFmax} not normally exceeded determined as 90th percentile of $L_{AFmax,15mins}$

The representative background sound levels ($L_{A90,T}$, dB) have been determined based the guidance in MCC's *Planning & Noise Technical Guidance (October 2022)* and are summarised in Table 4-3.

The arithmetic average of each octave band, for each time period over the duration of the survey has been calculated. The minimum of the averages has then been used to determine the representative background sound level. Full details of the measured L_{90s} during each 15 minute period at night and 1 hour period during the day are provided in Appendix A.

Table 4-3 – Summary of 2024 representative background sound level (L_{90} , dB)

Position	Period	Representative background noise level ($L_{90,T}$ dB) at each octave band centre frequency (Hz)								Overall A-weighted level (dB)
		63	125	250	500	1k	2k	4k	8k	
Logger 1 (Mayfield Park)	Daytime 07:00-23:00	54	50	52	52	57	51	37	25	59 ($L_{A90,1hr}$)
	Night-time 23:00-07:00	54	52	49	50	42	31	22	11	50 ($L_{A90,15mins}$)
Logger 2 (Mancunian Way)	Daytime 07:00-23:00	56	52	55	56	62	57	45	37	64 ($L_{A90,1hr}$)
	Night-time 23:00-07:00	47	43	44	43	47	42	32	24	51 ($L_{A90,15mins}$)

4.2.5.2 February 2024 Attended noise survey results

A summary of the sound pressure levels measured during the attended surveys at positions A-D and positions 1-2 in Figure 2-1 is provided in Table 4-4.

Table 4-4 – 2024 Summary of attended measurements at positions A-D and positions 1-2

Position	Date	Start time	$L_{Aeq,15 mins}$ (dB)	$L_{AFmax,15 mins}$ (dB)	$L_{A90,15 mins}$ (dB)	Comments
A	21/02/2024	21:20	62	69	58	Dominant noise source is traffic along Mancunian Way. No music is audible from Star & Garter. Other noise sources include trains moving into Piccadilly Station & occasional emergency vehicle sirens.
	21/02/2024	22:50	59	67	56	
	24/02/2024	21:26	59	65	57	Dominant noise source is traffic along Mancunian Way, though music from Freight Island is audible when there is a lull in traffic passing. Some bass sounds can be heard, as well as female vocals.
	24/02/2024	22:47	58	65	56	
B	21/02/2024	21:40	60	64	59	As position A, though traffic noise is less audible than position A.
	21/02/2024	23:08	59	70	57	
	24/02/2024	21:43	59	63	58	As position A, though music noise is less audible than position A.
	24/02/2024	23:05	58	62	57	

Position	Date	Start time	$L_{Aeq,15\text{ mins}}$ (dB)	$L_{AFmax,15\text{ mins}}$ (dB)	$L_{A90,15\text{ mins}}$ (dB)	Comments
C	21/02/2024	22:05	64	79	58	Dominant noise source is traffic on Mancunian Way. Other noise sources are cars on Hoyle Street & occasional emergency vehicle sirens. No music noise.
	21/02/2024	23:30	61	77	55	
	24/02/2024	22:05	67	86	59	
	24/02/2024	23:27	64	79	56	
D	21/02/2024	22:25	78	92	68	Dominant noise source is traffic on Mancunian Way. Trains are audible when the traffic lulls.
	21/02/2024	23:50	76	94	60	
	24/02/2024	22:24	80	92	72	
	24/02/2024	23:45	79	92	69	
1	21/02/2024	00:44	52	68	46	Quiet residential street. Main noise sources are, house alarm beeping, occasional traffic along residential streets and distant traffic along Mancunian Way.
	24/02/2024	00:44	57	70	51	
2	21/02/2024	00:18	61	72	54	Main noise source was traffic along Mancunian Way. No music audible, event may have finished.
	24/02/2024	00:19	62	69	58	Main noise source was traffic along Mancunian Way and filling of glass bin at Freight Island. No music audible, event may have finished.

4.3 SEPTEMBER 2024 ATTENDED MEASUREMENTS

There were no events involving amplified music at Mayfield Depot during the February 2024 noise survey. During September 2024 the Warehouse Project held a number of music events at the venue so additional noise measurements were carried out at the Mayfield Phase 1B site.

Measurements were made at Positions A and B in Figure 2-1, facing Mayfield Depot, on Saturday 28 September 2024 between 01:30 hrs and 03:30 hrs during the DJ Hannah Laing Warehouse Project event. A summary of the measurements is provided in Table 4-3Table 4-5. Subjectively, amplified music was audible at the Mayfield Phase 1B site during the Warehouse Project event. There was very little variation in sound pressure level during the measurements.

The $L_{A90,5mins}$ levels ranged between 47-52 dB and the L_{AFmax} levels ranged between 60-65 dB which are consistent with previous measurements at positions A and B.

The average L_{eq} at 63 Hz and 125 Hz at Position A were 75 dB and 58 dB respectively. At position B the average L_{eq} at 63 Hz and 125 Hz were 77 dB and 62 dB respectively.

Table 4-5 – Summary of measured levels at Phase 1B during Warehouse Project Event

Position	Time	Measured ambient noise level ($L_{eq,T}$ dB) at each octave band centre frequency (Hz)								Overall A-weighted level (dB)
		63	125	250	500	1k	2k	4k	8k	
A	01:52-01:57	77	60	46	46	49	42	29	24	54 dB ($L_{Aeq,5mins}$)
	03:00-03:05	77	60	48	47	49	42	26	17	54 dB ($L_{Aeq,5mins}$)
	03:05-03:10	77	58	47	47	47	39	24	15	54 dB ($L_{Aeq,5mins}$)
	03:10-03:15	73	58	47	47	50	43	26	17	54 dB ($L_{Aeq,5mins}$)
	03:15-03:20	73	58	47	47	50	43	26	17	53 dB ($L_{Aeq,5mins}$)
	03:20-03:25	74	59	48	48	50	43	27	17	54 dB ($L_{Aeq,5mins}$)
	03:25-03:30	73	56	48	47	50	43	27	19	53 dB ($L_{Aeq,5mins}$)
B	01:08-01:13	77	61	48	49	53	47	39	31	57 dB ($L_{Aeq,5mins}$)
	01:38-01:43	77	63	46	47	49	44	38	32	55 dB ($L_{Aeq,5mins}$)
	02:28-02:33	77	62	48	47	49	44	38	31	55 dB ($L_{Aeq,5mins}$)
	02:33-02:38	79	63	46	46	49	45	38	31	56 dB ($L_{Aeq,5mins}$)
	02:38-02:43	77	63	49	48	50	46	40	32	56 dB ($L_{Aeq,5mins}$)
	02:43-02:48	77	61	46	46	49	45	39	32	55 dB ($L_{Aeq,5mins}$)
	02:48-02:53	76	60	46	47	49	46	40	32	55 dB ($L_{Aeq,5mins}$)
	02:53-02:58	79	62	46	48	49	46	40	33	56 dB ($L_{Aeq,5mins}$)

4.3.1 SEPTEMBER 2024 WEATHER CONDITIONS

Weather for the noise survey was clear with no rainfall. Weather reports for the area during the unattended measurements noted that the temperature ranged from 2°C to 4°C. Wind speeds were ≤ 3 m/s for the duration of the survey.

4.3.2 SEPTEMBER 2024 MEASUREMENT EQUIPMENT & PERSONNEL

Details of the measurement equipment is provided in Appendix B. Measurements were carried out by Luis Vargas Crespo and Zijiang Yang.

4.4 2019 NOISE SURVEY

4.4.1 2019 UNATTENDED MEASUREMENTS

Unattended noise monitoring equipment was left to continually record noise from 10:00 hrs on Friday 16 August 2019 until 11:55 hrs on Tuesday 20 August 2019.

Two meters were installed on opposite sides of the building in first floor meeting rooms of The Gatehouse (temporary office/site accommodation). The microphones of both extended approximately 1 m from the façade and were approximately 10 m above ground level. These are shown as locations L1 and L2 on Figure 4-1.

Position L1 was to the north-east of the site, screened from Baring Street but with a line of sight to the elevated train line leading into Piccadilly and Mancunian Way.

Position L1 also overlooks the outdoor food market, GRUB. The results of the noise monitoring at Position 1 show that the $L_{A90,1hr}$ during these periods is 3-13 dB higher than the $L_{A90,1hr}$ recorded in the daytime before GRUB opens.

On Saturday 17 August, a stage for Manchester Pride was erected along the eastern boundary of the Mayfield site and measurements at Position L1 may have also been affected by this.

Position L2 was facing Baring Street, opposite the Unite Student Accommodation building. It was completely screened from GRUB and the location where the Manchester Pride Stage was erected. The results of the measurements at L2 were reasonably consistent throughout the duration survey and are considered representative of the existing background levels at the student accommodation building opposite.

Figure 4-1 - Site plan showing 2019 noise survey measurement locations



4.4.2 2019 ATTENDED MEASUREMENTS

Attended measurements were taken at strategic locations around the site, shown as positions P1-P5 on Saturday 17 August 2019, Sunday 18 August 2019 and Tuesday 20 August 2019.

Night-time measurements were carried out at positions P1-P5 between 23:50 hrs on Saturday 17 August and 01:50 hrs on Sunday 18 August.

Day-time measurements were carried out at Positions P1-P3 between 11:12 hrs and 13:10 hrs on Tuesday 20 August 2019.

4.4.3 WEATHER CONDITIONS

There was heavy rainfall on Friday daytime and night and so the results from the unattended measurements for the 16 August 2019 have been omitted from the assessment.

Weather for the remainder of the noise survey was clear, with only intermittent rainfall on Monday 19 August 2019.

Weather reports for the area during the unattended measurements noted that the temperature ranged from 10°C to 16°C at night, and 13°C to 22°C during the day. Wind speeds were ≤ 3 m/s for the duration of the survey, with occasional gusts of up to 5 m/s.

Weather during the attended night-time measurements on Saturday 17 August through to Sunday 18 August 2019 was clear and dry. Temperature was 14°C and windspeeds were ≤ 2 m/s for the duration of the survey, with occasional gusts of up to 3 m/s. No rainfall occurred.

Weather during the attended daytime measurements on Tuesday 20 August 2019 was clear and dry. Temperature was 16°C and windspeeds were <2 m/s for the duration of the survey, with occasional gusts of up to 3 m/s. No rainfall occurred.

Other than the periods where rain occurred, which have been excluded from the assessment, the weather was considered suitable for obtaining representative noise data.

4.4.4 2019 MEASUREMENT EQUIPMENT & PERSONNEL

Details of the measurement equipment is provided in Appendix B.

Unattended noise monitoring equipment was installed and collected by Ed Taylor.

Attended measurements were carried out by Ed Taylor and Aisha Ben Kahla on Saturday 17 and Sunday 18 August 2019, and by Ed Taylor on Tuesday 20 August 2019.

4.4.5 2019 MEASUREMENT RESULTS

A summary of the measurement results is provided below.

4.4.5.1 2019 Unattended measurements

A summary of the ambient noise levels during the unattended measurements is provided in Table 4-6.

Table 4-6 – Summary of 2019 ambient & maximum noise levels at positions L1 & L2

Position	Date	L_{Aeq,16hrs} (dB) Daytime (07:00-23:00)	L_{Aeq,8hrs} (dB) Night-time (23:00-07:00)	L_{AFmax} (dB)** Daytime (07:00-23:00)	Night-time L_{AFmax} (dB)** Night-time (23:00-07:00)
L1	17/8/19	67	54	83	65
	18/8/19	61	54	82	69
	19/8/19	63	53	84	64
	20/8/19*	65	-	83	-
L2	17/8/19	62	59	82	71
	18/8/19	58	59	83	73
	19/8/19	60	58	78	71
	20/8/19*	67	-	83	-

*Not over entire 16-hour due to measurement start & finish times

**L_{AFmax} not normally exceeded determined as 90th percentile of L_{AFmax,5mins}

The representative background sound levels ($L_{A90,T}$, dB) have been determined based the guidance in MCC's *Planning & Noise Technical Guidance (December 2015)* and are summarised in Table 4-7.

The arithmetic average of each octave band, for each time period over the duration of the survey has been calculated. The minimum of the averages has then been used to determine the representative background sound level. Full details of the measured L90s during each 15 minute period at night and 1 hour period during the day are provided in Appendix A.

Table 4-7 – Summary of 2019 representative background sound level (L_{90} , dB)

Position	Period	Representative background noise level ($L_{90,T}$ dB) at each octave band centre frequency (Hz)								Overall A-weighted level (dB)
		63	125	250	500	1k	2k	4k	8k	
L1	Daytime 07:00-23:00	53	46	46	46	49	42	32	22	51 ($L_{A90,1hr}$)
	Night-time 23:00-07:00	48	42	41	41	42	37	28	19	45 ($L_{A90,15mins}$)
L2	Daytime 07:00-23:00	56	53	52	52	54	47	37	26	56 ($L_{A90,1hr}$)
	Night-time 23:00-07:00	51	50	48	46	47	41	30	19	50 ($L_{A90,15mins}$)

4.4.5.2 2019 Attended measurements

A summary of the sound pressure levels measured during the attended surveys at Positions P1-P5 is provided in Table 4-8

Table 4-8 – 2019 Sound pressure levels from attended measurements at Positions P1-P5

Position (see Fig 4-1)	Date	Start time	$L_{Aeq,5 mins}$ (dB)	$L_{AFmax,5 mins}$ (dB)	$L_{A90,5 mins}$ (dB)	Comments
P5	17/8/19	23:52	57	65	54	Dominant noise source is traffic along Mancunian Way. Two sirens audible. Occasional rattle from light weight fencing. No music audible from Star & Garter.
		23:57	60	77	56	
	18/8/19	00:02	58	66	55	
P4	18/8/19	00:16	64	75	55	No music audible from Star & Garter. Busy outside the pub with people talking. Trains are audible pulling in and out of Piccadilly. Traffic along Fairfield Street is fairly busy but not constant.
		00:21	64	76	56	
		00:26	65	88	54	

Position (see Fig 4-1)	Date	Start time	$L_{Aeq,5\text{ mins}}$ (dB)	$L_{AFmax,5\text{ mins}}$ (dB)	$L_{A90,5\text{ mins}}$ (dB)	Comments
P2	18/8/19	00:44	71	80	56	Constant traffic along Mancunian Way is dominant noise source throughout.
		00:49	72	84	59	
	18/8/19	00:54	73	85	58	
P3	18/8/19	01:06	73	84	62	As position P2
		01:11	74	85	64	
		01:16	74	85	62	
P1	18/8/19	01:23	72	85	60	As position P2, traffic along Mancunian Way dominates. Train movements into and out of Piccadilly are just audible.
		01:26	73	86	53	
		01:33	72	88	55	
P2	20/8/19	11:12	76	83	71	Constant traffic along Mancunian Way. From 11:16-11:27 noise from demolition activities taking place to the north of the site. Traffic noise still dominates.
		11:17	76	82	71	
		11:22	76	82	71	
P3	20/8/19	12:12	77	94	70	As P2. Siren along Mancunian Way at 12:16 and 12:20. A train was visible at 12:20 but not audible.
		12:17	78	92	70	
		12:22	76	86	71	
P1	20/8/19	12:39	77	86	70	Constant traffic along Mancunian Way dominates throughout. At 13:00 there is lull in traffic and a train passby is audible.
		12:44	76	87	69	
		12:49	76	87	68	
	20/8/19	12:54	76	87	69	
		12:59	76	85	68	

Position (see Fig 4-1)	Date	Start time	$L_{Aeq,5 \text{ mins}}$ (dB)	$L_{AFmax,5 \text{ mins}}$ (dB)	$L_{A90,5 \text{ mins}}$ (dB)	Comments
		13:04	76	87	68	

4.5 COMPARISON OF 2019 AND 2024 SURVEY RESULTS

Though measurements were not made in the same locations during the 2019 and 2024 surveys, the results of the 2024 survey indicate that external noise levels around the site are reasonably consistent. The locations of the unattended measurements are closer to the Mancunian Way and so measured levels are higher than the 2019 unattended measurements. However, they are similar to the 2019 attended measurements made at locations close to the Mancunian Way.

5 EXTERNAL PLANT

5.1 PLANT NOISE LIMITS

As noted previously, MCC requires that:

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 5 dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location.

It notes that the rating level is to be determined based on the methodology set out in BS 4142:2014, taking account of any penalties due to tonality, intermittency etc.

Based on the representative background noise level in Table 4-3, the resultant rating level from building services plant associated with the development should not exceed the limits in Table 5-1 at the nearest noise sensitive receptors.

The nearest noise sensitive receptors are considered to be the apartments to the west of the site on Baring Street, and the houses to the south-east of the site on Cotter Street. The representative background sound levels from Logger 1 have been used to determine the rating level at both locations. The properties closest to the site on Cotter Street, face Mancunian Way, the main noise source in the area. They are located closer to the Mancunian Way than the position of Logger L1, and so this is considered a reasonable approach.

The night-time rating level is the same as that determined from the 2019 survey. The daytime rating level is 3 dB higher than that determined from the 2019 survey.

These limits are cumulative and include contributions from any tenant plant associated with the commercial units. Limits for individual tenancies shall be determined as the design progresses.

Once details of the plant selections and locations are known, an assessment of the resultant rating level at the nearest noise sensitive receptor will be carried out. If required, attenuation measures will be provided to meet the limits in Table 5-1.

Table 5-1 - Maximum noise rating level $L_{A,Tr}$ (dB) from external plant, 1m from receptor

Period	Maximum rating noise level from external plant, 1 m from nearest noise sensitive receptors $L_{A,Tr}$ (dB)
Daytime (07:00-23:00)	54
Night-time (23:00-07:00)	45

5.2 EMERGENCY PLANT

Subject to approval by MCC, noise from emergency plant should be limited to no more than 15 dB higher than the criteria in Table 5-1, 1m from the nearest noise sensitive receptors. This equates to a level 10 dB above the existing representative background sound level.

To minimise the risk of disturbance, it is recommended that the testing of emergency plant only occurs during normal working hours, Monday-Friday (09:00-17:00). There shall be no testing of emergency plant on Sundays or public holidays.

6 OPERATIONAL NOISE (ENTERTAINMENT NOISE)

6.1 EXTERNAL LIMITS

As noted previously, MCC requires that:

Entertainment noise (L_{Aeq}) should be controlled to 5 dB below the background noise level (L_{A90}) without the entertainment noise present, in each octave band at the nearest noise sensitive location.

This criterion applies to any operational noise (e.g. background music) associated with the development, for example, background music or amplified sound in the proposed commercial units at lower levels.

Based on the representative background noise levels in Table 4-3 for Logger 1, operational noise associated with the development should not exceed the levels in Table 6-1, 1m from the nearest noise sensitive receptors.

Table 6-1 – Maximum operational noise limits 1 m from the nearest noise sensitive receptors

	Maximum operation noise level (L_{eq} dB) at nearest noise sensitive receptor at each octave band centre frequency (Hz)							
Period	63	125	250	500	1k	2k	4k	8k
Daytime 07:00-23:00	49	45	47	47	52	46	32	20
Night-time 23:00-07:00	49	47	44	45	37	26	17	6

Maximum internal operational noise limits for individual commercial tenancies shall be determined based on the façade sound insulation performance such that noise egress from the development does not exceed these criteria.

6.2 INTERNAL LIMITS

Refer to Section 8, maximum internal operational noise limits for individual commercial tenancies shall also consider internal sound transfer to residential apartments within the Phase 1B development.

7 BUILDING ENVELOPE

7.1 INTERNAL NOISE CRITERIA

7.1.1 GENERAL CRITERIA

MCC's *Planning and Noise Technical Guidance document (October 2022)* specifies the criteria in Table 7-1 with regards to internal noise in residential developments during background ventilation.

These levels are understood to be the maximum internal noise levels, taking account of both contributions from external noise ingress and noise from any building services providing background ventilation.

Table 7-1 - MCC internal noise criteria for residential developments

Internal space	Internal noise limit	
	Daytime (07:00-23:00)	Night-time (23:00-07:00)
Living rooms	L_{Aeq} 35 dB	-
Bedrooms	-	L_{Aeq} 30 dB & L_{Amax} 45 dB*

* MCC state that individual noise events in bedrooms should not normally exceed L_{Amax} 45 dB more than 10 times per night.

7.1.2 ENTERTAINMENT NOISE

Where entertainment noise is a factor in the noise climate, MCC states the following:

'Music noise levels in the 63Hz and 125Hz octave centre frequency bands should be controlled so as not to exceed (in habitable rooms) 47dB and 41dB (L_{eq}), respectively.'

These criteria apply to both music noise from any non-residential units proposed as part of the development (e.g. bars) and from any existing entertainment venues in the surrounding area.

From experience on other projects with MCC, it is understood that the low frequency criteria only apply to bedrooms at night-time (23:00-07:00) and relate to external noise ingress only (i.e. exclude building services noise).

These criteria are relevant to the Mayfield Development due to the proximity of Mayfield Depot, Freight Island and Star & Garter.

The addendum to the Manchester Core Strategy 2024 references Policy JP-P3 of the Places for Everyone Joint Development Plan (2022-2039), which has been considered in this assessment. The relevant clause from this is included below.

Policy JP-P3: Cultural Facilities

We will proactively develop and support cultural businesses and attractions in our cities and towns through a range of measures, where appropriate, including:

8] Supporting a mix of uses which derive mutual benefits from, and do not compromise, the creative industries and cultural facilities in the Creative Improvement District in line with the Agent of Change principle. If development would potentially result in conflict between a cultural activity and another use, especially in terms of noise, then the development responsible for the change must secure the implementation of appropriate mitigation before it is completed.

7.1.3 PURGE VENTILATION

The internal noise criteria in Table 7-1 do not apply during purge ventilation (i.e. when windows are open to get rid of cooking /paint smells, etc).

7.1.4 OVERHEATING

MCC's guidance does not set specific guidance for internal levels during a scenario to address over-heating. However, it does reference both Approved Document O (AD-O) and AVO Guide (Acoustics, Ventilation and Over-heating Guide).

7.1.4.1 Approved Document O – Overheating

Approved Document O (AD-O) aims to protect the health and welfare of residents from high indoor temperatures. In order to ensure that any mitigation to avoid overheating is usable, AD-O instructs the overheating designer that;

“Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits:

40dB $L_{Aeq,T}$, averaged over 8 hours (between 11pm and 7am).

55dB L_{AFmax} , more than 10 times a night (between 11pm and 7am).“

In doing so, AD-O essentially sets these indoor sound levels as the maximum permissible sound levels for noise ingress when the overheating mitigation solution is in use. For example, if the design relies on windows to be open by a certain amount in order to avoid overheating, the above noise limits would apply with the windows open by that same amount.

7.1.4.2 IOA/ANC Guide to AD-O

Guidance produced by the IOA and ANC indicates that a reduction from external to internal levels of up to 4 dB can typically be expected for 'high' risk locations (i.e. sites in central London and central Manchester postcodes M1, M2, M3, M5, M15, M16 and M50) (9 dB is noted for 'medium' risk locations), leading to the following threshold levels above which the simplified AD-O assessment method cannot be used.

Table 7-2 - Typical threshold levels for simplified and dynamic thermal modelling for AD-O

Parameter	Outside sound level
$L_{Aeq,T}$, averaged over 8 hours (between 11pm and 7am)	44 dB
L_{AFmax} , more than 10 times a night (between 11pm and 7am)	59 dB

7.1.5 ACOUSTICS VENTILATION AND OVER-HEATING GUIDE (AVOG, JANUARY 2020)

AVOG provides a means of considering acoustics, ventilation and over-heating. It provides 2 levels of assessment to help understand the risk of disturbance to occupants if windows are opened to address overheating.

Table 3-2 of AVOG suggests that where the external free-field level at night is $<L_{Aeq} 50$ dB at night, the use of opening windows as a way to mitigate overheating is “*not likely to result in adverse effect*”.

7.2 EXTERNAL NOISE LEVELS

7.2.1 3D COMPUTER MODELLING

To determine the external noise levels at the different facades of the development a 3D computer model has been constructed using CadnA acoustic modelling software. This allows for the effects of distance and screening to be considered

The data from the 2024 environmental noise survey has been used to calculate the external noise levels across the façade. Data for the frequency of trains into and out of Piccadilly Station has also been inputted into the model, so that noise levels at upper levels overlooking the train line are representative. This data has been obtained from ontimetrains.co.uk/departures-arrivals and realtime trains.co.uk and includes both passenger and freight trains.

Images from the 3D model are provided in Figure 7-1 to Figure 7-4.

Figure 7-1 - Screenshot showing calculated external noise levels, Mancunian Way, daytime

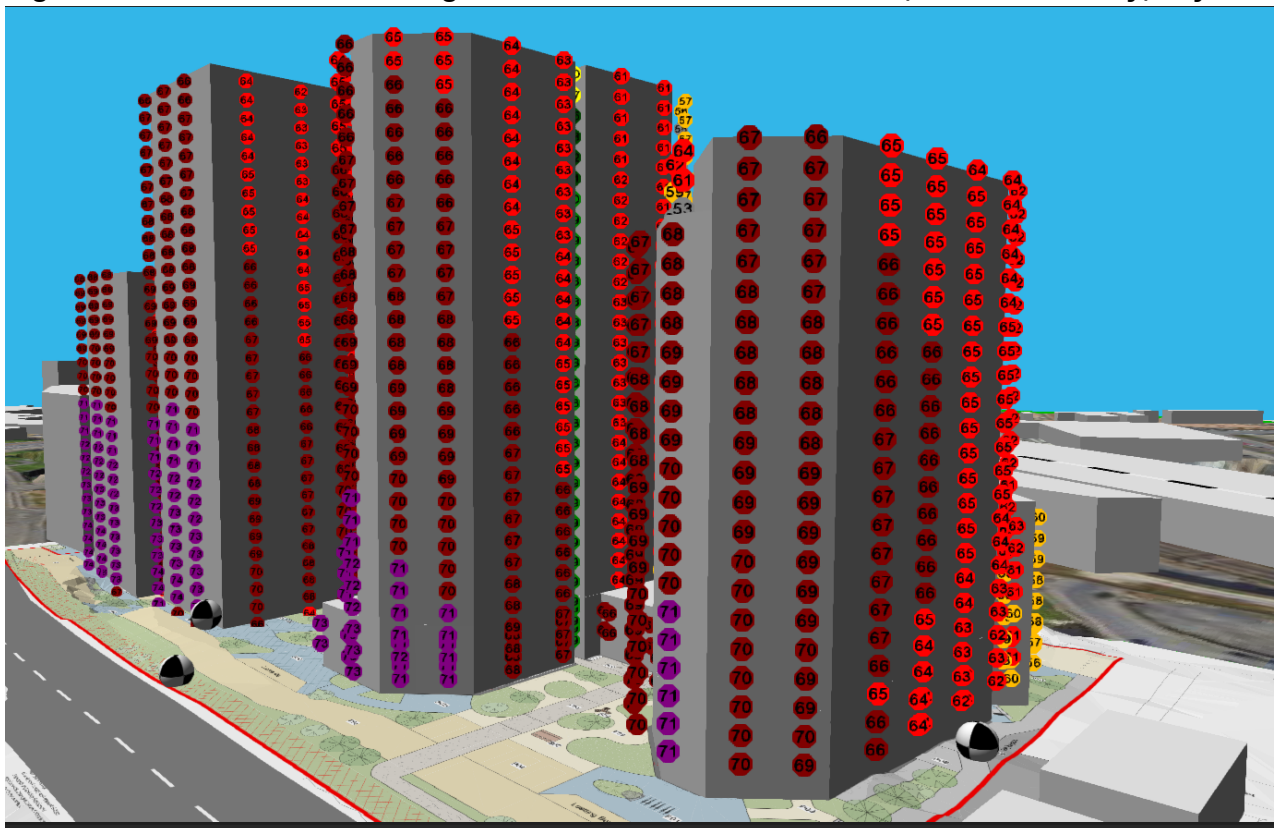


Figure 7-2 - Screenshot showing calculated external noise levels, Mancunian Way, night-time

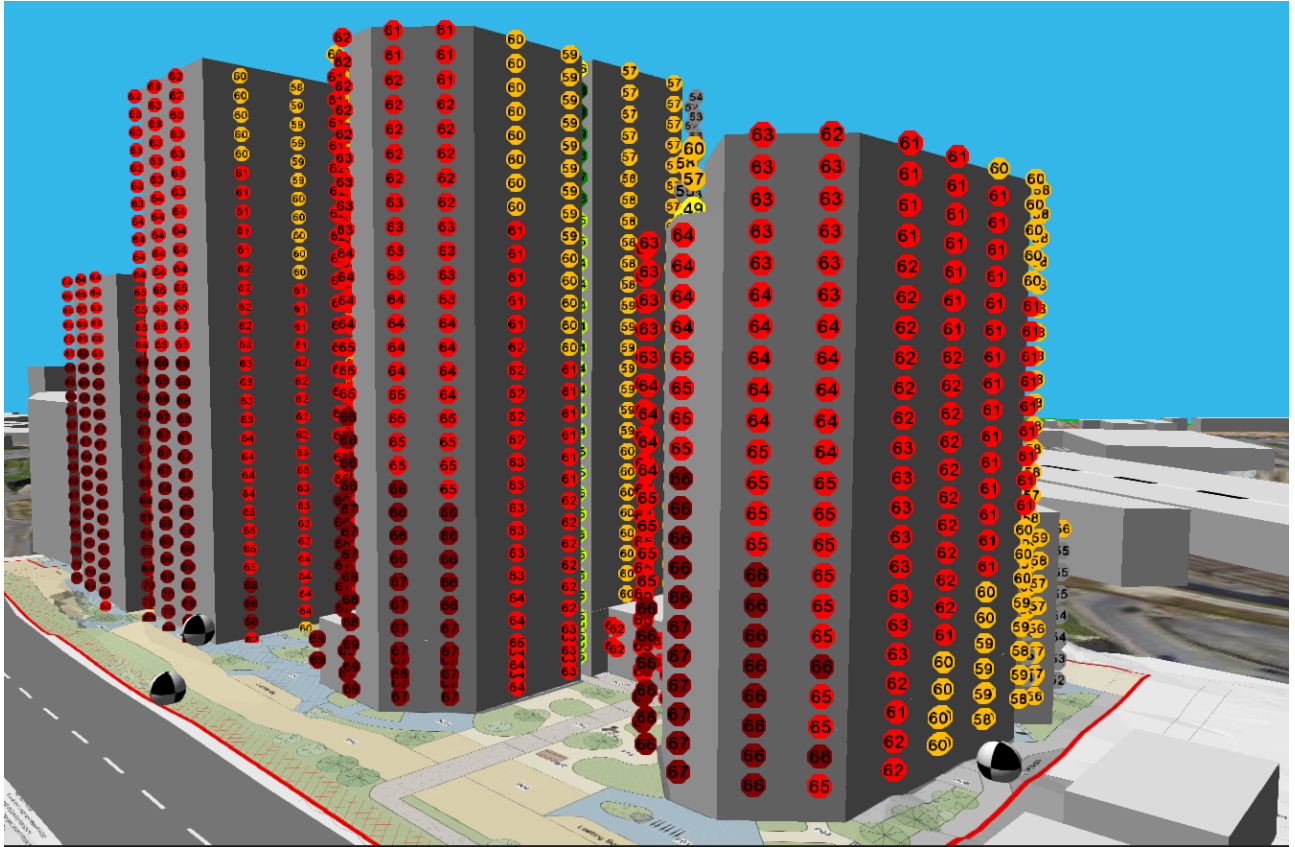
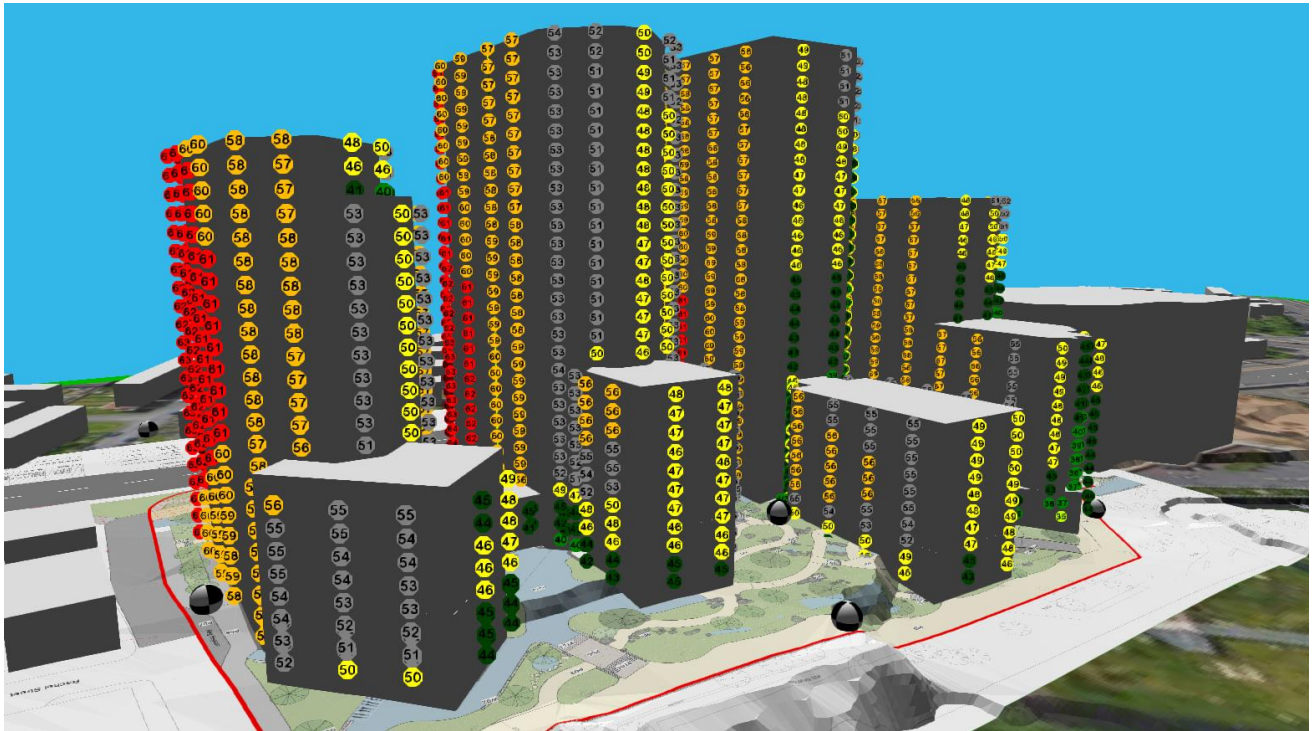


Figure 7-3 - Screenshot showing calculated external noise levels, Mayfield Park, daytime



Figure 7-4 - Screenshot showing calculated external noise levels, Mayfield Park, night-time



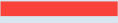
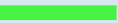
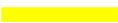
7.2.2 CALCULATED EXTERNAL NOISE LEVELS

The calculated external noise levels at the proposed facades of the development are provided in Table 7-3, based on the façade mark-up provided in Figure 7-5.

Though there is some variation in noise level across the facades, the highest noise level is given to avoid multiple façade sound insulation performances on each façade.

The L_{AFmax} not normally exceeded is considered to be 82 dB on façade zones A and B, and 72 dB on façade zones C and D.

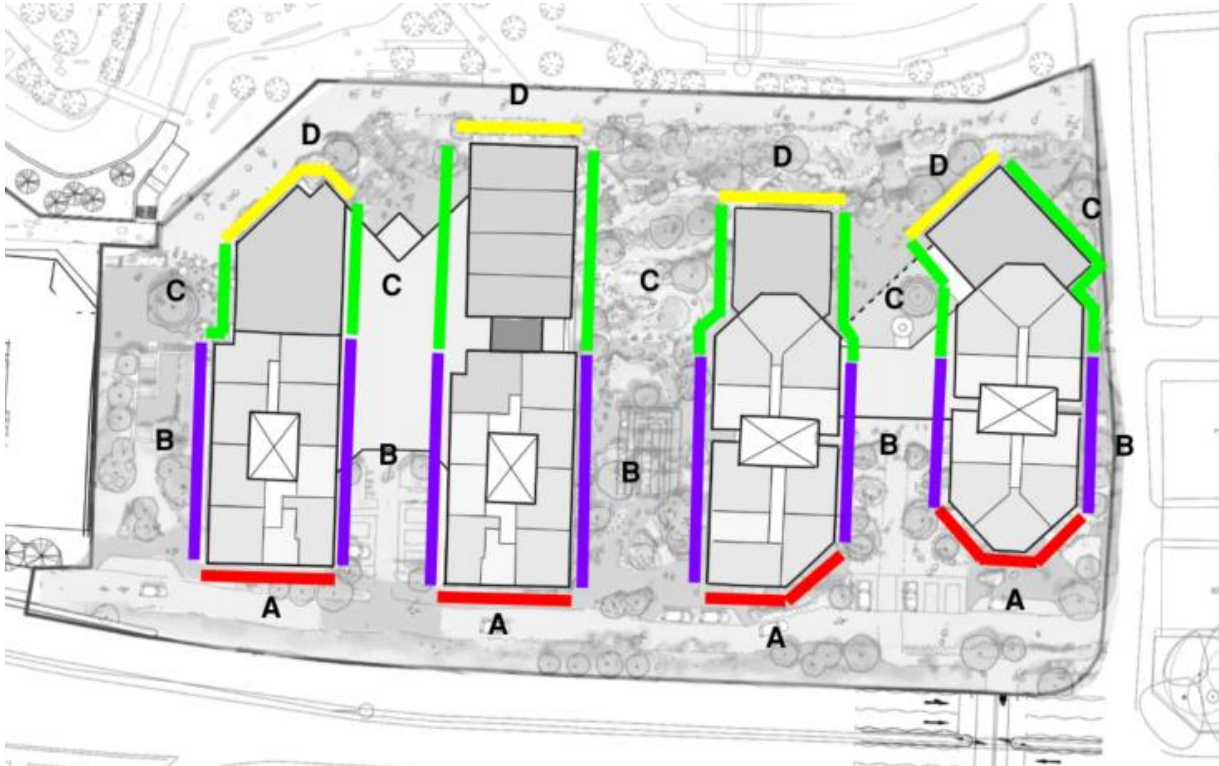
Table 7-3 – Summary of calculated external noise levels at proposed development

Façade zone (refer to Figure 7-5)	Calculated daytime free-field level ($L_{Aeq, 16 \text{ hrs}}$ dB)	Calculated night-time free-field level ($L_{Aeq, 8 \text{ hrs}}$ dB)	Low frequency L_{eq} from amplified music
Zone A- Red 	73	70	N/A
Zone B- Purple 	69	65	N/A
Zone C- Green 	65	60	$L_{eq, 63 \text{ Hz}}$ 75 dB* $L_{eq, 125 \text{ Hz}}$ 58 dB*
Zone D- Yellow 	55	50	$L_{eq, 63 \text{ Hz}}$ 77 dB** $L_{eq, 125 \text{ Hz}}$ 62 dB**

*Determined from measurements at Position A during Warehouse Project event.

**Determined from measurements at Position B during Warehouse Project event.

Figure 7-5 - Mark-up showing façade zones



7.3 INITIAL ASSESSMENT OF EXTERNAL NOISE INGRESS

7.3.1 VENTILATION AND OVERHEATING STRATEGY

It is understood that all apartments are to be mechanically ventilated using individual MVHR units so, for the purposes of external noise ingress, all windows are considered to be closed. The assessment of internal noise level assumes equal contributions from external noise ingress and noise from background ventilation systems.

To help control overheating, peak lopping units, which provide a cooling coil, are proposed to each MVHR. The MVHR units will also operate in boost mode/ higher speed when cooling is needed. Noise from cooling units shall be attenuated in line with the AD-O criteria outlined in Section 7.1.4.1 ($\approx$ NR 35).

7.3.2 GLAZING SOUND INSULATION PERFORMANCE

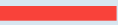
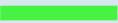
The building envelope shall be specified so that it is capable of controlling external noise ingress in line with MCC's criteria. An initial assessment of the minimum sound insulation performance for glazed and non-glazed elements of the external envelope has been carried out.

The minimum sound insulation performance for glazed elements is provided in Table 7-4. This is on the basis of the following:

- The term 'glazing' refers to the complete assembly including the glass, frame, seals and any associated hardware.
- Non-glazed external wall build-ups have a minimum sound insulation performance of $R_w + C_{tr}$ 50 dB. This performance is achievable with an outer cladding element and internal masonry/ plasterboard lining.

- The area of 'glazing' on the façade equates to no more than 30 % of the total façade area.
- For façade zone C and D, where the performance is influenced by 'entertainment noise' the non-glazed external wall build-ups will need to provide a sound insulation performance of $R_{63\text{Hz}}$ 36 dB and $R_{63\text{Hz}}$ 38 dB respectively.
- Equal contributions from noise from building services providing background ventilation ($\approx$ NR27 in living rooms & $\approx$ NR22 in bedrooms)

Table 7-4 – Summary of calculated external noise levels at proposed development

Façade zone (refer to Figure 7-5)	Minimum glazing sound insulation performance ($R_w + C_{tr}$ dB)	Minimum low frequency sound insulation performance	Example glazing configuration
Zone A- Red 	41	N/A	8.8 mm acoustic laminate glass/ 20 mm air gap/ 12.8 mm acoustic laminate glass
Zone B- Purple 	37	N/a	10 mm glass/ 16 mm airgap/ 10.8 mm acoustic laminate glass
Zone C- Green 	33	$R_{63\text{Hz}}$ 29 dB $R_{63\text{Hz}}$ 17 dB	9 mm acoustic laminate glass/ 16 mm air gap/ 6 mm glass
Zone D- Yellow 	28	$R_{63\text{Hz}}$ 31 dB $R_{63\text{Hz}}$ 21 dB	9 mm acoustic laminate glass/ 16 mm air gap/ 6 mm glass

7.3.3 CONTROL OF ENTERTAINMENT NOISE

As noted in Section 4.3 during the attended measurements on Saturday 27 September 2024, when there was an event on at Mayfield Depot, music from the venue was clearly audible at positions A and B, and little variation in noise level was noted for the duration of the measurements.

The requirements set out above for Façade Zones C and D are based on the measured L_{eq} levels at 63 Hz and 125 Hz during this event, to meet MCC's internal low frequency criteria. low frequency noise criterion (refer to Section 3.1).

8 TRANSFER OF SOUND WITHIN THE DEVELOPMENT

As per Section 7.3.3, the limits set by MCC in relation to low frequency sound from entertainment noise, relates to sound transfer within the development itself (e.g. from commercial spaces to residential apartments), as well as from existing venues in the surrounding area.

The current design proposal is to provide at least a 5 dB enhancement over the minimum sound insulation requirements set out in Building Regulations Approved Document E (2003 edition incorporating all amendments) between the based build commercial units and residential apartments. Maximum limits for any amplified music within the commercial units will be determined following pre-completion testing of the final constructions.

9 CONCLUSION

An environmental noise survey has been carried out at the proposed site of Mayfield Phase 1B. The purpose was to determine the existing background sound levels for the purpose of setting limits from new external plant and building services, and operational (amplified music) sound.

The background sound levels have been determined using the methodology set out in MCC's *Planning & Noise Technical Guidance (October 2022)*.

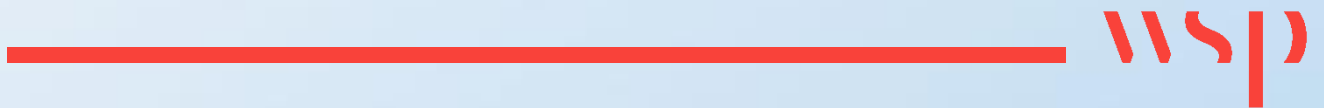
A plant noise assessment will be required once final plant selections and locations are known. Mitigation measures will be provided, where necessary, to meet the specified criteria.

Attended measurements were also carried out during events at Mayfield Depot, Freight Island and Star & Carter, which are all venues that host events with amplified music. The measurements were to determine if amplified music is audible at the Phase 1B site and allow façade sound insulation performances to be determined, considering MCC's low frequency sound criteria relating to entertainment noise.

The building fabric design will be progressed with the view to controlling external noise break-in, taking account of low frequency sound from entertainment venues where relevant. In addition, the design of internal separating elements with Phase 1B between residential and commercial areas will consider noise transfer between the spaces, and take account of MCC's low frequency sound criteria where appropriate.

Appendix A

SUMMARY OF UNATTENDED NOISE MONITORING TO DETERMINE REPRESENTATIVE BACKGROUND



2024 REPRESENTATIVE BACKGROUND SOUND DATA

Table A-1 – 2024 Logger 1 Mayfield Park, measured $L_{90,1hr}$ levels during daytime (07:00-23:00)

Date	Time	Measured $L_{90,1hr}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
15/02/2024	13:00	58.5	54.9	55.5	56.3	60.5	54.0	41.2	28.7	62.8
	14:00	58.7	55.1	55.6	56.6	60.9	55.0	43.2	31.3	63.4
Excluded rain	15:00									
	16:00	59.1	53.8	53.0	52.4	56.0	51.2	42.0	31.6	59.0
	17:00	58.6	53.6	53.7	53.5	58.3	52.6	41.2	30.0	60.7
	18:00	58.7	53.5	53.9	53.2	58.1	52.5	40.7	29.8	60.3
	19:00	56.2	52.4	54.2	54.7	60.1	54.2	41.3	28.7	62.3
	20:00	55.1	51.7	53.3	53.9	59.1	53.1	40.0	28.0	61.4
	21:00	54.3	50.7	52.4	52.8	58.3	52.3	38.8	27.0	60.4
	22:00	53.7	49.8	51.7	52.1	57.4	51.3	37.9	26.1	59.7
16/02/2024	07:00	58.7	54.5	55.7	57.0	61.9	56.1	43.3	30.1	64.2
	08:00	58.6	54.6	55.4	56.7	61.3	55.8	43.9	31.3	63.7
	09:00	59.0	54.8	55.5	56.8	60.9	55.4	44.9	33.6	63.4
	10:00	58.4	54.1	55.1	56.4	60.5	54.7	42.9	31.0	63.0
	11:00	58.1	54.3	55.5	56.6	61.3	55.5	43.5	31.5	63.6
	12:00	58.6	54.6	56.1	57.0	61.4	55.6	43.5	31.6	63.8
Excluded rain	13:00 - 14:00									
	15:00	59.0	54.2	54.2	54.4	58.6	52.8	40.7	28.7	61.0
	16:00	58.1	54.1	55.4	56.1	61.0	54.8	41.6	28.5	63.2
	17:00	57.9	53.9	55.6	56.2	61.5	55.6	42.2	28.8	63.7
	18:00	57.6	53.7	54.8	55.8	61.0	55.3	42.1	28.5	63.3
	19:00	56.5	52.8	55.3	55.7	61.3	55.4	41.6	27.5	63.5
	20:00	55.8	52.0	53.9	54.7	60.2	54.4	40.6	26.9	62.3
	21:00	54.5	50.5	52.3	53.4	58.7	53.3	40.3	27.9	61.0

Date	Time	Measured $L_{90,1hr}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	22:00	54.6	50.7	52.1	53.3	58.7	53.3	40.0	27.1	61.0
17/02/2024	07:00	53.8	50.0	50.3	51.7	55.7	50.6	40.1	29.7	58.3
Excluded rain	08:00 - 09:00									
	10:00	56.7	52.9	53.7	54.9	60.2	54.3	41.3	28.7	62.4
	11:00	56.8	53.1	54.0	55.3	60.3	54.3	41.5	28.6	62.5
	12:00	57.2	53.4	54.9	56.1	61.2	54.8	41.7	28.5	63.3
	13:00	57.5	53.7	55.0	56.1	61.1	54.6	41.4	28.4	63.2
	14:00	57.8	54.1	55.1	56.1	60.9	54.5	41.4	28.3	63.1
	15:00	58.1	54.0	55.0	55.8	60.3	54.5	43.0	31.4	62.7
Excluded rain	16:00-22:00									
18/02/2024	07:00	51.3	47.8	49.3	50.6	55.1	49.4	38.5	29.1	57.5
	08:00	52.6	48.8	50.2	51.0	55.7	50.1	39.0	30.0	58.2
	09:00	54.3	50.9	52.3	53.4	58.5	52.7	40.7	30.5	60.8
	10:00	55.1	51.7	53.4	54.6	59.9	54.0	41.2	29.9	62.1
	11:00	55.8	52.4	53.8	54.8	60.0	53.9	41.5	30.2	62.2
	12:00	57.0	53.5	55.0	55.9	60.9	54.5	41.7	30.1	63.1
	13:00	56.6	53.3	55.2	55.9	60.7	54.1	41.2	29.3	62.9
	14:00	57.1	53.7	55.6	56.7	61.3	54.8	42.0	29.9	63.5
	15:00	56.4	52.9	54.8	56.0	60.5	54.1	41.6	29.8	62.8
	16:00	55.8	52.7	54.1	55.2	59.8	53.5	40.9	29.2	62.2
	17:00	55.5	51.9	53.7	54.7	59.6	53.2	40.0	28.2	61.8
	18:00	55.8	52.0	54.0	54.4	59.4	52.9	38.5	26.7	61.5
	19:00	55.1	51.7	53.3	53.7	58.6	52.1	38.0	26.4	60.7
	20:00	53.9	50.8	52.6	52.9	57.8	51.3	37.2	25.6	59.9
	21:00	53.4	50.4	52.2	52.3	57.1	50.7	36.5	25.3	59.3
	22:00	52.5	49.3	51.5	51.1	55.8	49.5	35.4	25.3	58.0

Date	Time	Measured $L_{90,1hr}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
19/02/2024	07:00	59.2	55.5	57.4	58.1	63.1	57.2	44.4	31.8	65.4
	08:00	59.0	55.2	56.8	57.3	62.2	56.2	43.0	30.2	64.5
	09:00	58.6	55.1	56.3	56.7	61.2	54.9	41.5	28.6	63.5
	10:00	57.5	54.0	55.3	56.0	60.0	53.5	40.4	28.5	62.3
	11:00	57.8	54.1	55.4	56.0	59.9	53.2	40.2	28.4	62.2
	12:00	57.9	54.2	55.5	56.1	60.1	53.4	40.0	27.9	62.5
Excluded rain	13:00									
	14:00	57.9	54.4	55.8	56.7	61.0	54.3	41.1	28.8	63.3
	15:00	57.6	53.9	55.5	56.7	61.0	54.5	41.3	28.9	63.3
	16:00	57.6	54.1	55.7	56.4	61.1	54.5	40.8	27.7	63.3
	17:00	57.6	53.8	55.2	55.9	60.7	54.1	39.6	26.5	62.8
	18:00	56.7	53.0	54.8	55.3	60.1	53.5	38.6	25.2	62.3
	19:00	55.7	52.4	53.6	54.0	58.9	52.4	37.5	25.2	61.0
	20:00	54.5	51.0	52.4	52.9	57.7	51.2	36.4	24.9	59.9
	21:00	53.8	50.3	51.6	52.0	56.8	50.3	35.6	24.0	59.0
	22:00	52.9	49.4	51.0	51.0	55.4	49.0	34.6	23.8	57.7
20/02/2024	07:00	59.3	55.5	56.2	57.4	62.0	55.3	40.7	26.3	64.1
	08:00	59.3	55.6	56.2	57.2	61.6	55.1	40.8	26.7	63.8
	09:00	59.6	55.4	55.8	56.5	60.4	53.8	40.5	28.5	62.7
	10:00	58.2	54.4	55.4	56.3	59.9	53.2	40.0	27.2	62.2
	11:00	58.2	54.5	55.6	56.5	60.1	53.4	40.4	27.7	62.5
	12:00	58.5	54.6	55.6	56.3	60.1	53.3	39.9	26.7	62.5
	13:00	58.6	54.9	56.0	56.8	60.6	53.7	40.4	27.7	62.9
	14:00	58.7	55.0	56.6	57.3	61.5	55.3	43.3	31.6	63.9
	15:00	59.0	55.2	57.4	58.0	61.8	57.2	49.2	37.9	64.7
Excluded rain	16:00-18:00									
	19:00	56.4	52.6	54.3	54.5	59.3	53.8	41.4	30.0	61.6

Date	Time	Measured $L_{90,1hr}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	20:00	55.4	52.0	53.5	54.2	59.5	54.0	41.0	29.1	61.8
	21:00	56.1	52.4	54.1	55.6	61.3	55.6	42.2	29.6	63.4
	22:00	54.5	51.2	53.2	53.8	59.1	53.5	40.1	27.9	61.3
21/02/2024 Excluded rain	07:00-14:00									
	15:00	58.7	55.1	57.1	57.6	62.6	56.7	44.4	32.7	64.9
	16:00	58.7	54.7	55.8	55.5	60.4	54.3	41.5	29.7	62.6
	17:00	58.2	54.4	56.2	56.6	61.9	55.7	42.2	29.6	64.1
	18:00	57.3	53.6	55.4	55.9	61.4	55.2	41.1	27.9	63.5
	19:00	56.4	53.0	55.2	55.6	61.0	54.8	40.6	27.2	63.2
	20:00	55.5	51.9	53.9	54.5	59.6	53.5	39.5	26.7	61.8
	21:00	54.9	51.4	53.3	53.7	58.8	52.6	38.4	25.9	60.9
	22:00	53.4	50.2	51.8	52.0	56.8	50.6	36.6	25.3	59.0
22/02/2024 Excluded rain	07:00									
	08:00	59.0	54.5	55.3	56.4	61.3	55.8	43.5	30.9	63.6
	09:00	58.9	54.6	55.8	56.9	61.4	55.6	42.9	30.5	63.8
	10:00	57.7	53.7	54.7	56.2	60.6	54.9	42.5	30.5	63.0
	11:00	57.7	53.6	55.3	57.2	60.3	56.0	47.2	36.2	63.4
	12:00	57.1	53.3	54.5	55.9	60.4	54.7	42.6	30.9	62.8
	13:00	57.4	54.0	54.3	55.4	59.8	53.9	41.0	29.5	62.2
	14:00	57.6	54.0	54.5	55.7	60.2	54.0	40.4	28.0	62.5
	15:00	57.7	54.0	54.8	56.0	60.4	53.8	39.6	27.1	62.6
	16:00	58.0	54.0	55.0	55.6	60.2	53.4	38.4	25.4	62.3
	17:00	57.1	53.4	55.4	56.1	61.2	54.4	38.6	25.0	63.2
	18:00	56.9	53.4	56.1	56.3	61.4	54.7	38.6	24.2	63.5
	19:00	55.8	52.7	55.2	55.3	60.4	53.7	37.5	23.5	62.4
	20:00	55.2	51.5	53.9	54.6	59.5	53.3	38.0	24.5	61.6

Date	Time	Measured $L_{90,1hr}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	21:00	54.2	50.5	52.2	53.0	58.4	52.6	38.0	24.9	60.5
	22:00	53.9	50.6	52.1	52.7	57.9	52.3	37.5	24.3	60.2
23/02/2024	07:00	58.7	54.7	56.4	58.2	62.5	57.4	46.3	33.3	65.0
	08:00	58.8	55.0	56.1	57.6	61.7	56.9	46.4	33.5	64.4
	09:00	58.1	54.5	55.9	57.4	60.6	56.4	47.8	35.6	63.7
	10:00	58.1	54.5	55.6	56.9	60.9	55.3	43.5	30.6	63.4
	11:00	58.2	54.1	54.4	56.1	59.7	54.8	44.7	32.5	62.4
	12:00	58.4	54.1	55.1	56.5	60.6	55.0	43.3	30.0	63.0
	13:00	58.0	53.9	55.1	56.8	61.3	55.4	42.3	28.3	63.6
	14:00	57.4	53.5	54.8	56.2	61.0	54.8	40.4	25.8	63.2
	15:00	57.1	53.0	54.2	55.5	60.3	54.1	39.5	25.2	62.5
Excluded rain	16:00-18:00									
	19:00	55.9	52.0	53.2	54.7	60.1	54.6	40.5	27.3	62.4
	20:00	55.5	51.5	52.3	53.9	59.3	53.8	39.7	26.6	61.6
	21:00	54.9	50.9	51.9	53.3	58.8	53.1	38.9	26.0	61.0
	22:00	55.3	51.0	52.1	53.5	58.9	53.4	39.0	25.5	61.2
24/02/2024	07:00	54.6	51.3	52.8	53.4	58.0	52.0	37.4	25.7	60.3
	08:00	55.4	51.6	52.0	53.3	57.8	51.5	37.3	25.2	60.1
	09:00	56.2	52.1	52.3	53.6	58.4	52.1	37.8	25.1	60.6
	10:00	56.5	52.4	52.7	54.1	58.6	52.1	37.6	24.8	60.8
	11:00	56.4	52.7	53.2	54.6	59.1	52.6	38.0	24.9	61.3
	12:00	56.4	52.7	53.6	55.4	59.9	53.4	39.4	25.6	62.2
	13:00	56.6	53.0	54.0	55.2	59.7	52.7	38.0	24.7	61.8
	14:00	56.2	52.6	53.8	55.5	59.7	53.0	39.1	25.8	62.0
	15:00	55.9	51.8	53.6	55.5	59.8	53.0	38.8	25.7	62.1
Excluded rain	16:00									
	17:00	55.4	51.3	54.5	55.1	60.6	54.5	39.7	25.2	62.6

Date	Time	Measured $L_{90,1hr}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	18:00	56.1	51.7	55.4	55.3	61.0	55.0	39.8	25.8	63.1
	19:00	55.8	51.4	54.3	54.7	60.3	54.3	39.2	25.1	62.4
	20:00	55.3	50.6	53.6	53.9	59.3	53.4	38.3	24.9	61.5
	21:00	55.8	51.2	52.7	53.5	58.5	52.4	37.5	25.0	60.7
	22:00	55.5	51.0	53.1	53.6	58.7	52.6	37.3	24.6	60.9
25/02/2024	07:00	52.3	48.8	50.3	50.2	54.2	48.1	33.8	23.1	56.6
	08:00	52.7	49.2	50.0	50.1	54.3	48.9	36.2	23.6	57.0
	09:00	53.4	50.0	50.2	51.0	55.6	49.3	35.0	23.0	57.9
	10:00	54.3	50.9	52.1	52.6	57.1	50.4	36.1	23.7	59.2
	11:00	54.5	51.3	52.6	52.9	57.0	50.3	36.4	24.1	59.3
	12:00	54.6	51.6	53.0	53.1	56.8	50.3	36.8	24.5	59.3
	13:00	54.8	51.9	53.2	53.2	56.9	50.2	37.0	24.4	59.4
	14:00	55.1	52.1	53.3	53.3	56.6	50.3	37.8	25.8	59.3
	15:00	54.6	51.5	52.7	52.8	56.2	49.8	37.6	25.5	58.9
	16:00	54.4	51.4	52.4	52.3	56.0	49.5	36.1	24.5	58.5
	17:00	54.6	51.5	52.2	52.0	55.8	49.2	35.3	23.5	58.3
	18:00	54.3	51.4	51.9	51.6	55.8	48.9	33.6	22.1	58.0
	19:00	53.3	50.3	50.6	50.5	54.8	48.4	33.4	22.2	57.0
	20:00	52.7	49.9	50.3	50.1	54.1	47.8	33.5	22.6	56.5
	21:00	52.3	49.4	49.6	49.3	53.2	47.0	33.0	22.6	55.6
	22:00	51.2	48.5	48.6	48.6	52.8	46.7	32.9	22.6	55.1
26/02/2024	07:00	59.2	54.9	54.5	55.8	60.3	53.9	38.7	24.1	62.6
	08:00	61.2	56.1	54.2	55.0	59.1	52.5	37.6	23.6	61.4
	09:00	57.6	54.2	53.7	53.9	57.4	50.7	36.5	23.6	59.9
	10:00	57.2	53.7	53.2	53.6	55.9	48.7	35.0	24.0	58.5

Table A-2 – 2024 Logger 1, Mayfield Park, arithmetic average measured $L_{90,1hr}$ levels daytime (07:00-23:00)

	Time	Arithmetic average of $L_{90,1hr}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	07:00	56.3	52.6	53.7	54.7	59.2	53.3	40.4	28.1	61.1
	08:00	57.4	53.4	54.0	54.9	59.4	53.6	40.9	28.3	61.8
	09:00	57.3	53.5	54.2	55.1	59.4	53.4	40.8	28.8	61.8
	10:00	57.0	53.2	54.1	55.2	59.4	53.1	40.0	27.9	61.7
	11:00	57.0	53.3	54.4	55.6	59.7	53.8	41.5	29.3	62.2
	12:00	57.3	53.6	54.8	55.8	60.2	53.9	41.0	28.4	62.5
	13:00	57.2	53.7	54.8	55.7	60.1	53.6	40.3	27.6	62.4
	14:00	57.4	53.8	55.0	56.0	60.3	54.0	41.0	28.4	62.7
	15:00	57.4	53.6	54.9	55.8	60.1	54.1	41.6	29.3	62.5
	16:00	57.4	53.6	54.5	54.8	59.2	53.0	40.2	28.1	61.6
	17:00	56.9	53.0	54.6	55.0	60.0	53.7	39.8	27.1	62.3
	18:00	56.7	52.8	54.5	54.7	59.8	53.5	39.1	26.3	61.9
	19:00	55.7	52.1	53.9	54.3	59.5	53.4	39.1	26.3	61.7
	20:00	54.9	51.2	52.9	53.5	58.6	52.5	38.2	25.8	60.8
	21:00	54.4	50.8	52.2	52.9	58.0	52.0	37.8	25.7	60.2
	22:00	53.7	50.2	51.7	52.2	57.1	51.2	37.0	25.1	59.4
	Minimum	53.7	50.2	51.7	52.2	57.1	51.2	37.0	25.1	59.4

Table A-3 – 2024 Logger 1 Mayfield Park, measured $L_{90,15\text{mins}}$ levels during night (23:00-07:00)

Date	Time	Measured $L_{90,15\text{mins}}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
15/02/2024	23:00-23:30									
	23:45	50.2	46.9	48.3	48.2	51.7	46.6	37.3	27.6	54.3
16/02/2024	00:00	56.4	46.3	52.1	53.8	46.5	35.5	25.0	11.7	53.5
	00:15	56.2	46.1	53.0	54.9	47.9	35.8	25.4	11.6	54.3
	00:30	55.4	45.3	50.8	52.0	45.0	34.1	24.8	11.7	51.9
Rain excluded	00:45-01:00									
	01:15	53.9	51.8	49.0	50.6	44.0	34.3	25.5	11.6	51
	01:30	53.7	51.7	48.9	51.1	44.5	34.2	25.1	11.8	51.4
	01:45	54.3	52.3	50.2	51.6	44.6	34.7	26.0	11.8	51.9
	02:00	54.8	52.8	50.2	50.5	43.8	34.7	26.0	11.8	51.4
Rain excluded	02:15-02:30									
	02:45	53.3	51.3	49.0	48.2	43.8	37.0	29.0	15.0	49.6
	03:00	53.9	51.6	48.9	48.8	43.2	35.5	26.5	12.0	49.8
	03:15	53.9	52.0	48.7	49.6	43.1	34.5	25.4	11.8	50.1
	03:30	53.7	51.8	48.7	49.8	43.2	34.1	25.3	11.8	49.9
	03:45	54.2	51.6	48.8	49.2	42.9	34.0	25.2	11.8	50
	04:00	54.1	50.5	47.4	47.1	41.3	32.4	24.1	11.6	47.7
	04:15	55.9	53.2	50.9	51.7	44.9	34.7	25.1	11.8	51.5
	04:30	54.8	52.8	50.6	52.5	45.0	33.9	24.2	11.6	52.2
Rain excluded	04:45-06:00									
	06:15	62.2	61.7	60.1	62.6	54.9	41.3	27.9	11.7	61.8
	06:30	63.7	62.9	61.9	64.8	57.4	43.6	29.4	11.9	64.3
	06:45	64.0	63.1	62.1	64.9	57.3	43.4	28.9	11.8	64.4
16/02/2024	23:00	60.2	59.6	58.4	61.6	54.0	39.5	24.8	11.4	60.6
	23:15	59.5	58.4	57.0	59.8	52.4	38.3	24.6	11.5	58.9

Date	Time	Measured $L_{90,15\text{mins}}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	23:30	58.5	58.0	57.0	60.3	52.7	37.9	24.0	11.4	59.4
	23:45	58.7	57.9	56.6	59.3	51.9	37.7	24.0	11.4	58.5
17/02/2024	00:00	58.5	57.7	56.3	59.2	51.6	37.1	23.6	11.3	58.2
	00:15	58.6	57.6	56.3	59.2	51.8	37.3	24.1	11.3	58.4
	00:30	58.1	56.6	55.3	57.4	50.0	36.8	25.6	11.3	56.8
	00:45	57.2	55.4	53.4	55.6	48.3	35.3	24.2	11.4	55.1
	01:00	56.3	54.4	53.1	55.2	47.7	34.9	24.4	11.5	54.7
	01:15	56.7	55.0	53.5	55.5	48.2	35.3	24.7	11.6	55
	01:30	56.0	54.0	52.8	54.9	47.5	34.8	24.6	11.7	54.3
	01:45	55.5	53.7	52.4	54.1	46.8	34.2	24.2	11.6	53.6
	02:00	55.9	54.3	52.4	53.9	46.5	34.3	23.9	11.5	53.5
	02:15	56.0	54.3	52.2	53.5	46.2	34.1	24.0	11.5	53.2
	02:30	55.2	53.8	51.3	52.8	45.1	32.8	22.7	11.3	52.4
	02:45	54.8	53.3	51.1	53.5	46.0	33.4	23.3	11.4	53
	03:00	55.3	53.8	51.5	53.2	46.0	33.9	23.8	11.5	52.8
Rain excluded	03:15-06:00									
	06:15	60.4	57.7	56.8	58.0	51.2	40.4	27.7	11.7	57.9
	06:30	59.4	57.2	56.7	58.9	51.8	40.5	28.7	11.7	58.2
	06:45	59.9	57.7	57.2	59.0	52.0	40.8	28.3	11.7	58.4
17/02/2024	23:00	61.7	60.3	59.0	60.9	53.9	43.2	30.6	13.0	60.4
	23:15	61.5	60.9	59.0	60.9	53.7	42.4	30.1	12.4	60.3
	23:30	61.2	61.3	59.2	61.6	54.1	42.1	29.5	12.2	60.7
	23:45	60.9	60.7	58.2	60.5	53.0	40.4	27.7	11.9	59.7
18/02/2024	00:00	60.8	60.5	57.9	60.4	53.0	40.2	28.2	11.9	59.7
	00:15	60.2	59.8	57.6	59.8	52.4	40.2	28.9	11.9	59.2
	00:30	59.6	59.5	56.3	58.5	51.5	39.4	27.8	11.9	58.5
	00:45	58.4	58.1	56.0	58.2	53.0	42.9	27.6	12.0	59.2

Date	Time	Measured $L_{90,15\text{mins}}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	01:00	58.3	57.5	56.1	58.4	54.7	46.6	28.7	13.0	59.6
Rain excluded	01:15-01:30									
	01:45	56.7	55.8	54.5	57.1	49.9	38.1	27.1	11.8	56.6
	02:00	56.3	55.5	53.3	55.8	48.2	36.9	27.3	12.0	55.1
	02:15	57.7	55.9	54.6	56.4	49.6	39.3	29.3	13.3	56
	02:30	55.2	54.1	51.7	52.8	46.7	37.7	28.0	12.2	52.8
	02:45	55.6	53.7	51.8	53.4	46.8	37.1	27.0	11.9	53.4
	03:00	55.5	53.8	52.0	54.1	47.3	36.5	26.4	12.3	53.8
Rain excluded	03:15-06:45									
18/02/2024	23:00	59.4	59.3	56.4	58.7	50.5	35.3	23.0	11.5	57.6
	23:15	59.5	59.4	56.9	59.4	50.9	35.3	22.7	11.4	58.4
	23:30	58.3	58.1	55.3	57.4	49.0	33.9	22.7	11.4	56.7
	23:45	57.3	56.3	53.7	55.7	47.3	32.8	22.5	11.4	54.9
19/02/2024	00:00	57.0	55.2	51.6	52.7	44.9	32.5	23.4	11.5	52.5
	00:15	54.7	54.3	50.9	52.9	44.6	32.7	24.4	11.6	52.4
	00:30	55.7	54.2	51.5	53.3	45.8	32.8	24.2	11.6	52.6
	00:45	55.0	52.7	49.4	50.4	42.8	31.4	23.3	11.6	50
	01:00	54.5	52.1	48.5	48.5	41.1	31.3	23.4	11.6	48.6
	01:15	54.9	53.4	49.8	50.0	42.1	31.5	23.2	11.6	50
	01:30	53.3	51.4	48.1	48.7	40.7	31.5	23.8	11.6	48.6
	01:45	53.1	51.1	47.6	47.7	40.4	31.3	23.4	11.5	48.1
	02:00	53.0	51.1	47.6	47.8	40.7	31.4	23.7	11.6	48.3
	02:15	53.5	51.2	48.1	47.9	40.7	31.5	23.8	11.6	48.8
	02:30	54.2	51.8	48.8	48.7	41.4	31.6	23.7	11.6	49.2
	02:45	54.8	51.9	48.1	47.2	40.6	31.8	23.6	11.5	48.5
	03:00	54.4	51.3	47.4	46.8	39.7	31.0	22.8	11.4	47.5

Date	Time	Measured $L_{90,15\text{mins}}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	03:15	55.4	51.4	47.0	45.4	38.9	31.0	23.3	11.5	46.7
	03:30	55.4	52.3	48.7	48.9	41.3	31.6	23.5	11.5	49.2
	03:45	56.1	52.4	48.3	46.7	40.1	31.9	24.2	11.6	47.8
	04:00	56.1	52.2	48.5	47.8	41.0	31.7	23.4	11.5	48.4
	04:15	56.0	52.5	49.3	49.7	42.4	32.6	24.4	11.6	49.9
	04:30	56.9	54.5	51.4	52.2	44.3	33.0	24.4	11.5	51.9
	04:45	57.6	55.1	53.1	54.0	46.1	33.8	24.2	11.7	53.5
	05:00	58.0	56.1	53.5	54.4	47.2	35.7	26.4	13.4	54.1
Rain excluded	05:15-06:45									
19/02/2024	23:00	59.1	58.1	56.1	58.2	49.7	33.9	21.6	11.2	57
	23:15	59.1	56.9	55.1	57.0	48.7	33.4	21.8	11.2	56.2
	23:30	57.3	55.4	53.0	54.9	46.7	32.2	21.7	11.2	54
	23:45	57.4	55.3	53.5	55.2	47.0	32.7	22.4	11.3	54.3
20/02/2024	00:00	56.3	54.1	51.0	51.6	43.6	31.6	22.4	11.3	51.1
	00:15	55.8	53.8	50.9	51.9	43.7	31.6	22.3	11.2	51.5
	00:30	56.3	54.4	51.3	51.9	44.0	31.4	22.0	11.2	51.5
	00:45	56.0	54.1	51.3	51.5	42.6	31.1	21.9	11.2	51.3
	01:00	54.7	53.1	50.2	51.5	43.2	30.6	21.7	11.2	51.2
	01:15	55.2	53.1	50.8	50.6	42.2	30.9	22.4	11.3	50.5
	01:30	54.7	52.7	49.3	49.2	41.5	31.3	22.5	11.3	49.4
	01:45	53.8	51.6	48.4	48.8	40.9	30.5	22.1	11.2	48.7
	02:00	54.5	51.7	48.3	48.5	40.7	30.0	21.8	11.1	48.6
	02:15	53.9	51.0	47.4	46.7	39.4	29.9	21.8	11.2	47.2
	02:30	54.9	51.7	48.5	47.3	40.6	30.9	22.2	11.2	48.7
	02:45	54.6	51.1	47.2	45.1	38.6	30.6	22.8	11.2	46.1
	03:00	54.6	51.1	47.8	46.6	39.2	30.3	22.2	11.3	47
	03:15	54.7	51.7	48.3	48.8	41.1	30.7	22.3	11.3	48.6

Date	Time	Measured $L_{90,15\text{mins}}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	03:30	54.5	51.4	48.4	49.0	41.2	30.0	21.5	11.1	48.7
	03:45	55.4	52.9	49.7	50.1	42.2	30.4	21.6	11.2	49.6
	04:00	55.9	53.1	50.6	50.0	41.7	31.3	21.5	11.1	50.7
	04:15	56.7	54.3	51.4	51.8	43.7	31.4	21.6	11.1	51.6
	04:30	56.9	54.2	51.5	51.7	43.6	31.4	21.9	11.2	51.4
	04:45	57.5	54.6	52.1	51.5	43.3	32.2	22.5	11.3	51.4
	05:00	57.6	55.0	52.8	54.4	45.9	33.0	22.8	11.3	53.8
	05:15	59.4	57.1	55.8	57.3	49.0	34.9	22.7	11.1	56.6
	05:30	60.3	58.6	57.5	59.4	51.0	35.8	22.0	11.1	58.6
	05:45	61.0	58.9	58.0	60.4	51.7	36.0	22.1	11.1	59.3
	06:00	62.0	60.3	59.6	61.9	53.4	37.6	23.0	11.1	60.9
	06:15	63.7	61.5	60.8	63.0	54.5	38.6	23.5	11.2	61.9
	06:30	64.2	62.3	61.3	64.1	55.6	39.8	24.0	11.1	63
	06:45	65.2	63.1	62.7	64.9	56.3	40.4	24.4	11.2	63.8
20/02/2024	23:00	59.2	58.8	57.4	60.5	53.0	38.2	25.1	11.9	59.7
	23:15	57.6	57.0	54.8	56.9	49.5	36.0	24.9	11.9	56.2
	23:30	57.6	56.9	54.8	57.5	50.1	36.3	25.5	12.1	56.7
	23:45	57.4	55.3	53.6	56.0	48.5	35.3	25.3	12.0	55.3
21/02/2024	00:00	56.5	54.7	52.3	54.5	47.2	34.6	25.0	11.9	54
	00:15	56.6	54.7	52.7	54.2	46.8	34.9	25.5	12.1	53.8
	00:30	56.4	54.2	51.8	53.4	46.0	34.0	24.9	11.9	52.9
	00:45	56.1	53.8	50.6	51.2	44.3	33.3	24.8	11.9	51.4
	01:00	54.4	52.0	49.1	50.1	42.9	32.8	24.7	11.6	50.5
	01:15	54.0	51.0	48.3	48.3	41.1	31.7	23.8	11.6	49.2
	01:30	54.4	51.6	48.8	50.2	43.5	33.0	24.6	11.7	50.6
	01:45	53.6	50.8	48.4	49.1	42.7	33.3	25.0	11.8	50
	02:00	53.7	51.5	49.9	51.6	44.6	34.1	25.2	11.8	51.6

Date	Time	Measured $L_{90,15\text{mins}}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	02:15	55.0	52.3	49.5	48.6	42.5	33.6	24.9	11.9	50.1
	02:30	53.4	50.8	47.6	46.6	41.0	32.7	23.6	11.6	48.5
	02:45	53.7	51.0	48.2	48.6	41.5	32.7	23.8	11.6	50
	03:00	54.5	51.4	48.8	49.3	42.4	32.0	23.3	11.4	49.5
Rain excluded	03:15-06:45									
21/02/2024	23:00	60.0	58.1	56.3	58.9	50.7	35.8	22.9	11.4	57.9
	23:15	59.4	57.7	56.0	58.1	50.0	35.2	22.9	11.4	57.2
	23:30	58.7	57.3	55.1	57.4	49.5	34.6	22.4	11.3	56.5
	23:45	57.5	55.8	53.3	55.3	47.1	32.8	22.4	11.4	54.5
22/02/2024	00:00	57.9	56.8	54.8	56.5	48.1	33.7	22.1	11.3	55.6
	00:15	57.9	56.6	53.8	55.2	46.8	32.0	21.2	11.2	54.3
	00:30	57.5	56.1	53.3	54.9	46.1	32.0	21.3	11.2	54.3
	00:45	56.2	53.9	50.5	51.6	43.3	30.9	21.6	11.2	51.3
	01:00	57.0	53.8	50.6	51.2	43.2	31.6	22.1	11.2	51.3
	01:15	56.2	52.8	49.9	51.2	42.7	30.5	21.4	11.2	50.6
	01:30	55.8	52.5	48.8	49.2	41.2	29.2	20.5	11.2	49.1
	01:45	56.6	53.8	50.8	51.2	43.0	30.6	20.4	11.2	51.1
	02:00	56.7	53.6	49.8	49.7	42.4	30.9	20.9	11.2	50.3
Rain excluded	02:15-06:45									
22/02/2024	23:00	59.8	58.8	57.2	60.0	52.3	36.5	21.8	11.1	59.1
	23:15	59.5	57.8	56.2	58.8	51.0	35.4	21.7	11.1	57.8
	23:30	58.4	56.8	55.1	57.6	49.8	34.1	21.7	11.1	56.6
	23:45	57.8	56.1	54.0	55.7	47.6	32.7	21.6	11.1	54.9
23/02/2024	00:00	57.1	55.4	52.8	54.3	46.1	31.7	21.7	11.2	53.7
	00:15	57.2	55.9	53.5	55.5	47.6	33.2	21.8	11.2	54.7
	00:30	57.6	56.2	54.3	56.3	48.1	33.0	21.5	11.1	55.3

Date	Time	Measured $L_{90,15\text{mins}}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	00:45	56.9	55.2	52.2	53.9	45.8	31.8	21.0	11.1	53.2
	01:00	56.9	56.5	53.4	54.5	46.5	31.9	21.1	11.1	54
	01:15	56.6	56.2	52.3	53.2	44.8	31.2	20.8	11.1	52.6
	01:30	56.4	54.4	51.5	52.1	43.8	30.7	20.9	11.1	51.6
	01:45	55.8	54.5	51.5	52.7	44.8	31.0	20.9	11.1	52.4
	02:00	56.4	54.5	51.5	53.0	44.4	30.5	20.7	11.1	52.4
	02:15	55.8	53.4	49.7	50.4	42.3	29.2	20.0	11.1	49.9
	02:30	56.1	53.9	50.9	51.0	41.9	30.2	20.9	11.1	50.7
	02:45	55.2	52.8	50.0	51.2	42.9	29.3	20.0	11.0	50.7
	03:00	54.7	52.3	49.0	49.4	41.3	29.9	20.6	11.0	49.2
	03:15	55.5	53.5	50.6	50.9	42.8	30.6	21.3	11.1	50.9
	03:30	55.1	53.2	50.3	51.6	43.5	30.6	20.9	11.1	51
	03:45	55.2	53.9	51.2	52.4	44.5	31.7	21.7	11.1	51.8
	04:00	55.4	53.4	50.1	50.8	43.1	31.4	21.8	11.1	50.6
	04:15	56.3	54.7	52.2	53.2	45.1	32.2	21.6	11.1	52.9
	04:30	56.4	54.8	52.7	54.3	45.6	31.9	21.8	11.1	53.3
	04:45	57.3	55.1	53.1	54.7	47.1	33.9	22.3	11.1	54.1
	05:00	57.9	55.8	54.0	55.5	47.4	33.8	22.2	11.1	54.7
	05:15	58.6	57.0	55.6	57.0	50.1	38.1	27.3	14.6	56.6
	05:30	60.3	59.0	58.2	59.2	52.9	42.6	29.2	11.8	59
Rain excluded	05:45-06:00									
	06:15	63.1	61.8	61.4	64.2	56.7	42.5	26.7	11.3	63.4
	06:30	63.9	62.8	62.5	64.9	57.6	43.7	28.3	11.5	64
	06:45	64.4	63.6	63.2	65.6	58.1	44.8	29.6	11.5	64.8
23/02/2024	23:00	59.5	58.4	57.1	60.2	52.7	36.9	23.2	11.3	59.3
	23:15	59.5	58.5	57.2	59.8	52.3	36.6	23.4	11.3	59
	23:30	59.3	57.8	57.1	60.0	52.4	36.7	22.9	11.2	59.2

Date	Time	Measured $L_{90,15\text{mins}}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	23:45	58.7	57.4	56.4	59.7	52.0	36.1	22.7	11.2	58.7
24/02/2024	00:00	57.9	56.7	55.4	58.4	50.8	35.3	22.6	11.2	57.6
	00:15	57.5	56.3	54.7	57.5	50.1	34.6	22.8	11.3	56.6
	00:30	57.2	55.2	53.4	55.9	48.1	33.9	23.0	11.4	54.9
	00:45	57.5	55.5	54.3	56.9	49.4	34.6	23.2	11.4	56.1
	01:00	55.5	54.7	53.8	56.6	49.2	34.0	23.0	11.4	55.6
	01:15	56.1	54.8	53.9	56.2	48.4	34.3	23.5	11.4	55.4
	01:30	54.9	53.6	52.0	54.1	46.5	33.6	23.5	11.4	53.4
	01:45	55.2	54.8	53.1	55.7	48.5	34.6	23.8	11.5	55.2
	02:00	54.9	53.5	51.5	51.8	44.6	33.3	24.1	11.4	52.2
	02:15	54.6	53.0	51.2	52.8	45.7	33.0	23.2	11.4	52.3
	02:30	55.3	53.5	51.3	52.0	44.9	32.9	23.5	11.4	51.9
	02:45	54.5	52.5	50.8	51.9	44.6	32.7	23.4	11.4	51.5
	03:00	54.2	52.7	51.0	52.7	45.5	32.8	23.3	11.4	52.1
	03:15	54.3	53.0	50.8	52.1	44.6	32.9	23.4	11.4	51.7
	03:30	53.0	52.5	49.4	49.5	42.3	32.1	23.2	11.4	49.4
	03:45	55.2	54.5	51.3	52.0	44.5	32.8	23.0	11.4	51.4
	04:00	54.7	53.8	50.9	52.0	44.6	32.4	23.1	11.4	51.8
	04:15	54.9	53.5	50.9	52.5	44.6	32.6	23.3	11.4	51.8
	04:30	54.6	53.1	50.8	51.3	44.3	32.9	23.5	11.4	51.4
	04:45	54.4	53.6	51.5	52.8	45.8	33.3	23.6	11.4	52.6
	05:00	56.1	54.8	52.2	52.7	45.0	33.1	23.0	11.4	52.8
	05:15	56.5	55.3	52.9	53.9	46.1	33.3	23.1	11.4	53.5
	05:30	56.8	55.4	53.8	55.2	47.4	33.6	22.6	11.3	54.6
	05:45	58.0	56.7	54.4	56.1	48.4	34.5	23.5	11.4	55.3
	06:00	58.5	56.6	54.4	55.5	47.9	34.2	23.4	11.4	55
	06:15	60.7	58.7	56.9	58.5	52.4	38.8	23.6	11.4	58.4

Date	Time	Measured $L_{90,15\text{mins}}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	06:30	60.8	59.2	57.8	60.2	52.4	36.4	23.0	11.3	59.3
	06:45	59.8	58.6	57.1	59.6	51.6	35.9	22.9	11.3	58.8
24/02/2024	23:00	60.6	59.4	58.1	60.3	52.2	36.0	22.5	11.2	59.4
	23:15	60.1	59.3	57.4	60.1	51.9	36.0	22.7	11.3	59.1
	23:30	59.5	59.0	56.9	59.5	51.7	35.6	22.7	11.3	58.5
	23:45	59.2	58.6	56.6	59.3	51.2	35.1	21.6	11.1	58.3
25/02/2024	00:00	58.2	57.5	55.4	58.1	50.0	33.9	21.6	11.1	57
	00:15	58.8	58.2	56.3	59.2	51.4	34.7	21.2	11.0	58.3
	00:30	59.0	58.7	56.7	59.7	52.0	35.2	21.8	11.2	58.6
	00:45	57.2	56.9	54.7	57.0	49.3	33.6	21.8	11.1	56.4
	01:00	57.0	56.3	54.7	57.4	52.1	38.6	22.1	11.2	57.9
	01:15	57.5	56.4	54.6	57.1	49.0	33.5	21.8	11.1	56.2
	01:30	57.7	55.1	54.0	56.4	48.6	33.5	21.1	11.0	55.6
	01:45	56.4	54.2	52.7	55.2	47.2	32.5	20.8	11.0	54.2
	02:00	56.7	54.8	53.5	56.2	48.6	33.9	22.0	11.1	55.3
	02:15	56.9	54.6	52.9	54.8	47.0	33.3	22.3	11.2	53.9
	02:30	55.3	54.6	52.5	54.5	46.9	32.9	22.3	11.2	54
	02:45	55.2	54.9	53.0	55.5	47.6	33.1	21.9	11.2	54.7
	03:00	55.8	54.4	52.8	55.3	47.6	32.3	21.5	11.1	54.6
	03:15	54.9	53.4	51.6	53.9	46.0	32.1	21.6	11.1	53.1
	03:30	55.3	53.4	50.7	52.5	44.8	31.3	20.8	11.0	51.8
	03:45	54.6	53.4	50.8	52.6	44.7	31.0	20.9	11.0	51.9
	04:00	55.2	54.3	51.4	53.4	45.6	32.0	21.7	11.2	52.8
	04:15	54.6	53.7	50.1	50.6	42.8	31.5	22.3	11.3	50.1
	04:30	55.5	55.8	53.5	55.0	46.9	32.7	22.0	11.2	54.5
	04:45	55.8	53.5	51.1	52.0	44.5	32.3	22.7	11.4	51.6
	05:00	56.0	54.4	51.4	52.7	45.3	32.5	22.2	11.2	52.2

Date	Time	Measured $L_{90,15\text{mins}}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	05:15	55.7	54.5	52.4	53.6	45.6	32.2	21.3	11.1	53.1
	05:30	56.8	58.0	56.3	57.2	49.0	32.8	20.8	11.0	56.6
	05:45	56.4	56.6	54.8	55.7	47.5	32.2	20.4	11.0	55.4
	06:00	56.8	57.1	55.0	57.5	49.4	32.7	20.5	11.0	56.6
	06:15	57.0	56.6	54.6	56.8	48.6	32.9	21.4	11.1	56
	06:30	58.4	58.3	56.6	59.7	51.7	34.9	22.1	11.2	58.8
	06:45	59.2	59.0	57.2	59.8	51.5	34.4	21.6	11.1	58.8
25/02/2024	23:00	58.3	55.9	54.0	56.1	48.1	32.4	20.1	11.0	55.3
	23:15	57.5	54.4	51.8	53.6	45.5	31.0	20.0	11.0	52.8
	23:30	57.1	54.3	52.3	53.8	45.7	31.3	19.9	11.0	53.2
	23:45	55.9	53.2	50.8	52.6	44.1	30.0	19.6	11.0	51.7
26/02/2024	00:00	55.8	52.8	50.5	51.8	44.0	30.2	20.1	11.0	51.1
	00:15	53.8	50.9	48.6	49.6	41.9	29.3	20.0	11.1	49
	00:30	54.1	51.1	49.1	50.6	42.7	29.6	20.0	11.1	49.9
	00:45	54.5	51.3	48.6	49.2	41.4	29.2	19.8	11.1	48.9
	01:00	54.1	50.5	47.5	47.5	39.8	28.6	19.8	11.1	47.2
	01:15	52.9	49.2	46.1	45.7	39.1	28.2	19.5	11.0	46
	01:30	53.4	49.9	47.0	47.1	40.0	28.5	19.4	11.0	46.8
	01:45	52.7	49.5	47.1	47.5	39.8	28.3	19.6	11.0	47.1
	02:00	52.3	48.8	46.0	45.6	38.6	27.9	19.3	11.0	45.7
	02:15	52.6	49.1	46.3	45.7	38.5	28.1	19.4	11.0	45.5
	02:30	52.0	48.8	45.8	44.9	38.1	28.8	20.1	11.0	46
	02:45	51.9	48.3	45.5	44.7	37.9	28.8	20.6	11.1	45.7
	03:00	52.1	48.4	45.3	44.7	38.1	29.3	20.9	11.1	46.3
	03:15	52.6	49.2	46.7	46.5	39.1	29.1	20.2	11.0	46.9
	03:30	52.8	49.6	47.7	48.2	41.0	29.3	20.1	11.0	49.2
	03:45	52.9	49.1	46.6	46.1	39.7	29.4	20.1	11.0	47.1

Date	Time	Measured $L_{90,15\text{mins}}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	04:00	53.1	49.7	47.0	46.0	39.1	28.7	19.9	11.0	46.9
	04:15	54.3	51.4	49.6	50.3	42.6	29.9	20.3	11.0	50
	04:30	55.3	52.1	50.5	50.5	42.1	30.0	20.4	11.0	50.7
	04:45	56.4	53.5	51.6	52.3	44.4	31.8	21.4	11.1	52
	05:00	57.0	54.6	52.9	54.4	46.7	33.2	22.2	11.2	54
	05:15	57.9	55.9	54.4	55.9	47.6	33.1	21.5	11.1	55
	05:30	59.3	57.1	56.4	57.7	49.3	34.4	21.0	11.0	57
	05:45	59.9	56.9	56.4	57.8	49.3	34.4	20.7	11.0	57.2
	06:00	61.2	58.7	57.8	59.4	51.0	35.5	21.1	11.0	58.7
	06:15	63.0	60.1	59.5	61.7	53.3	37.5	21.7	11.1	60.8
	06:30	63.2	60.6	59.8	61.9	53.5	37.1	21.6	11.0	61
	06:45	64.4	61.5	60.6	62.9	54.6	38.3	21.9	11.0	61.9

Table A-4 – 2024 Logger 1, Mayfield Park, arithmetic average measured $L_{90,15\text{mins}}$ levels night-time (23:00-07:00)

	Time	Arithmetic average of $L_{90,15\text{min}}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	23:00	59.8	58.7	57.0	59.5	51.7	36.8	23.6	11.5	58.6
	23:15	59.3	58.0	56.2	58.5	50.6	36.0	23.5	11.5	57.6
	23:30	58.6	57.5	55.6	58.0	50.2	35.5	23.3	11.4	57.2
	23:45	58.0	56.6	54.6	56.7	48.9	34.8	23.2	11.4	55.9
	00:00	57.5	56.0	53.7	55.6	47.8	34.2	23.2	11.4	54.9
	00:15	57.0	55.7	53.5	55.4	47.7	34.2	23.4	11.4	54.8
	00:30	57.0	55.5	53.1	54.9	47.2	33.8	23.4	11.4	54.3
	00:45	56.5	54.7	52.1	53.6	46.0	33.4	22.9	11.4	53.3
	01:00	55.9	54.1	51.7	53.1	46.0	34.1	23.1	11.5	53.1
	01:15	55.4	53.4	50.8	51.8	44.2	32.1	22.6	11.3	51.7
	01:30	55.0	52.7	50.1	51.3	43.8	32.0	22.6	11.4	51.1
	01:45	54.9	52.9	50.6	51.9	44.4	32.6	23.0	11.4	51.7

	Time	Arithmetic average of $L_{90,15min}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	02:00	55.0	52.9	50.4	51.3	43.9	32.5	23.2	11.4	51.3
	02:15	55.1	52.8	50.2	50.8	43.5	32.4	23.2	11.5	50.8
	02:30	54.6	52.6	49.8	50.1	43.0	32.3	23.0	11.4	50.5
	02:45	54.4	52.1	49.5	49.9	43.0	32.6	23.5	11.7	50.3
	03:00	54.5	52.1	49.4	50.1	43.0	32.4	23.1	11.4	50.3
	03:15	54.5	52.0	49.1	49.6	42.2	31.5	22.5	11.3	49.7
	03:30	54.3	52.0	49.1	49.9	42.5	31.3	22.2	11.3	49.9
	03:45	54.8	52.5	49.5	49.9	42.7	31.6	22.4	11.3	49.9
	04:00	54.9	52.4	49.4	49.6	42.3	31.4	22.2	11.3	49.8
	04:15	55.5	53.3	50.6	51.4	43.7	32.1	22.7	11.3	51.1
	04:30	55.8	53.9	51.6	52.5	44.6	32.2	22.6	11.3	52.2
	04:45	56.5	54.3	52.1	52.9	45.2	32.9	22.8	11.3	52.5
	05:00	57.1	55.1	52.8	54.0	46.3	33.6	23.1	11.6	53.6
	05:15	57.6	56.0	54.2	55.5	47.7	34.3	23.2	11.9	55.0
	05:30	58.7	57.6	56.4	57.8	49.9	35.8	23.1	11.2	57.2
	05:45	58.8	57.3	55.9	57.5	49.2	34.3	21.7	11.1	56.8
	06:00	59.6	58.2	56.7	58.6	50.5	35.0	22.0	11.1	57.8
	06:15	61.4	59.7	58.6	60.7	53.1	38.9	24.6	11.3	60.0
	06:30	61.9	60.5	59.5	62.1	54.3	39.4	25.3	11.4	61.2
	06:45	62.4	61.0	60.0	62.4	54.5	39.7	25.4	11.4	61.6
	Minimum	54.3	52.0	49.1	49.6	42.2	31.3	21.7	11.1	49.7

Table A-5 – 2024 Logger 2 Mancunian Way, measured $L_{90,1hr}$ levels daytime (07:00-23:00)

Date	Time	Measured $L_{90,1hr}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
15/02/2024	12:00	60.6	56.8	59.2	60.0	65.5	60.1	49.7	44.4	67.9
	13:00	60.9	57.2	59.6	60.1	65.6	60.1	49.9	44.9	68.0
	14:00	60.9	57.3	59.8	60.6	66.3	61.4	53.4	51.1	69.0
Excluded rain	15:00									
	16:00	63.2	57.0	55.6	54.5	59.0	55.3	50.5	48.7	62.6
	17:00	62.5	56.7	56.4	55.8	61.6	56.9	49.7	47.6	64.3
	18:00	62.3	56.5	56.5	55.7	61.4	56.8	49.6	47.5	64.1
	19:00	58.6	55.1	58.1	58.9	65.3	60.6	51.2	47.6	67.8
	20:00	57.5	53.9	57.2	57.8	64.2	59.4	49.4	44.4	66.7
	21:00	56.4	52.8	56.0	56.6	63.0	58.2	47.8	41.7	65.5
	22:00	55.9	51.8	54.8	55.9	62.2	56.9	45.8	39.0	64.4
16/02/2024	07:00	61.5	57.1	59.9	61.1	67.2	62.6	53.9	50.2	69.7
	08:00	61.3	57.0	59.7	60.9	66.7	62.4	55.1	52.0	69.6
	09:00	61.7	57.1	59.6	61.0	66.4	62.3	56.9	55.3	69.6
	10:00	60.9	56.4	58.7	59.8	65.1	60.2	52.7	49.9	67.8
	11:00	61.0	56.7	59.5	60.4	66.2	61.4	53.2	50.1	68.9
	12:00	61.6	57.2	59.8	60.9	66.2	61.2	53.9	51.3	68.9
Excluded rain	13:00-14:00									
	15:00	63.1	57.2	57.4	56.9	61.9	56.5	46.7	41.5	64.3
	16:00	61.2	56.9	60.1	60.5	66.3	60.8	50.2	44.0	68.5
	17:00	60.7	56.5	59.6	59.8	66.1	61.0	50.7	44.9	68.3
	18:00	60.3	56.3	59.5	60.4	66.8	62.1	52.4	47.1	69.3
	19:00	59.1	55.4	58.9	59.7	66.1	61.2	50.7	44.4	68.5
	20:00	58.4	54.3	57.8	58.7	65.1	60.4	50.1	44.1	67.5
	21:00	56.5	52.6	55.9	56.9	63.4	59.1	49.6	45.1	66.1
	22:00	56.6	53.2	56.3	57.5	64.1	59.6	49.9	45.3	66.6
17/02/2024	07:00	54.9	50.9	52.9	54.6	60.7	56.3	49.3	45.3	63.5

Date	Time	Measured $L_{90,1hr}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
Excluded rain	08:00									
Excluded rain	09:00									
	10:00	58.7	54.7	57.6	58.4	64.6	59.5	49.4	44.0	67.0
	11:00	59.0	55.2	58.2	59.0	65.2	60.0	50.1	44.5	67.5
	12:00	59.5	55.8	59.0	59.6	65.9	60.4	50.1	44.0	68.1
	13:00	59.9	56.2	59.5	59.8	66.0	60.3	49.5	43.4	68.1
	14:00	60.4	56.6	59.6	60.0	66.1	60.5	49.7	43.3	68.3
	15:00	60.8	56.7	59.0	58.9	64.5	59.4	51.6	48.8	67.2
Excluded rain	16:00-22:00									
18/02/2024	07:00	52.4	49.1	51.7	53.5	59.5	54.7	44.6	39.7	62.1
	08:00	54.4	50.0	52.5	53.8	59.9	55.0	44.6	38.5	62.4
	09:00	55.9	52.4	55.4	56.6	62.8	57.7	47.4	42.1	65.1
	10:00	57.0	53.5	57.1	57.9	64.4	59.2	48.4	42.1	66.7
	11:00	58.2	54.6	58.1	58.7	64.9	59.3	48.6	42.0	67.1
	12:00	59.3	55.9	59.1	59.6	65.8	60.0	49.2	42.8	68.0
	13:00	59.2	55.8	59.4	59.5	65.4	59.2	47.6	40.4	67.5
	14:00	59.4	56.1	59.6	59.8	65.9	59.7	48.3	41.1	68.0
	15:00	58.9	55.2	58.7	59.3	65.3	59.4	47.5	40.2	67.5
	16:00	58.2	55.0	58.2	58.6	64.6	58.6	46.8	39.4	66.7
	17:00	57.9	54.3	57.7	58.2	64.3	58.6	46.6	39.0	66.4
	18:00	57.8	54.2	57.5	58.3	64.3	58.6	46.7	39.4	66.5
	19:00	57.3	53.8	57.0	57.6	63.7	58.0	46.0	37.9	65.8
	20:00	55.9	52.5	55.5	56.3	62.3	56.8	44.5	36.1	64.5
	21:00	55.3	51.7	54.5	55.2	61.3	55.7	43.2	34.2	63.5
	22:00	54.2	50.7	53.6	54.0	60.2	54.5	41.7	31.8	62.3
19/02/2024	07:00	62.0	57.8	60.9	61.9	67.9	63.0	54.6	51.2	70.4
	08:00	61.7	57.4	60.5	61.3	67.2	62.1	53.1	49.0	69.7

Date	Time	Measured $L_{90,1hr}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	09:00	61.1	56.9	59.7	60.3	65.8	60.4	50.2	44.4	68.1
	10:00	60.1	55.8	58.8	59.4	64.6	58.7	47.6	40.3	66.9
	11:00	60.6	56.3	59.3	59.8	65.0	58.8	47.0	39.7	67.1
	12:00	60.8	56.4	59.1	59.4	64.8	58.4	46.7	39.8	66.9
Excluded rain	13:00									
	14:00	60.9	57.0	59.7	60.3	65.7	59.5	47.7	40.8	67.7
	15:00	60.6	56.5	59.9	60.6	66.2	60.2	48.4	41.4	68.3
	16:00	60.5	56.5	59.8	60.2	65.9	59.8	48.0	40.8	67.9
	17:00	60.8	56.6	59.7	60.3	66.2	60.5	48.6	41.7	68.3
	18:00	59.5	55.5	58.5	59.3	65.6	60.0	47.7	39.9	67.7
	19:00	57.8	54.5	57.5	58.4	64.5	59.0	46.6	38.6	66.7
	20:00	57.1	53.3	56.1	57.1	63.3	57.7	44.9	35.8	65.5
	21:00	55.9	52.1	54.7	55.7	61.7	56.4	43.4	34.3	63.9
	22:00	54.7	50.7	53.2	54.1	60.1	54.6	41.1	30.6	62.4
20/02/2024	07:00	62.2	58.1	60.9	62.0	67.7	62.3	51.2	45.0	69.9
	08:00	61.8	58.0	60.6	61.6	67.4	61.8	51.0	44.9	69.6
	09:00	61.7	57.7	59.9	60.6	66.0	60.4	49.7	43.5	68.4
	10:00	61.0	56.8	59.2	60.1	65.1	59.2	48.1	41.7	67.4
	11:00	60.9	57.0	59.4	60.1	65.1	59.1	47.9	41.2	67.4
	12:00	61.1	57.1	59.5	60.0	65.3	59.2	47.8	41.0	67.5
	13:00	61.2	57.2	59.8	60.5	65.7	59.7	48.3	42.1	67.9
	14:00	61.3	57.3	60.0	60.8	66.4	61.2	53.5	50.8	69.0
	15:00	61.6	57.5	60.4	61.6	66.4	63.1	60.6	59.0	70.3
Excluded rain	16:00-18:00									
	19:00	59.3	54.8	57.1	57.8	63.8	59.2	50.0	46.0	66.4
	20:00	57.4	53.5	56.4	57.6	64.2	59.6	49.6	44.7	66.6
	21:00	58.9	55.0	58.6	60.3	67.1	62.4	52.9	48.1	69.5

Date	Time	Measured $L_{90,1hr}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	22:00	57.1	53.6	56.7	58.0	64.7	60.1	49.9	44.3	67.2
21/02/2024 Excluded rain	07:00-14:00									
	15:00	61.4	56.9	60.1	60.9	66.9	62.1	53.6	50.5	69.5
	16:00	62.2	57.1	58.8	58.6	64.6	59.4	48.7	42.4	66.9
	17:00	61.2	56.8	59.9	60.1	66.4	60.9	50.0	43.0	68.6
	18:00	60.1	56.1	59.1	59.8	66.4	61.1	49.9	42.5	68.6
	19:00	58.6	54.8	57.9	58.7	65.2	60.0	48.5	40.7	67.4
	20:00	57.5	53.8	56.9	58.1	64.5	59.4	47.7	39.5	66.9
	21:00	56.4	52.8	55.8	56.7	63.2	58.0	46.2	37.8	65.5
	22:00	54.4	50.8	53.3	54.0	60.3	55.0	42.5	32.1	62.6
22/02/2024 Excluded rain	07:00									
	08:00	61.7	57.3	60.0	61.3	67.5	63.2	55.1	51.5	70.3
	09:00	61.3	57.1	59.6	60.7	66.6	61.8	52.7	48.5	69.2
	10:00	60.5	56.1	58.7	59.9	65.7	61.0	52.1	48.1	68.3
	11:00	60.7	56.2	59.0	60.8	65.2	62.1	57.9	55.2	69.2
	12:00	60.0	55.8	58.7	59.8	65.7	61.2	52.2	48.3	68.4
	13:00	60.6	56.2	58.7	59.7	65.2	60.1	49.7	44.1	67.6
	14:00	60.9	56.6	59.2	60.0	65.7	60.3	48.8	41.7	68.0
	15:00	61.2	56.8	59.6	60.3	65.9	60.2	48.2	40.3	68.1
	16:00	62.0	57.1	59.5	59.5	65.2	59.2	46.5	38.4	67.3
	17:00	60.8	56.5	59.4	59.8	65.8	60.0	47.2	38.6	67.9
	18:00	60.1	56.2	59.9	60.6	67.0	61.5	48.7	39.8	69.2
	19:00	58.7	55.2	58.3	59.3	65.7	60.5	47.6	38.4	67.8
	20:00	57.3	53.6	56.9	58.3	64.7	59.7	47.7	40.8	67.0
	21:00	56.7	52.7	55.7	57.0	63.9	59.5	48.1	41.4	66.4
	22:00	55.8	52.1	54.8	55.8	62.6	58.0	46.1	38.4	65.1

Date	Time	Measured $L_{90,1hr}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
23/02/2024	07:00	62.0	57.4	60.1	62.3	67.8	64.2	58.4	55.3	71.1
	08:00	61.7	57.1	59.9	61.8	67.0	63.6	58.8	55.7	70.5
	09:00	60.8	56.5	59.3	61.1	65.4	62.8	59.8	56.9	69.7
	10:00	60.7	56.3	59.0	60.4	65.8	61.5	54.7	51.5	68.8
	11:00	61.3	56.5	58.7	60.1	65.0	61.5	57.0	54.2	68.5
	12:00	61.2	56.6	59.1	60.4	65.7	61.4	55.2	52.4	68.6
	13:00	60.8	56.5	59.2	60.7	66.5	61.8	52.8	48.8	69.1
	14:00	60.6	56.5	59.2	60.3	66.4	61.4	50.7	44.3	68.8
	15:00	60.0	56.1	58.8	60.0	66.0	61.0	49.3	41.5	68.4
Excluded rain	16:00-18:00									
	19:00	58.9	54.8	58.0	59.4	66.2	62.0	51.8	46.3	68.7
	20:00	57.9	53.9	56.4	57.6	64.5	60.2	49.6	43.5	67.0
	21:00	57.2	53.2	55.9	57.1	63.9	59.6	48.6	41.6	66.5
	22:00	57.3	53.0	55.6	56.9	63.9	59.7	48.3	40.6	66.4
24/02/2024	07:00	56.7	52.9	54.9	56.4	62.6	57.7	45.2	36.4	65.0
	08:00	57.2	53.1	54.9	56.3	62.3	57.3	45.2	36.8	64.6
	09:00	57.9	54.2	56.7	57.6	63.9	58.9	47.2	39.3	66.3
	10:00	59.1	55.0	57.5	58.2	64.1	58.5	45.8	37.0	66.3
	11:00	59.3	55.6	58.5	59.2	65.3	59.8	47.2	38.7	67.5
	12:00	59.4	55.7	58.9	59.6	65.4	59.8	47.7	38.4	67.8
	13:00	60.1	56.4	59.6	60.0	66.0	60.1	47.2	39.1	68.1
	14:00	59.7	56.2	59.3	60.0	65.9	59.9	47.1	38.8	68.0
	15:00	58.9	55.3	58.9	59.6	65.4	59.2	45.6	36.7	67.4
Excluded rain	16:00									
	17:00	58.5	54.8	58.5	59.7	66.1	61.3	49.9	43.6	68.5
	18:00	59.2	55.1	58.5	59.5	66.1	61.2	49.5	42.5	68.4
	19:00	58.2	54.3	57.8	59.0	65.8	61.1	49.1	41.1	68.1

Date	Time	Measured $L_{90,1hr}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	20:00	57.6	53.5	56.7	58.1	64.7	60.0	47.6	39.1	67.1
	21:00	57.3	53.0	56.0	57.2	63.6	58.8	46.6	37.9	65.9
	22:00	56.8	52.6	55.8	56.6	62.8	57.9	45.2	36.2	65.2
25/02/2024	07:00	55.5	50.2	52.1	53.6	58.8	53.8	40.4	31.1	61.3
	08:00	55.6	50.5	52.7	53.9	59.4	56.1	46.5	32.4	62.5
	09:00	55.7	52.1	54.0	55.1	61.2	56.2	44.2	35.3	63.9
	10:00	57.4	53.7	56.2	57.0	62.9	57.6	44.6	35.8	65.3
	11:00	57.9	54.3	57.0	57.4	63.2	57.8	44.7	36.0	65.5
	12:00	58.8	55.0	57.8	58.3	63.8	58.3	45.4	36.8	66.0
	13:00	58.9	55.4	58.0	58.3	63.9	58.1	44.9	36.4	66.0
	14:00	59.3	55.6	58.2	58.7	63.9	58.2	45.7	37.4	66.2
	15:00	58.5	54.6	56.9	57.3	62.6	56.9	43.8	34.7	64.8
	16:00	58.4	54.6	57.1	57.7	63.1	57.4	44.1	35.0	65.4
	17:00	58.7	54.7	57.0	57.6	63.0	57.6	44.5	35.6	65.4
	18:00	58.5	54.7	57.3	57.8	63.5	57.9	44.9	36.0	65.8
	19:00	56.9	52.8	55.0	55.7	61.1	55.9	42.6	32.9	63.5
	20:00	56.5	52.2	54.0	55.1	60.4	55.2	41.7	31.7	62.8
	21:00	55.6	51.3	52.5	53.4	58.3	53.1	40.4	29.8	60.9
	22:00	54.4	50.3	51.9	52.8	58.3	53.4	40.1	29.3	60.7
26/02/2024	07:00	63.0	58.0	60.4	61.5	67.1	61.9	50.4	43.3	69.5
	08:00	63.8	57.6	59.8	60.6	66.2	60.9	49.0	41.4	68.5
	09:00	62.0	57.5	59.5	59.9	65.0	59.4	47.5	40.0	67.3
	10:00	60.9	56.9	58.8	59.1	63.5	57.4	45.7	39.0	65.8

Table A-6 – 2024 Logger 2, Mancunian Way, arithmetic average measured $L_{90,1hr}$ levels daytime (07:00-23:00)

	Time	Arithmetic average of $L_{90,1hr}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	07:00	58.9	54.6	57.1	58.5	64.4	59.6	49.8	44.2	67.0
	08:00	59.9	55.3	57.8	59.0	64.9	60.3	50.9	44.7	67.5
	09:00	59.8	55.7	58.2	59.2	64.8	60.0	50.6	45.0	67.5
	10:00	59.6	55.5	58.2	59.0	64.6	59.3	48.9	42.9	67.0
	11:00	59.9	55.8	58.6	59.5	65.0	60.0	50.4	44.6	67.6
	12:00	60.2	56.2	59.0	59.8	65.4	60.0	49.8	43.9	67.8
	13:00	60.2	56.4	59.2	59.8	65.5	59.9	48.7	42.4	67.8
	14:00	60.4	56.6	59.4	60.0	65.8	60.2	49.4	43.2	68.1
	15:00	60.5	56.3	59.0	59.5	65.1	59.8	49.5	43.5	67.6
	16:00	60.8	56.3	58.4	58.5	64.1	58.6	47.8	41.3	66.5
	17:00	60.1	55.9	58.5	58.9	64.9	59.6	48.4	41.7	67.2
	18:00	59.7	55.6	58.3	58.9	65.1	59.9	48.7	41.8	67.4
	19:00	58.3	54.5	57.6	58.5	64.7	59.8	48.4	41.4	67.1
	20:00	57.3	53.5	56.4	57.5	63.8	58.8	47.3	40.0	66.2
	21:00	56.6	52.7	55.6	56.6	62.9	58.1	46.7	39.2	65.4
	22:00	55.7	51.9	54.6	55.6	61.9	57.0	45.1	36.8	64.3
	Minimum	55.7	51.9	54.6	55.6	61.9	57.0	45.1	36.8	64.3

Table A-7 – 2024 Logger 2 Mancunian Way, measured $L_{90,15\text{mins}}$ levels during night-time (23:00-07:00)

Date	Time	Measured $L_{90,15\text{min}}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
15/02/2024	23:00-23:30									
	23:45	51.2	47.5	49.4	51.0	56.6	52.6	44.4	38.9	59.8
16/02/2024	00:00	50.5	46.0	47.3	48.2	53.5	48.8	40.4	35.1	56.4
	00:15	49.9	45.9	48.3	49.8	55.5	51.3	42.7	38.7	58.6
	00:30	48.6	44.6	46.0	46.7	51.9	47.8	39.0	35.7	55
Rain excluded	00:45-01:00									
	01:15	46.6	42.3	43.4	44.1	49.0	44.0	38.6	36.2	52.8
	01:30	46.9	42.9	44.4	45.0	51.2	47.2	39.5	35.7	55.3
	01:45	48.0	42.9	44.4	45.5	51.3	46.3	39.4	36.4	54.6
	02:00	47.9	43.5	44.3	44.4	47.9	43.1	38.8	37.4	52.7
Rain excluded	02:15-02:30									
	02:45	44.1	41.5	42.5	42.3	45.0	42.3	39.4	38.1	49.7
	03:00	45.9	43.2	43.9	43.6	47.1	43.2	39.1	36.4	51.4
	03:15	44.7	41.3	42.8	41.8	46.1	41.6	36.0	32.2	50.7
	03:30	46.2	42.7	43.7	43.5	48.5	44.0	37.3	33.5	52.2
	03:45	45.7	42.0	43.2	42.8	47.2	43.1	36.5	31.2	51.5
	04:00	46.2	42.9	43.3	42.4	45.0	40.9	33.8	28.9	49.2
	04:15	48.6	45.0	45.7	46.6	50.5	45.6	37.4	32.2	53.8
	04:30	48.8	44.0	44.8	46.0	51.5	46.7	37.5	32.0	54.8
Rain excluded	04:45-06:00									
	06:15	58.1	53.5	56.1	57.8	64.2	59.2	50.6	47.1	66.6
	06:30	60.3	56.0	58.5	60.0	66.3	61.7	53.2	50.1	68.8
	06:45	60.8	56.6	59.2	60.9	67.2	62.6	54.0	50.5	69.8
16/02/2024	23:00	56.8	52.6	55.7	56.5	63.0	58.5	48.5	43.0	65.6
	23:15	55.2	51.3	54.5	55.5	61.7	57.1	47.2	42.2	64.2

Date	Time	Measured $L_{90,15min}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	23:30	52.9	49.6	53.0	54.4	61.3	56.8	45.8	39.5	63.7
	23:45	54.3	50.6	53.7	54.7	61.4	56.9	46.7	41.1	63.9
17/02/2024	00:00	54.1	49.6	52.4	54.1	60.1	55.6	44.9	38.1	62.8
	00:15	53.3	50.0	52.9	54.0	60.1	56.0	45.6	39.7	62.9
	00:30	53.4	50.1	52.3	53.4	59.5	54.8	45.1	40.1	62.2
	00:45	52.1	47.4	49.1	49.8	56.4	51.8	42.4	38.3	59.4
	01:00	50.1	45.6	48.0	49.3	55.9	51.1	40.3	34.2	58.6
	01:15	50.9	47.3	49.5	50.9	56.8	52.0	42.1	36.5	59.7
	01:30	51.1	46.0	47.7	49.2	55.3	50.5	41.3	36.7	58.1
	01:45	50.2	45.8	48.2	49.7	56.3	51.5	41.2	35.9	59
	02:00	50.9	45.5	46.7	48.3	53.2	47.8	40.1	35.6	56.9
	02:15	49.6	46.1	47.0	47.5	52.5	47.9	39.2	33.5	55.8
	02:30	48.0	45.3	46.5	47.7	52.9	47.5	37.8	31.1	56.4
	02:45	47.7	43.0	44.8	45.2	51.6	46.6	37.6	31.6	55.4
	03:00	49.0	45.0	46.4	46.9	52.8	48.3	38.5	32.1	56
Rain excluded	03:15-06:00									
	06:15	55.6	51.2	52.3	53.9	59.2	55.3	50.3	46.6	62.5
	06:30	55.0	50.6	52.6	54.3	60.3	56.3	49.9	46.9	63.3
	06:45	55.2	51.3	53.6	55.6	61.5	57.2	50.9	47.8	64.5
17/02/2024	23:00	57.9	52.6	54.5	55.4	60.8	56.6	51.4	48.5	63.8
	23:15	58.0	53.1	56.1	57.0	62.6	58.6	53.5	51.1	65.8
	23:30	56.3	52.4	55.8	56.6	62.7	58.3	51.9	49.6	65.6
	23:45	56.8	52.3	55.1	55.6	61.4	56.6	49.6	46.7	63.9
18/02/2024	00:00	57.8	51.1	53.6	54.2	60.3	56.0	47.5	43.8	63
	00:15	56.5	51.1	53.5	54.7	60.7	56.3	47.8	44.3	63.6
	00:30	54.6	50.1	52.4	52.6	58.4	54.1	47.0	43.6	61.8
	00:45	51.9	48.2	50.5	52.2	57.8	59.3	54.4	40.3	64.1

Date	Time	Measured $L_{90,15min}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	01:00	52.3	48.1	50.3	51.6	57.8	57.3	51.8	41.1	63.8
Rain excluded	01:15-01:30									
	01:45	50.3	46.4	49.4	50.5	56.8	52.0	43.9	40.5	59.5
	02:00	50.1	46.2	48.8	50.0	56.1	51.6	43.5	39.9	58.9
	02:15	51.7	47.6	49.4	50.8	56.6	52.3	45.4	41.9	59.6
	02:30	52.4	44.6	45.9	46.7	51.9	48.0	42.2	38.4	55.6
	02:45	52.5	45.1	45.8	46.7	52.8	48.4	41.5	37.3	56
	03:00	52.1	44.8	45.9	46.8	53.1	48.4	41.0	36.8	56.4
Rain excluded	03:15-06:45									
18/02/2024	23:00	54.1	50.5	53.3	53.5	58.8	53.2	41.0	31.5	61
	23:15	54.2	51.0	54.6	55.3	61.4	55.8	43.3	34.2	63.5
	23:30	52.2	48.6	51.4	51.5	56.9	51.3	38.3	27.6	59.1
	23:45	50.9	47.1	49.6	50.3	55.5	49.4	35.8	23.8	57.7
19/02/2024	00:00	50.0	46.7	48.6	48.6	52.9	47.3	35.1	27.7	55.5
	00:15	48.1	43.8	45.9	45.6	51.4	45.6	34.3	30.2	54.1
	00:30	47.8	44.6	46.8	47.7	52.8	46.8	36.1	30.0	55.7
	00:45	46.9	43.5	44.6	44.6	49.7	44.3	30.6	21.2	52.7
	01:00	47.1	43.2	43.6	41.9	45.7	39.8	28.5	20.2	49.1
	01:15	49.3	43.4	43.9	43.1	46.7	40.1	28.4	20.4	50
	01:30	45.8	41.9	42.5	41.1	45.7	39.0	30.9	23.2	50.4
	01:45	46.5	41.7	41.8	40.0	43.6	37.1	30.3	25.7	48.2
	02:00	45.7	41.1	41.9	39.9	44.0	38.4	29.4	22.6	48.3
	02:15	45.4	41.7	42.5	41.1	45.2	39.4	30.7	25.3	49.7
	02:30	48.2	42.5	42.9	41.8	44.9	38.9	30.1	24.1	49.2
	02:45	46.4	43.6	44.0	42.6	45.8	40.5	31.5	25.4	50
	03:00	45.3	42.3	42.4	39.4	42.2	36.0	29.3	22.0	47

Date	Time	Measured $L_{90,15min}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	03:15	45.6	43.4	42.7	39.2	41.0	35.0	28.8	23.8	46.8
	03:30	46.5	43.5	43.4	40.9	45.0	38.2	30.9	25.2	49.3
	03:45	47.0	44.3	43.9	41.5	43.3	37.5	30.1	26.5	48
	04:00	46.2	44.0	43.1	40.7	43.4	37.6	31.6	26.5	48.6
	04:15	47.9	44.6	43.8	42.8	46.8	41.2	33.0	29.9	50.8
	04:30	49.9	46.0	46.4	46.2	50.4	44.5	35.3	30.7	53.4
	04:45	52.2	46.6	47.4	48.4	53.3	47.2	35.5	27.4	55.9
	05:00	52.1	48.1	49.6	50.4	55.2	50.0	40.2	35.4	57.9
Rain excluded	05:15-06:45									
19/02/2024	23:00	54.1	50.2	53.4	54.3	60.3	54.7	41.3	30.6	62.5
	23:15	54.3	50.1	51.9	52.9	58.7	53.1	40.5	29.7	61
	23:30	52.4	47.4	49.3	50.0	55.9	50.2	36.1	23.6	58.2
	23:45	51.5	47.1	48.5	49.9	55.5	49.8	35.4	24.0	57.9
20/02/2024	00:00	50.3	45.7	47.1	46.9	52.7	46.0	33.7	24.5	54.8
	00:15	49.5	45.0	46.0	46.0	51.4	45.2	33.4	26.2	54
	00:30	51.0	45.8	46.6	46.5	50.7	45.5	32.9	23.4	53.7
	00:45	49.9	46.1	45.9	45.6	49.4	41.6	29.5	21.3	51.7
	01:00	48.2	43.5	44.9	45.0	50.1	44.0	29.5	19.5	52.7
	01:15	48.4	44.1	44.6	44.5	48.2	41.0	28.6	20.0	51.2
	01:30	50.5	43.9	44.1	42.6	46.2	39.8	30.3	21.5	49.8
	01:45	46.6	42.3	42.9	42.1	46.1	39.7	29.5	21.8	50.3
	02:00	46.5	43.1	42.8	41.1	44.9	38.2	29.7	23.8	49.4
	02:15	46.3	42.0	41.7	40.0	42.6	35.8	25.1	18.5	46.3
	02:30	49.7	43.3	42.9	41.9	43.8	38.1	29.5	23.2	49.2
	02:45	47.0	42.7	42.0	39.8	40.4	33.8	27.6	24.6	45.1
	03:00	46.7	43.0	42.2	39.9	42.4	35.1	26.7	19.9	46.9
	03:15	47.2	43.2	43.1	42.0	45.7	40.0	29.2	23.4	49.2

Date	Time	Measured $L_{90,15\text{min}}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	03:30	46.9	43.0	42.9	41.9	47.1	40.1	28.7	21.1	50
	03:45	47.9	44.0	45.0	44.0	48.5	42.0	28.4	21.3	51.3
	04:00	48.6	44.8	44.5	43.8	46.3	40.1	32.4	25.4	50.2
	04:15	50.5	46.0	46.4	46.4	50.5	44.6	32.9	26.1	53.3
	04:30	50.1	46.4	46.7	46.9	50.4	44.3	32.5	24.9	53.1
	04:45	51.2	46.4	46.2	46.2	49.0	42.4	33.3	25.2	52.7
	05:00	52.1	47.0	47.3	47.5	53.0	46.6	35.3	27.8	55.7
	05:15	53.9	49.5	50.6	51.8	56.8	51.3	38.5	28.2	59.3
	05:30	55.5	50.8	52.8	54.4	60.4	55.1	42.0	32.1	62.8
	05:45	55.8	52.0	53.7	55.3	61.5	55.9	43.8	35.6	63.9
	06:00	58.1	53.1	55.3	57.2	63.4	57.7	45.3	37.4	65.5
	06:15	58.7	54.6	56.9	58.5	64.7	59.0	47.4	39.8	66.9
	06:30	60.7	56.2	58.6	60.1	66.2	60.8	49.6	42.6	68.4
	06:45	61.6	57.5	60.1	61.4	67.5	62.0	50.6	44.0	69.7
20/02/2024	23:00	54.2	50.5	53.6	55.4	61.8	57.3	46.0	38.9	64.4
	23:15	53.0	48.2	50.5	52.1	57.7	53.2	42.1	32.7	60.4
	23:30	51.6	47.9	50.3	51.6	58.7	54.2	42.2	33.6	61.2
	23:45	51.7	47.2	48.4	49.6	55.9	50.7	39.2	30.6	58.5
21/02/2024	00:00	51.6	47.2	47.9	48.7	55.4	50.5	39.3	31.6	57.9
	00:15	50.1	46.1	46.9	48.1	53.9	48.1	36.7	27.9	56.6
	00:30	51.0	46.6	47.3	47.8	54.2	49.2	38.0	29.4	57.2
	00:45	49.7	46.1	45.9	45.5	49.9	44.9	35.1	28.5	53.5
	01:00	46.7	43.0	43.2	42.0	46.7	40.4	35.0	31.7	51.7
	01:15	46.7	43.3	42.5	41.8	45.4	39.5	31.1	25.7	49.9
	01:30	49.8	43.4	42.7	41.5	46.4	41.3	32.4	26.7	50.6
	01:45	47.7	43.1	42.1	41.3	46.0	40.8	32.8	27.5	50.2
	02:00	48.0	42.8	42.9	43.3	49.1	43.7	35.3	30.5	53.2

Date	Time	Measured $L_{90,15min}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	02:15	49.4	44.1	44.1	44.1	46.3	41.5	34.3	28.0	51.7
	02:30	48.6	42.8	42.5	40.8	42.8	38.7	32.2	25.1	47.9
	02:45	46.9	42.2	41.5	39.9	43.4	37.9	30.8	22.7	47.4
	03:00	47.0	43.0	42.4	41.2	45.4	40.0	30.7	24.6	48.9
Rain excluded	03:15-06:45									
21/02/2024	23:00	53.9	50.3	52.2	53.2	59.6	54.5	41.7	31.1	61.9
	23:15	52.9	49.2	51.1	51.4	57.9	52.4	39.1	28.6	60
	23:30	52.8	48.9	50.7	51.6	57.9	52.9	39.5	27.9	60.3
	23:45	50.9	46.7	47.7	47.7	53.7	47.9	33.9	21.6	55.7
22/02/2024	00:00	51.8	47.8	49.9	50.9	56.2	50.8	37.5	26.6	58.8
	00:15	50.8	47.3	48.7	48.5	53.6	48.0	34.4	23.0	56
	00:30	50.7	47.0	48.0	48.0	52.7	46.0	32.8	22.0	55.1
	00:45	51.2	45.6	45.3	43.8	48.5	42.4	30.6	22.7	52
	01:00	51.6	47.7	46.0	44.8	48.5	42.9	33.4	26.6	52.6
	01:15	48.6	45.0	44.6	43.2	48.8	42.5	31.4	24.9	51.6
	01:30	48.2	44.3	44.1	42.0	45.6	39.3	26.9	18.8	48.6
	01:45	49.6	45.7	45.5	44.5	48.4	42.5	30.0	19.8	51.7
	02:00	49.3	45.6	45.1	43.1	45.7	39.8	29.8	20.0	49.3
Rain excluded	02:15-06:45									
22/02/2024	23:00	54.8	51.1	53.5	54.8	61.0	56.6	45.3	36.9	63.6
	23:15	54.4	49.7	51.8	52.9	59.4	54.7	42.3	31.8	61.7
	23:30	52.6	49.3	51.3	52.5	59.1	54.3	41.9	31.8	61.5
	23:45	51.7	47.3	48.6	48.9	54.4	49.1	35.6	23.6	56.5
23/02/2024	00:00	51.0	46.7	47.8	47.3	52.9	47.5	33.5	24.4	55
	00:15	49.8	46.6	48.6	49.3	55.4	50.9	37.3	24.1	57.8
	00:30	50.2	47.2	48.5	49.5	54.9	49.9	36.2	23.3	57.3

Date	Time	Measured $L_{90,15min}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	00:45	50.8	46.6	47.6	47.3	53.0	48.1	33.6	20.6	55.6
	01:00	54.2	47.1	47.6	47.7	52.6	47.0	32.2	19.7	55
	01:15	56.2	47.2	47.0	46.4	50.8	44.4	29.4	19.2	53
	01:30	51.8	45.5	46.4	45.9	50.3	44.6	30.5	20.0	52.9
	01:45	48.7	44.9	46.2	46.2	50.5	44.7	31.3	19.2	53.3
	02:00	48.3	45.4	46.7	46.6	51.0	44.4	31.0	21.0	53.9
	02:15	47.3	44.8	45.0	43.0	46.8	40.9	26.5	17.6	49.5
	02:30	49.1	45.1	45.3	44.0	47.2	40.4	28.8	20.2	49.9
	02:45	47.2	43.9	44.2	42.8	46.9	40.0	25.6	17.4	49.1
	03:00	46.2	43.7	44.2	43.7	47.7	42.6	30.6	23.1	51
	03:15	47.0	44.1	44.7	43.6	47.5	41.0	29.5	20.7	50.6
	03:30	46.8	43.5	44.8	43.7	48.1	41.7	29.2	18.8	51
	03:45	47.9	44.4	45.8	46.1	51.4	45.7	34.0	25.3	54.3
	04:00	47.4	44.1	45.5	44.8	49.0	44.1	32.9	26.0	52.3
	04:15	49.1	45.1	46.8	47.2	52.0	45.6	34.4	26.3	54.8
	04:30	48.7	45.0	46.4	46.7	52.4	45.9	33.7	27.1	54.4
	04:45	51.0	46.7	47.5	48.5	54.0	48.6	37.3	30.7	56.8
	05:00	50.9	47.0	48.0	49.2	54.8	49.5	38.4	29.9	57.5
	05:15	52.5	47.9	49.5	50.6	55.9	51.6	43.2	38.4	58.8
	05:30	55.6	51.4	53.9	56.4	60.9	58.1	53.4	48.3	64.6
Rain excluded	05:45-06:00									
	06:15	59.5	54.6	56.8	59.2	65.4	61.2	52.4	47.7	68.1
	06:30	60.4	56.1	58.7	61.1	67.4	63.3	55.6	51.7	70.2
	06:45	60.8	56.8	59.6	62.2	68.1	64.1	56.8	53.2	71
23/02/2024	23:00	55.3	50.8	53.3	54.2	60.8	56.4	44.0	34.4	63.2
	23:15	55.7	50.7	53.2	54.0	60.9	56.7	45.1	36.1	63.3
	23:30	55.3	50.8	53.5	54.6	61.3	56.8	44.6	36.2	63.6

Date	Time	Measured $L_{90,15min}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	23:45	53.7	49.8	52.4	53.9	60.8	56.1	43.9	34.7	63.2
24/02/2024	00:00	52.9	48.7	50.9	52.3	59.4	54.6	41.7	30.8	61.7
	00:15	52.2	47.9	50.2	51.4	58.3	53.6	40.8	30.0	60.8
	00:30	51.6	47.6	49.3	50.6	57.1	51.8	37.9	23.8	59.4
	00:45	52.4	48.7	50.1	50.9	57.3	52.5	40.1	29.1	59.6
	01:00	50.5	46.3	48.1	49.9	56.5	51.8	38.4	26.5	58.9
	01:15	50.7	46.4	48.5	50.5	56.6	51.9	39.8	30.2	59.1
	01:30	52.3	44.7	45.9	47.4	53.8	48.8	37.4	30.0	56.6
	01:45	50.6	46.1	49.1	51.0	57.7	52.8	40.8	32.1	60.4
	02:00	50.4	44.6	45.5	46.8	50.4	45.2	35.2	28.1	53.8
	02:15	49.3	44.0	46.0	47.2	53.0	48.5	35.3	24.6	56
	02:30	50.7	45.3	46.4	47.5	51.4	46.6	35.5	27.0	54.6
	02:45	48.6	44.4	45.9	47.5	52.8	47.2	35.1	25.8	55.3
	03:00	48.4	43.4	44.8	46.3	52.3	46.9	34.1	24.1	55.1
	03:15	48.2	43.5	44.8	45.9	51.7	46.2	34.8	25.6	54.4
	03:30	48.0	42.3	43.3	42.6	46.3	40.5	31.8	23.4	49.1
	03:45	49.7	45.2	46.4	46.8	50.4	45.4	34.3	24.4	53.7
	04:00	48.7	44.2	46.3	47.5	52.3	46.9	34.6	23.9	55.3
	04:15	47.5	43.3	44.3	44.2	49.4	43.5	33.6	24.9	52.1
	04:30	49.4	44.2	45.2	46.1	50.8	45.2	33.8	25.1	53.8
	04:45	49.7	44.0	45.5	47.2	52.2	47.1	34.6	24.6	55.5
	05:00	50.6	45.1	46.7	47.3	52.2	46.3	33.9	23.0	54.9
	05:15	52.0	46.6	48.2	49.4	54.6	48.7	37.5	29.5	57.9
	05:30	51.4	45.8	47.2	48.6	52.9	47.5	34.4	22.6	55.5
	05:45	54.0	48.4	49.9	51.0	56.7	51.4	38.4	27.0	59.1
	06:00	54.7	48.4	49.1	50.8	55.7	50.3	37.4	26.7	58.2
	06:15	55.0	51.1	52.5	53.8	59.4	56.7	45.4	32.0	62.7

Date	Time	Measured $L_{90,15min}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	06:30	56.0	52.2	54.2	56.1	62.0	57.5	45.3	35.6	64.7
	06:45	55.2	50.9	52.8	54.3	60.7	55.8	42.6	32.2	63
24/02/2024	23:00	56.4	51.9	54.4	55.5	61.3	56.2	43.9	35.0	63.7
	23:15	56.2	51.5	54.3	55.3	61.6	56.7	44.0	34.4	64
	23:30	55.9	50.6	53.4	54.4	60.8	56.2	42.8	32.4	63.3
	23:45	54.8	50.6	53.3	54.5	60.9	55.9	42.6	32.4	63.1
25/02/2024	00:00	54.7	48.8	50.6	51.7	57.7	52.5	38.3	25.5	59.9
	00:15	54.2	49.8	52.5	53.7	59.9	55.2	41.2	29.6	62.3
	00:30	54.3	49.7	52.7	53.8	59.6	54.2	40.5	28.8	61.8
	00:45	53.3	47.9	50.4	52.0	58.1	52.9	37.5	22.6	60.4
	01:00	52.2	47.3	49.5	51.2	57.5	59.2	51.6	26.9	63.5
	01:15	53.5	48.5	50.8	52.5	58.8	53.8	39.9	29.0	61.3
	01:30	53.4	48.3	50.3	52.0	58.1	53.3	39.9	28.9	60.6
	01:45	52.1	47.0	48.8	50.0	57.0	52.0	38.9	28.2	59.6
	02:00	51.9	47.2	48.9	50.6	56.9	52.1	39.9	30.4	59.4
	02:15	51.2	47.1	48.6	50.4	57.0	52.0	39.0	30.5	59.5
	02:30	51.0	45.9	47.9	49.3	54.5	49.8	36.9	27.8	57.2
	02:45	50.2	45.2	48.4	50.5	56.4	51.3	38.7	30.0	59.1
	03:00	50.5	45.7	48.1	50.1	56.1	51.2	37.2	25.7	58.6
	03:15	49.6	45.1	46.9	48.4	55.0	49.6	36.5	28.1	57.2
	03:30	50.0	45.3	46.3	47.0	53.0	48.2	34.5	23.1	55.7
	03:45	49.4	44.2	45.3	46.3	51.3	46.0	32.6	22.4	54
	04:00	52.5	44.4	46.1	47.2	53.1	47.7	34.8	26.0	56
	04:15	54.3	44.0	45.1	45.4	49.0	42.7	32.1	23.0	51.8
	04:30	54.5	45.3	48.5	50.2	55.3	49.6	35.4	23.4	57.7
	04:45	54.1	45.5	45.9	47.1	52.3	46.7	33.2	22.8	54.9
	05:00	52.5	45.5	46.1	47.3	52.2	47.5	35.0	27.4	54.7

Date	Time	Measured $L_{90,15min}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	05:15	50.2	46.4	46.6	47.6	52.6	46.9	35.1	24.4	55.1
	05:30	51.2	47.7	50.7	53.7	58.0	52.6	39.4	28.3	60.8
	05:45	49.8	46.6	49.9	52.5	57.3	51.5	37.0	25.0	59.9
	06:00	50.8	47.1	49.7	51.6	57.1	51.1	36.0	23.5	59.2
	06:15	51.2	47.6	49.7	51.2	57.4	51.8	38.0	29.4	60.7
	06:30	52.3	49.2	51.8	54.2	60.2	55.2	40.2	27.9	62.5
	06:45	54.0	50.4	53.1	55.1	61.2	55.8	41.5	31.1	63.4
25/02/2024	23:00	54.6	50.4	52.1	53.0	58.8	54.0	40.2	29.2	61.3
	23:15	53.5	49.3	50.2	50.5	55.8	50.6	37.3	26.9	58.4
	23:30	53.3	48.9	49.9	50.7	55.8	49.9	36.7	25.8	58.2
	23:45	51.3	46.6	47.7	48.6	54.2	48.4	33.7	21.1	56.4
26/02/2024	00:00	51.4	47.0	48.0	49.2	54.5	49.1	35.0	22.4	57
	00:15	49.4	44.2	44.9	45.2	50.4	44.0	28.9	17.6	52.6
	00:30	49.3	44.3	45.1	46.2	51.3	45.6	30.1	18.7	53.7
	00:45	50.3	44.9	45.2	45.8	50.4	44.6	30.6	18.9	52.8
	01:00	49.1	43.9	44.1	43.9	47.6	40.9	26.7	18.9	49.9
	01:15	48.3	42.2	42.0	41.2	43.0	36.7	22.6	16.7	45.9
	01:30	49.7	43.0	43.2	43.1	46.8	40.9	26.4	16.5	49.6
	01:45	48.7	42.4	42.6	42.9	46.5	39.3	24.5	16.7	48.9
	02:00	48.3	42.1	42.2	42.3	45.4	38.9	24.4	16.5	47.9
	02:15	48.0	41.9	41.9	41.4	43.6	36.9	23.4	15.8	46.2
	02:30	49.0	41.5	41.7	41.5	43.1	35.7	25.9	18.7	47.5
	02:45	47.0	41.6	41.2	40.4	43.1	36.1	25.0	18.1	46.8
	03:00	46.7	41.8	40.9	40.0	41.0	34.3	28.3	20.7	47.9
	03:15	47.5	41.9	41.6	41.1	44.0	37.2	28.2	19.1	48.4
	03:30	48.5	42.5	42.4	42.9	46.8	40.6	29.8	20.8	51.2
	03:45	48.9	43.1	43.0	43.3	46.8	40.9	30.3	20.4	51

Date	Time	Measured $L_{90,15min}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	04:00	48.9	42.4	41.8	40.8	42.7	37.3	26.5	17.7	46.5
	04:15	49.9	44.3	45.0	45.9	49.7	43.5	30.3	20.1	52.2
	04:30	50.9	45.0	45.4	46.5	49.9	43.7	31.7	22.9	54
	04:45	52.7	46.0	46.6	47.7	51.5	45.7	33.6	23.7	54.3
	05:00	53.2	48.2	49.6	50.3	54.7	49.1	37.3	27.5	57.4
	05:15	54.0	48.6	50.1	51.6	56.9	51.0	37.2	25.5	58.9
	05:30	56.3	50.8	52.7	54.6	59.7	54.0	41.3	31.6	62.1
	05:45	57.1	52.0	53.1	55.5	60.4	54.7	42.0	32.6	62.8
	06:00	59.9	52.8	54.6	56.3	61.5	56.0	42.9	33.7	63.8
	06:15	61.4	55.5	57.4	59.0	64.9	59.5	47.8	40.1	67.2
	06:30	61.7	56.1	58.1	59.8	65.6	60.3	48.7	41.2	68
	06:45	62.5	57.7	60.0	61.3	67.2	61.9	50.4	43.1	69.6

Table A-8 – 2024 Logger 2, Mancunian Way, arithmetic average measured $L_{90,15mins}$ levels night-time (23:00-07:00)

	Time	Arithmetic average of $L_{90,15min}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	23:00	55.2	51.1	53.6	54.6	60.6	55.8	44.3	35.9	63.1
	23:15	54.7	50.4	52.8	53.7	59.8	54.9	43.4	34.8	62.2
	23:30	53.5	49.4	51.8	52.8	59.0	54.1	42.0	32.8	61.5
	23:45	52.6	48.4	50.4	51.3	57.3	52.1	40.1	30.8	59.7
	00:00	52.4	47.8	49.5	50.2	56.0	50.8	38.8	30.0	58.4
	00:15	51.3	47.1	48.9	49.7	55.5	50.4	38.5	30.1	58.1
	00:30	51.1	47.1	48.6	49.3	54.8	49.6	37.8	29.0	57.5
	00:45	50.9	46.5	47.5	47.7	53.0	48.2	36.4	26.3	56.2
	01:00	50.2	45.6	46.5	46.7	51.9	47.5	36.7	26.5	55.6
	01:15	49.9	45.0	45.7	45.8	50.4	44.6	33.2	25.9	53.5
	01:30	50.0	44.4	45.1	45.0	49.9	44.5	33.6	25.8	53.3
	01:45	49.0	44.4	45.5	45.8	50.9	45.3	34.8	27.6	54.2

	Time	Arithmetic average of $L_{90,15min}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	02:00	48.8	44.3	45.1	45.1	49.5	43.9	34.3	27.8	53.1
	02:15	48.7	44.4	45.1	45.1	49.3	43.9	33.2	26.2	52.7
	02:30	49.6	44.0	44.7	44.6	48.1	42.6	33.2	26.2	51.9
	02:45	47.8	43.3	44.0	43.8	47.8	42.4	33.3	27.1	51.4
	03:00	47.8	43.6	44.1	43.8	48.0	42.6	33.6	26.5	51.9
	03:15	47.1	43.2	43.8	43.1	47.3	41.5	31.9	24.7	51.0
	03:30	47.6	43.3	43.8	43.2	47.8	41.9	31.7	23.7	51.2
	03:45	48.1	43.9	44.7	44.4	48.4	43.0	32.3	24.5	52.0
	04:00	48.3	43.8	44.4	43.9	47.4	42.1	32.4	24.9	51.2
	04:15	49.7	44.6	45.3	45.5	49.7	43.8	33.4	26.1	52.7
	04:30	50.3	45.1	46.2	46.9	51.5	45.7	34.3	26.6	54.5
	04:45	51.8	45.9	46.5	47.5	52.1	46.3	34.6	25.7	55.0
	05:00	51.9	46.8	47.9	48.7	53.7	48.2	36.7	28.5	56.4
	05:15	52.5	47.8	49.0	50.2	55.4	49.9	38.3	29.2	58.0
	05:30	54.0	49.3	51.5	53.5	58.4	53.4	42.1	32.6	61.2
	05:45	54.2	49.8	51.6	53.6	59.0	53.4	40.3	30.1	61.4
	06:00	55.9	50.4	52.2	54.0	59.4	53.8	40.4	30.3	61.7
	06:15	57.1	52.6	54.5	56.2	62.2	57.5	47.4	40.4	65.0
	06:30	58.1	53.8	56.1	57.9	64.0	59.3	48.9	42.3	66.6
	06:45	58.6	54.4	56.9	58.7	64.8	59.9	49.5	43.1	67.3
	Minimum	47.1	43.2	43.8	43.1	47.3	41.5	31.7	23.7	51.0

2019 REPRESENTATIVE BACKGROUND DATA

Table A-9 – 2019 Position L1, measured $L_{90,1hr}$ levels during daytime (07:00-23:00)

Date	Time	Measured $L_{90,1hr}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
17/08/19	07:00	53	45.9	47.1	48.3	50.1	44	35.5	26.8	52.6
	08:00	57.6	47.7	48.6	48.8	51.5	46	36.4	24.7	54.0
	09:00	57.5	46.7	47.7	47.5	50.6	44.5	35	23.2	52.9
	10:00	59.4	54.6	52.9	52	54.1	48.6	41.6	29.8	56.8
	11:00	59.4	54.8	52.8	52.5	53.8	47.8	39.9	30.4	56.6
	12:00	58.6	53.5	53.5	53.6	54.6	48.4	40.8	31.4	57.3
	13:00	60.2	57.2	57.6	59.7	58.7	53.1	46.5	36.5	62.1
	14:00	62.2	60.7	60.1	63	61.7	56.9	49.8	38.8	65.3
	15:00	64.4	60.9	61.4	64.3	62.8	57.8	51.1	39.1	66.4
	16:00	60	60.8	62.4	66.4	64.5	59.8	53	41.7	68.3
	17:00	60.1	61	63	67.9	66.6	62.1	55	43	70.2
	18:00	59.6	59.5	62.1	67.3	65.6	61.2	53.8	42.7	69.3
	19:00	58.6	56.7	61.3	66.9	64.8	60	52.6	41.1	68.5
	20:00	58.2	55.9	61	66.7	64.1	59.2	52.2	40.8	68.0
	21:00	58.2	58.4	59.8	63.7	61.9	57.1	50.2	40.3	65.6
	22:00	57.4	48.3	48.3	49.4	51.7	44.8	34.8	26.1	53.9
18/8/19	07:00	55.9	44.1	44.3	43.8	46.6	39.7	28.6	19.1	48.8
	08:00	57.1	46.4	47.5	48.7	50.1	44	35.4	27.3	52.7
	09:00	57.6	49.5	50	50	52.5	46.8	39	28.9	55
	10:00	62.7	59.8	57.3	54.3	55	50.7	42.2	33.1	58.6
	11:00	62.6	59.5	58	55.1	56	51	42	32.7	59.3
	12:00	62.8	59.9	58.8	56.4	56.5	51.4	43.4	34.7	60.0
	13:00	62.2	60.3	59.5	58.9	58	53	45.2	35.6	61.6
	14:00	61.7	60.1	59.4	60.4	58.8	53.8	46	36.5	62.5
	15:00	61.2	60.4	59.7	60.2	58.9	54.1	46.8	36.8	62.6

Date	Time	Measured $L_{90,1hr}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	16:00	60.9	60	59	59	57.9	53	45.2	36	61.6
	17:00	60.6	59.8	58.3	58	57.2	52.2	44.3	35.2	60.8
	18:00	55.3	49	48.9	49.6	52.9	46.5	36.1	26.2	55.0
	19:00	53.7	47.5	46.9	47.4	50.8	43.8	32.2	20.5	52.8
	20:00	53.5	46.1	45.8	45.9	49.6	42.5	30.2	18.2	51.5
	21:00	51.5	45.1	45.1	45	48.8	41.7	29.3	17.3	50.7
	22:00	50.8	44	45	45.4	47.4	40.6	29.7	17.5	49.7
19/8/19	07:00	55.2	47.6	48.7	49.5	54.1	47.5	34.4	19.6	55.9
	08:00	58.9	53	53.3	53	55.2	49.2	38.1	25.6	57.6
	09:00	64.1	59.9	59	56.8	56.7	53	45.8	35.9	60.6
	10:00	63.3	59.2	57.1	55	55.1	50.9	43	32.1	58.8
	11:00	63.5	59.3	57.8	56	55.4	51.1	43	31.9	59.3
	12:00	64.5	60.3	59.1	57.4	57	53.1	46.6	36.3	60.9
	13:00	63.2	59.3	57.2	55.5	55.9	51.9	44.5	34.2	59.5
	14:00	65.1	58.7	58	58.3	58.5	54.8	47.9	38	62.1
	15:00	65.4	60.7	60.2	59	58.2	54.1	47.3	36.7	62.1
	16:00	64.9	56.9	56	53.7	54.1	49.3	39.6	28.7	57.5
	17:00	64.8	57.2	56.5	53.6	53.7	49.4	40.1	29.4	57.4
	18:00	56.1	49.6	50.3	51.2	53.6	48.1	36.4	25.9	56
Excluded rain	19:00									
	20:00	51.3	45.2	46.1	46.6	50.3	44.5	34.4	25.8	52.5
	21:00	51	44.9	45.5	46	49.9	43.8	32.5	23.4	51.9
	22:00	51.1	44.1	43.8	44	47.2	40.9	31	22.8	49.4
20/08/19	07:00	56.5	48.4	50.1	51.3	55.1	48.8	37.2	25.4	57.1
	08:00	65.2	60.7	58.1	56.7	57.6	53.3	45.7	35	61.0
	09:00	64.5	60.5	58.4	56.8	57	53	45.5	35	60.7
	10:00	64.5	61.6	61.1	56.5	56.9	53.2	46.3	35.6	61.0

Date	Time	Measured $L_{90,1hr}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	11:00	64.8	59.9	58.8	56.9	56.8	52.6	45.1	34	60.5

Table A-10 – 2019 Position L1 Arithmetic average measured $L_{90,1hr}$ levels daytime (07:00-23:00)

	Time	Arithmetic average of $L_{90,1hr}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	07:00	55.2	46.5	47.6	48.2	51.5	45.0	33.9	22.7	53.6
	08:00	59.7	52.0	51.9	51.8	53.6	48.1	38.9	28.2	56.3
	09:00	60.9	54.2	53.8	52.8	54.2	49.3	41.3	30.8	57.2
	10:00	62.5	58.8	57.1	54.5	55.3	50.9	43.3	32.7	58.8
	11:00	62.6	58.4	56.9	55.1	55.5	50.6	42.5	32.3	58.9
	12:00	62.0	57.9	57.1	55.8	56.0	51.0	43.6	34.1	59.4
	13:00	61.9	58.9	58.1	58.0	57.5	52.7	45.4	35.4	61.0
	14:00	63.0	59.8	59.2	60.6	59.7	55.2	47.9	37.8	63.3
	15:00	63.7	60.7	60.4	61.2	60.0	55.3	48.4	37.5	63.7
	16:00	61.9	59.2	59.1	59.7	58.8	54.0	45.9	35.5	62.4
	17:00	61.8	59.3	59.3	59.8	59.2	54.6	46.5	35.9	62.7
	18:00	57.0	52.7	53.8	56.0	57.4	51.9	42.1	31.6	60.0
	19:00	56.2	52.1	54.1	57.2	57.8	51.9	42.4	30.8	60.5
	20:00	54.3	49.1	51.0	53.1	54.7	48.7	38.9	28.3	57.1
	21:00	53.6	49.5	50.1	51.6	53.5	47.5	37.3	27.0	55.9
	22:00	53.1	45.5	45.7	46.3	48.8	42.1	31.8	22.1	51.0
	Minimum	53.1	45.5	45.7	46.3	48.8	42.1	31.8	22.1	51.0

Table A-11 – 2019 Position L2, measured $L_{90,1hr}$ levels during daytime (07:00-23:00)

Date	Time	Measured $L_{90,1hr}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
17/08/19	07:00	56.8	54.7	52.9	53.8	55	48.2	39.1	30.6	57.5
	08:00	56.7	52.8	52.4	51.9	55.4	48.4	36.6	23	57.4
	09:00	56.5	53	52.6	52.2	55.5	47.8	35.8	22.2	57.4
	10:00	58.9	55.8	54.8	54.1	56.9	49.3	37.9	25.1	59
	11:00	58.9	55.3	55.1	54.7	57.2	49.5	38.2	25.2	59.3
	12:00	59.4	56.7	56.4	56.2	58.3	50.4	39.9	29.6	60.4
	13:00	60.2	57.2	57.6	58.1	59.3	51.5	41.6	31.9	61.6
	14:00	61.5	59.4	58.7	59.7	60.5	53.1	43.5	33.3	63
	15:00	61.4	58.9	59.2	60.4	61.5	54	44.4	33.5	63.9
	16:00	60.3	58.8	59.3	61.5	61.6	54.5	45	34.1	64.3
	17:00	61.2	58.9	59.7	63	62.8	56.7	47.8	36.3	65.7
	18:00	59.8	58.6	58.9	62	61.6	55.1	45.7	34.5	64.5
	19:00	58.9	57.2	58.8	62.1	61.8	54.9	45.2	33.9	64.6
	20:00	57.8	56.4	58	61.7	60.5	53.9	45.2	33.9	63.6
	21:00	57.8	58	58	59.8	59.6	52.8	43.2	32.8	62.4
	22:00	57.1	55.7	53.5	54.3	56	48.8	38.8	30.9	58.3
18/8/19	07:00	53.2	50.9	49	48.1	50.8	43.3	31.6	19.8	52.9
	08:00	55.6	54.7	52.2	53.1	53.4	46.5	37.8	30.9	56.2
	09:00	56	52.9	51.8	51.2	54.3	46.8	36.3	25.8	56.3
	10:00	59.3	55.6	54.6	54.1	56.3	48.5	37.3	26.6	58.5
	11:00	59.8	56.6	55.8	55.3	57.6	49.5	38.3	27.8	59.7
	12:00	60.2	56.7	56.6	56.2	57.8	49.7	38.8	27.9	60.1
	13:00	60.6	57.2	56.8	57.3	58.4	50.7	40.3	31	60.8
	14:00	60.4	56.8	56.7	57.3	58.8	51	40	29	61
	15:00	59.9	57.1	56.8	57.5	57.8	50.4	40.7	31.3	60.5
	16:00	59.9	57.4	56.9	57.6	58.4	50.8	40.7	31.7	60.9
	17:00	60.2	56.9	56.1	56.7	58.1	50.4	39.8	30.3	60.4

Date	Time	Measured $L_{90,1hr}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	18:00	59.4	53.9	54.5	54.4	57.4	50.2	39	28.2	59.4
	19:00	59	52.8	53.4	53.7	56.7	49.9	39.2	27.8	58.8
	20:00	57.5	52.3	52.2	52.3	55.8	48.8	37	26.2	57.8
	21:00	55.8	51.9	51.1	50.8	54	46.7	35	23.2	56
	22:00	55.5	51.8	50.8	50.9	52.5	45.6	36.2	25	54.9
19/8/19	07:00	57.8	54.1	55	55.1	59.7	52.7	40.1	24.8	61.5
	08:00	59.5	55.8	56.3	56.2	59.6	52.6	41	26.3	61.6
	09:00	60.4	56.8	56.5	56.2	58.6	52	41.4	27.8	60.9
	10:00	61.2	56.6	55.9	55.5	57.6	51	40.6	27.6	60
	11:00	62.2	57.1	56.9	56.8	58.7	51.8	42.9	32.9	61.1
	12:00	62.3	57.6	57.6	57.4	58.3	52.2	42.9	32.9	61.1
	13:00	60.4	56.6	56.2	56.3	58.2	52.8	43.7	32.6	60.9
	14:00	60.4	56.2	56.1	56.1	58.5	51.3	40.2	26.3	60.7
	15:00	61.4	57.3	57.1	56.7	58.9	51.2	39.7	25.9	61
	16:00	60	55.3	55.6	55.2	58	49.9	37.5	23.7	59.9
	17:00	61	55.9	55.9	56.1	57.2	50.4	40.5	28.5	59.8
	18:00	60.8	54.8	55.6	56.2	58.5	50.9	40	30	60.6
Excluded rain	19:00									
	20:00	54.7	52.3	51.9	51.8	55.2	48.7	36.9	22.3	57.3
	21:00	55.5	52.8	52	52.1	55.2	48.6	36.6	21.4	57.3
	22:00	55.3	52	50.8	50.7	53.4	47	36	21.8	55.7
20/08/19	07:00	59.6	55.9	56.3	56.7	60.2	53.4	41.8	30.4	62.2
	08:00	62.6	57.8	58.1	58.4	61.1	54.6	44.8	33.8	63.3
	09:00	62.1	57.2	57.4	57.1	59.6	52.7	41.8	28.5	61.8
	10:00	63	57.7	57.5	57	59.7	53.3	44	32.4	62
	11:00	65	57.5	57.7	57.9	59.8	53.5	44.9	34.2	62.3

Table A-12 – 2019 Position L2 arithmetic average measured $L_{90,1hr}$ levels daytime (07:00-23:00)

	Time	Arithmetic average of $L_{90,1hr}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	07:00	56.9	53.9	53.3	53.4	56.4	49.4	38.2	26.4	58.5
	08:00	58.6	55.3	54.8	54.9	57.4	50.5	40.1	28.5	59.6
	09:00	58.8	55.0	54.6	54.2	57.0	49.8	38.8	26.1	59.1
	10:00	60.6	56.4	55.7	55.2	57.6	50.5	40.0	27.9	59.8
	11:00	61.5	56.6	56.4	56.2	58.3	51.1	41.1	30.0	60.6
	12:00	60.6	57.0	56.9	56.6	58.1	50.8	40.5	30.1	60.5
	13:00	60.4	57.0	56.9	57.2	58.6	51.7	41.9	31.8	61.1
	14:00	60.8	57.5	57.2	57.7	59.3	51.8	41.2	29.5	61.6
	15:00	60.9	57.8	57.7	58.2	59.4	51.9	41.6	30.2	61.8
	16:00	60.1	57.2	57.3	58.1	59.3	51.7	41.1	29.8	61.7
	17:00	60.8	57.2	57.2	58.6	59.4	52.5	42.7	31.7	61.9
	18:00	60.0	55.8	56.3	57.5	59.2	52.1	41.6	30.9	61.5
	19:00	59.0	55.0	56.1	57.9	59.3	52.4	42.2	30.9	61.6
	20:00	56.7	53.7	54.0	55.3	57.2	50.5	39.7	27.5	59.5
	21:00	56.4	54.2	53.7	54.2	56.3	49.4	38.3	25.8	58.5
	22:00	56.0	53.2	51.7	52.0	54.0	47.1	37.0	25.9	56.3
	Minimum	56.0	53.2	51.7	52.0	54.0	47.1	37.0	25.8	56.3

Table A-13 –2019 Position L1, measured $L_{90,15 \text{ min}}$ levels during night-time (23:00-07:00)

Date	Time	Measured $L_{90,15 \text{ min}}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
18/08/19	00:00	48.9	43.7	44.8	44.1	47.1	41.4	33.4	26.2	49.5
	00:15	48.5	43.5	43.5	43.4	46.5	40.6	33	26	48.8
	00:30	48.4	43.2	43.3	43.4	46.3	40.6	33.1	26	48.7
	00:45	50.3	43.6	45.5	47.1	47.4	41.8	35.7	28.3	50.4
	01:00	49.7	43.3	45.1	46.7	47.1	41.1	35.3	27.7	50.0
	01:15	51.6	44	44.8	46.3	45.9	40.5	34.8	27.1	49.2
	01:30	55.6	43.9	44.6	46.4	46.1	40.3	34.5	26.9	49.3
	01:45	47.3	43	42.6	42.8	45.3	39.8	31.8	23.1	47.8
	02:00	46.2	42.5	42.1	42	44.8	39.1	30.8	22.4	47.2
	02:15	46	42.4	41.6	41.4	43.7	38	30.1	22	46.3
	02:30	46.7	42.6	42.2	42.5	44.4	38.6	30.1	21.7	47.0
	02:45	46.3	42.6	41.6	41.3	43.2	37.4	29.6	21.4	45.8
	03:00	46.5	43	41.6	41.4	42.9	37.1	29.5	21.3	45.6
	03:15	47.2	44.7	42.3	42.1	44.2	38.5	29.8	21.4	46.8
	03:30	47.6	43.8	42.2	41.9	43.8	38	29.4	21.2	46.4
	03:45	47.8	44.2	42.8	42.1	43.9	38	29.7	21.4	46.6
	04:00	47.6	43.8	42.9	42	43.7	37.6	29.7	21.5	46.4
	04:15	47	43.4	43.1	42.8	44.9	38.7	30	21.4	47.4
	04:30	48.5	44.6	44.4	44.7	48.2	41.9	30.9	21.6	50.3
	04:45	51	44.6	45.1	45	48.3	41.9	31.3	21.9	50.4
	05:00	51.6	45.1	45.1	44.1	47	40.9	31	21.7	49.3
	05:15	50.5	44.4	45.4	45.4	48.6	42.1	31.3	21.5	50.7
	05:30	51.6	45.6	46.6	47.1	50.4	44.1	32.8	21.9	52.5
	05:45	53	45.6	47.4	48.8	50.1	44.1	36	27.5	52.7
	06:00	49.2	44.1	44.6	45.1	48.6	42.8	34	26.7	50.8
	06:15	51	43.9	44.3	44.4	47.7	44.4	35.3	26.8	50.7
	06:30	51.2	45.1	45.4	45.1	48.5	42.6	34.1	26.8	50.8

Date	Time	Measured $L_{90,15min}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	06:45	53.3	44.1	45	44.6	47.7	41.8	33.7	26.4	50.0
18/08/19	23:00	56.8	47	47.2	47.3	50.3	43.6	32.2	22.3	52.4
	23:15	56.5	46.4	46.9	47	50.3	43.1	31.2	21.1	52.3
	23:30	56.5	46.4	46.6	46.4	49.7	42.1	29.7	19.6	51.6
	23:45	56.3	46.3	46.4	45.9	49.1	42.4	30	19.6	51.2
19/08/19	00:00	56.4	45.8	46.3	46.2	49.3	42.6	30.2	19.5	51.4
	00:15	56.3	45.7	45.4	45	48.1	41	29.1	19	50.2
	00:30	56.3	46	45.5	44.9	48.2	41.2	29.4	19.4	50.3
	00:45	56.2	45.5	44.9	44.5	47.3	40	28.5	19.2	49.4
	01:00	56	45	44.5	43.9	46.6	39.4	28.2	18.8	48.8
	01:15	55.5	44.8	44.4	44	46.5	39.7	28.8	19.6	48.8
	01:30	55.5	44.5	43.6	43.3	46	38.8	27.8	18.6	48.2
	01:45	55.5	44.8	43.3	42.9	45.7	38.6	27.9	19	47.9
	02:00	55.5	45.1	44.2	43.9	47.3	40.1	28.6	19.4	49.3
	02:15	55.4	43.8	43	42.5	45.2	38.3	27.6	18.7	47.4
	02:30	55.4	43.9	43.1	42.8	45.3	41.7	31	19.3	48.3
	02:45	55.2	43.9	42.6	42	44.3	37.3	27.6	19	46.6
	03:00	55.7	43.9	45	47.2	45.8	39.5	34.3	27.4	49.2
	03:15	55.5	44.5	45	46.5	46.8	40.4	33.8	26.6	49.7
	03:30	55.6	44.3	44.6	46	46.2	39.7	33.2	26.2	49.1
	03:45	55.6	44.4	44.3	45.5	45.2	38.7	32.9	25.8	48.3
	04:00	55.1	44.1	43.2	44.1	44.4	38	29.5	21.1	47.3
	04:15	55	42.7	42.1	41.9	44	37.3	27.5	18.9	46.4
	04:30	55	42.9	41.9	41.3	42.9	36.3	27.5	19.1	45.5
	04:45	54.9	42.6	41.3	40.9	42.2	35.8	27	18.9	44.9
	05:00	54.8	43.1	41.8	40.9	42.5	36	27.5	19.1	45.2
	05:15	55.2	43.5	42.1	41.2	43.3	36.7	27.4	18.8	45.8

Date	Time	Measured $L_{90,15min}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	05:30	55.2	43.5	42.7	42.4	45.4	38.7	28.1	19.1	47.6
	05:45	55	43.6	43.2	42.6	45.6	38.7	28.2	19	47.8
	06:00	55	43.2	42.2	41.5	44.1	37.4	27.5	19	46.4
	06:15	55.3	44.3	43.3	42.7	45.1	38.3	27.8	19	47.4
	06:30	56.1	45.7	45.3	44.4	47.1	40.1	28.7	19.3	49.3
	06:45	55.8	44.1	43.4	42.4	44.1	37.8	28.3	19.3	46.8
19/08/19	23:00	50.3	43.7	45.3	46.3	47.3	40.8	33.2	25.6	49.9
	23:15	49.7	43.4	44.6	45.8	45.9	39.7	33	25.7	48.8
	23:30	49.4	42.6	44.2	45.4	45.7	39.3	32.5	25.1	48.5
	23:45	49.3	42.4	43.8	45.1	44.8	38.5	32.4	25.1	47.9
20/08/19	00:00	48.5	42.3	43.8	45.2	44.2	38.1	32.5	25.2	47.5
	00:15	46.9	41.9	41.2	40.7	42.4	35.9	25	15.4	44.9
	00:30	46.1	41.1	40.4	40.2	42	35.5	24.5	15.1	44.4
	00:45	45.1	41.5	40.5	39.6	41.1	34.7	24.2	15	43.7
	01:00	44.6	41	40.1	39.5	41.2	34.7	24.4	15	43.7
	01:15	46	41.1	39.9	38.9	39.6	34.2	24.5	15.2	42.7
	01:30	43.9	40.3	39.3	38.7	39.7	33.2	23.8	14.8	42.4
	01:45	45.6	40.5	41	39.6	39.3	33	23.7	14.5	42.5
	02:00	46.4	40.4	40.3	39.2	38.8	32.7	23.8	14.7	42.1
	02:15	49.1	40.5	39.5	39.2	39.4	33	23.8	14.7	42.4
	02:30	47.8	40.2	39	38.8	39.4	33.3	24.1	14.9	42.3
	02:45	42.8	39.7	38.3	37.6	37.9	32.6	23.5	14.6	41.1
	03:00	43.3	40	38.2	37.4	37.7	32.3	23.4	14.6	40.9
	03:15	53.7	39.7	37.9	37.2	36.8	31.5	23.3	14.8	40.4
Excluded rain	03:30-05:30	48.5	41	39.3	38.7	39.9	34	23.7	14.5	42.7
	05:45	49.5	44.2	45	46	50.2	43.9	32.1	19.5	52.1
	06:00	50.6	44.7	44.7	45	49.1	43.2	31.1	18.8	51.2

Date	Time	Measured $L_{90,15min}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	06:15	50.6	45.5	47.1	48.1	52.6	46.2	33.4	19.6	54.5
	06:30	52.6	46.6	47.9	48.7	53.2	46.9	34.1	19.8	55.1
	06:45	53.5	47.3	48.4	49.1	53.5	47.3	34.4	19.4	55.4

Table A-14 – 2019 Position L1 arithmetic average measured $L_{90,15mins}$ levels night (23:00-07:00)

	Time	Arithmetic average of $L_{90,15min}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	00:00	53.6	45.4	46.3	46.8	48.8	42.2	32.7	24.0	51.1
	00:15	53.1	44.9	45.8	46.4	48.1	41.4	32.1	23.4	50.5
	00:30	53.0	44.5	45.4	45.9	47.7	40.7	31.1	22.4	50.0
	00:45	52.8	44.4	45.1	45.5	47.0	40.5	31.2	22.4	49.5
	01:00	51.4	44.1	44.9	45.5	47.4	41.2	32.2	23.8	49.8
	01:15	51.4	43.8	43.6	43.4	46.1	40.4	29.8	20.4	48.5
	01:30	51.2	44.1	43.8	43.4	46.2	39.8	29.3	20.4	48.5
	01:45	51.5	43.7	43.5	42.9	45.4	38.8	28.8	20.2	47.7
	02:00	49.8	43.2	43.1	42.5	45.0	38.5	28.7	20.0	47.3
	02:15	50.0	43.1	42.6	42.1	44.2	38.2	28.8	20.3	46.7
	02:30	49.3	42.7	42.1	41.8	44.0	37.5	28.2	19.8	46.4
	02:45	50.5	43.0	43.3	43.2	44.1	37.8	29.1	20.6	46.9
	03:00	50.5	42.9	43.2	43.3	44.4	38.0	29.2	20.6	47.0
	03:15	52.0	42.8	42.4	42.7	43.5	37.3	28.7	20.2	46.3
	03:30	52.9	42.7	42.2	42.7	43.6	38.4	29.9	20.4	46.6
	03:45	48.4	42.2	41.2	40.8	42.5	36.6	27.6	18.9	45.1
	04:00	48.4	42.1	41.8	42.2	42.8	37.0	29.5	21.5	45.7
	04:15	51.7	42.2	41.5	41.7	42.4	36.6	29.1	21.1	45.4
	04:30	51.2	43.5	43.4	44.3	45.3	39.2	31.7	24.0	48.0
	04:45	51.0	43.5	43.0	43.4	44.2	38.1	31.3	23.6	47.0
	05:00	50.8	43.6	42.4	42.8	43.7	37.6	29.5	21.2	46.4



		Arithmetic average of $L_{90,15min}$ (dB) at each octave band centre frequency								
	Time	63	125	250	500	1k	2k	4k	8k	dBA
	05:15	51.1	43.7	42.2	42.0	44.1	37.9	28.7	20.2	46.6
	05:30	51.3	43.4	42.1	41.6	43.4	37.2	28.5	20.2	45.9
	05:45	51.4	43.4	42.1	41.5	43.1	36.9	28.4	20.2	45.7
	06:00	51.2	43.5	42.4	41.5	43.1	36.8	28.6	20.3	45.7
	06:15	51.1	43.5	42.6	42.0	44.1	37.7	28.7	20.1	46.6
	06:30	51.9	44.1	43.6	43.6	46.8	40.3	29.5	20.4	48.9
	06:45	51.8	44.1	44.4	44.5	48.0	41.5	30.5	20.1	50.1
	Minimum	48.4	42.1	41.2	40.8	42.4	36.6	27.6	18.9	45.1

Table A-15 – 2019 Position L2, measured $L_{90,15 \text{ min}}$ levels during night-time (23:00-07:00)

Date	Time	Measured $L_{90,15 \text{ min}}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
18/08/19	00:00	54.4	51.3	50.9	50.3	53.5	46.7	35.2	22.7	55.6
	00:15	54.4	51.2	50.3	49.2	52	46.2	35	22.5	54.4
	00:30	54.6	51.6	50.4	49.5	52.3	45.5	34.5	23	54.5
	00:45	55.4	51.6	50.5	49.4	51.9	45.3	34.5	22.8	54.2
	01:00	53.4	51.3	50.3	49	51.5	44.9	34.2	22.5	53.8
	01:15	53.7	51.3	50	48.9	51.4	44.6	34.1	22.6	53.7
	01:30	53.5	51.4	50	48.8	51.1	44.5	34.2	22.2	53.5
	01:45	54.1	54.9	52.3	53.2	51.9	45.5	38.4	30.9	55.3
	02:00	54.6	55.1	52.1	53	52.4	45.6	38.3	30.5	55.5
	02:15	55.8	54.8	51.8	52.2	51.1	44.7	37.7	29.9	54.5
	02:30	63.8	55.3	52.6	53.7	52.4	45.4	37.9	29.9	55.8
	02:45	54.3	51.6	49.6	48.3	50.3	43.6	34.2	23.7	52.8
	03:00	51.3	51	48.9	47.5	49.5	42.8	32.6	21.3	52.0
	03:15	51.3	51.1	48.8	47.2	48.5	42	32.4	21.1	51.2
	03:30	51.7	51.1	48.9	47.4	48.6	42	32.2	20.7	51.3
	03:45	51.2	51.2	48.7	47.2	48.3	41.7	32.2	20.9	51.1
	04:00	51.3	51.1	48.9	47.9	49	41.9	32	20.5	51.6
	04:15	52	51.1	49.1	48.5	49.6	42.8	32.4	21	52.2
	04:30	52.6	50.4	49.1	48.3	49.5	42.6	32.6	21.7	52.1
	04:45	52.7	50.7	49	47.7	48.8	41.8	32.1	20.9	51.5
	05:00	52.3	50.8	48.8	47.3	48	41.3	31.9	20.9	50.9
	05:15	52.4	51	49.1	47.9	49.5	42.5	32.8	21.8	52.0
	05:30	52.9	51.2	49.7	48.9	51.8	44.7	32.8	21.1	53.9
	05:45	54.2	50.9	50.4	49.6	52.7	45.6	33.9	21.8	54.8
	06:00	55.5	51.2	50.5	49.4	51.2	44.3	33.5	22.1	53.6
	06:15	54.2	50.8	50.5	50	53.2	46.1	34	21.6	55.2
	06:30	56.3	52.2	52.7	52.9	55.7	49	38.1	24.4	57.8

Date	Time	Measured $L_{90,15min}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	06:45	56.9	56.2	53.7	54.8	55.3	48.8	41.3	32.3	58.1
18/08/19	23:00	55.6	53.3	51.9	51.6	54.8	47.4	35.5	23.9	56.8
	23:15	55	52.8	52.3	51.9	54.9	47.3	34.4	21.8	56.9
	23:30	55.3	52.7	51.3	50.7	53.8	46.1	33.1	21	55.8
	23:45	55.1	52.4	51.3	50.7	53.6	46.3	33.8	21.3	55.7
19/08/19	00:00	55.1	52.6	51.1	50.4	53.2	45.7	33.6	21.5	55.3
	00:15	54.9	52.5	50.3	49.7	52.5	44.7	32	19.9	54.5
	00:30	54.9	52.4	50.3	49.4	51.9	44.3	32.3	20.9	54.0
	00:45	54.1	52.2	50	49.1	51.9	44	31.2	19.2	53.9
	01:00	53.1	51.9	49.8	48.8	51.1	43.3	30.5	17.4	53.3
	01:15	53.5	52.1	49.8	49.1	51.4	43.9	32.1	21.5	53.6
	01:30	52.4	51.7	49.4	48.4	50.9	42.9	30.3	17.7	53.0
	01:45	52.4	51.8	49	47.8	50.3	42.6	30.7	19.1	52.5
	02:00	52.5	52.1	49.8	49.1	52	44.3	31.8	19.3	54.0
	02:15	51.1	51.3	48.4	47.2	49.2	41.8	29.7	17.6	51.5
	02:30	51.7	51.3	48.9	47.8	49.7	43.1	31.5	19.3	52.2
	02:45	51.2	50.8	48.3	47	48.6	41.2	29.7	18.5	51.1
	03:00	53.2	54.4	51.8	53.5	51.2	44.1	37.7	32	54.9
	03:15	53	54.3	51.1	52.6	51.7	44.5	37	31	54.8
	03:30	53.1	54.2	50.9	52.1	51.2	44.3	36.5	30.6	54.4
	03:45	52.7	53.9	50.6	51.6	50.1	43.1	36.2	30.2	53.5
	04:00	51.7	51	49.4	48.8	49.8	42.7	33.2	24	52.4
	04:15	50.7	50.2	47.6	46.5	48.3	41.2	29.6	18.2	50.7
	04:30	50.9	50.1	47.2	45.9	47.4	40.1	28.8	17.1	49.9
	04:45	50.3	50	47.1	45.7	46.8	39.5	29	18.7	49.5
	05:00	50	50.1	47	45.6	46.7	39.6	28.6	17.1	49.4
	05:15	50.5	50.3	47.4	45.8	47.4	40.1	29.2	18.1	49.9

Date	Time	Measured $L_{90,15min}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	05:30	50.4	50.6	47.9	46.8	49.5	42.2	30.1	18.7	51.7
	05:45	51.2	50.6	48.2	47.4	49.9	42.5	30.6	18.9	52.1
	06:00	50.4	50	47.9	46.5	48.8	41.2	29.5	17.9	51
	06:15	52.2	50.8	48.4	46.9	48.8	41.5	29.9	18.6	51.2
	06:30	53.8	51.5	49.5	48.2	50.7	42.9	30.6	18.2	52.8
	06:45	52.9	50.5	47.9	46.6	48	40.9	30.7	18.7	50.6
19/08/19	23:00	54.4	52.5	50.9	52.5	51.8	44.7	36.8	30.5	54.8
	23:15	53.8	52.3	50.6	52.3	50.5	43.7	36.7	30.6	54
	23:30	53.6	52.1	50.4	51.9	51	43.9	36.3	30	54.1
	23:45	53.6	52.1	50	51.7	50	43.2	36.2	29.9	53.5
20/08/19	00:00	52.4	52.3	50	51.8	49.3	42.5	36.2	30	53.1
	00:15	51.9	50.4	47.9	46.5	47.8	40.6	29.3	16.7	50.4
	00:30	50.6	50.3	47.4	45.6	46.7	39.5	28.4	16.6	49.4
	00:45	50.5	50.1	47	45.1	46.4	39.4	28.4	16.4	49.1
	01:00	49.7	49.9	46.9	45	45.9	38.7	28.3	16.3	48.7
	01:15	50.5	50	46.8	44.4	44.2	37.9	28.2	17.3	47.6
	01:30	48.5	49.5	46.6	44.5	44.7	37.6	28.2	16.5	47.8
	01:45	49.1	49.3	46.1	44	43.9	37.1	27.6	15.9	47.2
	02:00	49.1	49.1	46	44.1	43.5	36.8	27.4	16	46.9
	02:15	56.6	49.9	49.7	49.4	48.2	39.5	28.8	16	51.4
	02:30	50.7	49.7	46.5	45.1	45.2	38.3	28.2	16.3	48.3
	02:45	47.7	49.1	45.5	43.4	43	36.7	27.2	15.4	46.5
	03:00	48.3	49	45.7	43.4	43.1	36.4	26.9	15.5	46.5
	03:15	57.5	49.2	45.4	43.2	42.1	35.9	27	16	46
Excluded rain	03:30-05:30	49.9	49.7	46.3	44.2	44.8	37.7	27.2	15.8	47.8
	05:45	53.1	51.1	50.2	50.6	55	48	35.3	20.9	56.8
	06:00	53.9	51.6	50.6	50.7	54.5	47.8	35.4	20.5	56.5

Date	Time	Measured $L_{90,15min}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	06:15	54.6	52.1	52.7	53.2	57.7	50.9	38.3	22.3	59.5
	06:30	56.1	53.3	54.2	54.2	58.6	51.8	39.3	23.9	60.4
	06:45	56.5	53.7	54.6	54.7	59.2	52.5	39.5	23.7	61.0

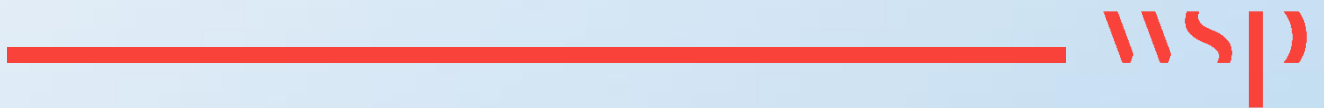
Table A-16 – 2019 Position L2 arithmetic average measured $L_{90,15mins}$ levels night (23:00-07:00)

	Time	Arithmetic average of $L_{90,15min}$ (dB) at each octave band centre frequency								dBA
		63	125	250	500	1k	2k	4k	8k	
	00:00	55.0	52.9	51.4	52.1	53.3	46.1	36.2	27.2	55.7
	00:15	54.4	52.6	51.5	52.1	52.7	45.5	35.6	26.2	55.3
	00:30	54.5	52.4	50.9	51.3	52.4	45.0	34.7	25.5	54.8
	00:45	54.4	52.3	50.7	51.2	51.8	44.8	35.0	25.6	54.4
	01:00	54.0	52.1	50.7	50.8	52.0	45.0	35.0	24.7	54.5
	01:15	53.7	51.4	49.5	48.5	50.8	43.8	32.1	19.7	53.1
	01:30	53.4	51.4	49.4	48.2	50.3	43.1	31.7	20.2	52.6
	01:45	53.3	51.3	49.2	47.9	50.1	42.9	31.4	19.5	52.4
	02:00	52.1	51.0	49.0	47.6	49.5	42.3	31.0	18.7	51.9
	02:15	52.6	51.1	48.9	47.5	49.0	42.1	31.5	20.5	51.6
	02:30	51.5	50.9	48.7	47.2	48.9	41.7	30.9	18.8	51.4
	02:45	51.9	52.0	49.1	48.3	48.7	41.7	32.2	22.0	51.6
	03:00	52.1	52.1	49.3	48.7	49.3	42.2	32.5	21.9	52.1
	03:15	54.5	52.0	50.0	49.6	49.5	42.0	32.1	21.2	52.4
	03:30	55.4	52.1	49.3	48.9	49.1	42.3	32.5	21.8	52.0
	03:45	51.1	50.5	47.8	46.2	47.3	40.5	30.4	19.2	50.1
	04:00	50.9	51.5	48.8	48.1	47.9	41.1	32.4	22.9	51.0
	04:15	53.9	51.5	48.4	47.7	47.4	40.8	32.1	22.7	50.6
	04:30	52.4	52.7	49.9	49.8	49.9	43.2	34.4	25.7	52.8
	04:45	52.0	52.6	49.7	49.4	49.2	42.4	34.2	25.6	52.3
	05:00	51.5	51.1	49.2	48.4	49.4	42.3	32.6	22.3	52.0

		Arithmetic average of $L_{90,15min}$ (dB) at each octave band centre frequency								
	Time	63	125	250	500	1k	2k	4k	8k	dBA
	05:15	51.4	50.7	48.4	47.5	49.0	42.0	31.0	19.6	51.5
	05:30	51.8	50.3	48.2	47.1	48.5	41.4	30.7	19.4	51.0
	05:45	51.5	50.4	48.1	46.7	47.8	40.7	30.6	19.8	50.5
	06:00	51.2	50.5	47.9	46.5	47.4	40.5	30.3	19.0	50.1
	06:15	51.5	50.7	48.3	46.9	48.5	41.3	31.0	20.0	51.0
	06:30	51.7	50.9	48.8	47.9	50.7	43.5	31.5	19.9	52.8
	06:45	52.8	50.9	49.6	49.2	52.5	45.4	33.3	20.5	54.5
	Minimum	50.9	50.3	47.8	46.2	47.3	40.5	30.3	18.7	50.1

Appendix B

SUMMARY OF EQUIPMENT USED FOR NOISE SURVEYS





2024 SURVEY EQUIPMENT

Table B-1 – Summary of noise monitoring equipment February 2024 Survey

Position	Equipment	Make/Model	Serial No.	Calibration due
Logger 1	Sound Level Meter	Rion NL52 Sound Level Meter	00242744	07/09/2024
	Pre-amplifier	H25 Preamplifier	32772	07/09/2024
	Microphone	Condenser Microphone	06229	07/09/2024
	Calibrator	Rion NC-74 Sound Calibrator	34246512	16/08/2024
Logger 2	Sound Level Meter	Rion NL52 Sound Level Meter	00320637	23/08/2025
	Pre-amplifier	NH25 Preamplifier	10645	23/08/2025
	Microphone	UC59 Microphone	05708	23/08/2025
	Calibrator	Rion NC-74 Sound Calibrator	34851881	23/08/2024
A-D, 1 & 2	Sound Level Meter	Rion NL-52	1143531	22/04/2025
	Pre-amplifier	NH25 Preamplifier	43548	22/04/2025
	Microphone	UC59 Microphone	07391	22/04/2025
	Calibrator	Rion NC-74 Sound Calibrator	34251556	26/04/2024

Table B-2 – Summary of noise monitoring equipment September 2024 Survey

Position	Equipment	Make/Model	Serial No.	Calibration due
A & B	Sound Level Meter	Rion NL52 Sound Level Meter	01143531	19/06/2026
	Pre-amplifier	NH25 Preamplifier	43548	19/06/2026
	Microphone	Condenser Microphone	07391	19/06/2026
	Calibrator	Rion NC-74 Sound Calibrator	34251556	19/06/2025

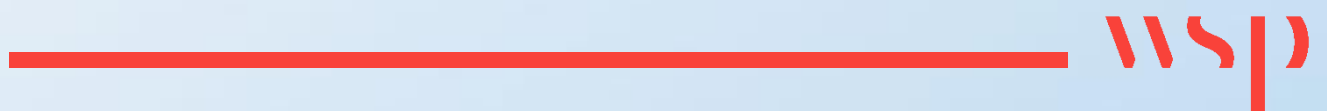
2019 SURVEY EQUIPMENT

Table B-3 – Summary of noise monitoring equipment 2019 Survey

Position	Equipment	Make/Model	Serial No.	Calibration due
L1	Sound Level Meter	01 dB CUBE	10629	07/03/20
	Pre-amplifier	Acoem PRE 22	10563	07/03/20
	Microphone	GRAS 40CD	161937	07/03/20
	Calibrator	01 dB-Metravib CAL 21	34344462	27/09/19
L2	Sound Level Meter	01 dB CUBE	10621	14/05/21
	Pre-amplifier	Acoem PRE 22	10635	14/05/21
	Microphone	GRAS 40CD	207269	14/05/21
	Calibrator	01 dB-Metravib CAL 21	34344463	24/9/19
P1-P5	Sound Level Meter	01 dB-Metravib Solo Master	65804	05/12/19
	Pre-amplifier	01 dB-Stell PRE 21 S	16471	05/12/19
	Microphone	Microtech Gefell GmbH MCE212	175391	05/12/19
	Calibrator	01 dB-Metravib Cal 21	35113823	12/12/19

Appendix C

LIMITATIONS OF THIS REPORT





This report has been prepared for the titled project or named part thereof and should not be used in whole or in part and relied upon for any other project without the written authorisation of WSP UK Limited. WSP UK Limited accepts no responsibility or liability for the consequences of this document if it is used for a purpose other than that for which it was commissioned. Persons wishing to use or rely upon this report for other purposes must seek written authority to do so from the owner of this report and/ or WSP UK Limited and agree to indemnify WSP UK Limited for any and all loss or damage resulting therefrom. WSP UK Limited accepts no responsibility or liability for this document to any other part other than the person by whom it was commissioned.

The findings and opinions expressed are relevant to the dates of the site works and should not be relied upon to represent conditions at substantially later dates. Opinions included therein are based on information gathered during the study and our experience. If additional information becomes available which may affect our comments, conclusions or recommendations WSP UK Limited reserve the right to review the information, reassess any new potential concerns and modify our opinions accordingly.



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Appendix 16.4 - Construction Noise Information

Appendix 16.4

Construction Noise Information

Construction Activity	Item detail	Plant / Equipment	Qty	On-time in working day (%)	BS5228 Ref	LAeq @ 10m
Piling	Piling	CFA/ Auger Large Piling Rig	2	80	C3.21	79
	Piling	Concrete Pump	1	60	C3.25	78
	Piling	Tracked 360O Excavator	1	90	C2.21	71
	Piling	Crawler Crane	1	60	C4.50	75
	Pile Caps	Tracked 360O Excavator	1	90	C2.3	78
	Pile Caps	Crawler Crane	1	60	C4.50	75
	Pile Caps	Hydraulic Breaker	1	30	C1.7	93
	Construction Activity Total LAeq, 10m					94
Excavation / Substructure	Basement Dig	Tracked 360 Excavator	2	90	C2.3	78
	Formation	Medium Roller/ Compactor	1	40	C2.39	74
	Trenching/ Utilities	Small Sheet Piling Rig	1	40	C3.11	59
	Trenching/ Utilities	Powerpack	1	40	C3.12	63
	Trenching/ Utilities	Excavator (Lifting)	1	25	C3.23	68
	Concrete	Concrete Pump	1	80	C3.25	78
	Concrete	Mobile Crane	1	50	C4.50	75
	General	Forklift	1	60	C2.35	71
	General	Generator	1	100	C4.83	65
	General	Water Pump	1	100	C2.45	65
	General	Cutters/ Grinders	2	30	C4.73	84
	Construction Activity Total LAeq, 10m					87
Superstructure	General	Tower Crane	1	90	C4.48	76
	General	Platform Hoists	2	90	C4.57	67
	General	Mobile Crane	1	25	C4.50	75
	General	Fork Lift	1	40	C2.35	71
	General	Generator	1	100	C4.83	65
	General	Water Pump	1	100	C2.45	65
	General	Concrete Pump	1	50	C3.25	78
	General	Cutters/ Grinders	2	20	C4.73	84
	Construction Activity Total LAeq, 10m					86
Building Envelope	General	Tower Crane	1	90	C4.48	76
	General	Platform Hoists	2	90	C4.57	67
	General	Mast Climbers	6	10	C4.57	67
	General	Mortar Batching Plant	1	40	C4.22	77
	General	Cutters/ Grinders	3	20	C4.73	84
	General	Fork Lift	1	40	C2.35	71
	Construction Activity Total LAeq, 10m					86

Appendix 16.5 - Road Traffic Data

Appendix 16.5

Road Traffic Data

AAWT Data Provided by Transport Consultant

Link Ref	Link	Average Speed (mph)	Baseline (2022/2023)		Peak Construction*				Opening Year					
					Do Nothing		Do Something		Do Nothing (exc cumulative)		Do Minimum (inc cumulative)		Opening Year w. Dev	
			AAWT	HDV	AAWT	HDV	AAWT	HDV	AAWT	HDV	AAWT	HDV	AAWT	HDV
1	Baring Street	14.3	260	0	260	0	260	0	260	0	260	0	464	23
2	Hoyle Street	15.4	2202	0	2202	0	2414	31	2202	0	2202	0	2406	23
3	Temperance Street	13.1	1552	2	1552	2	1552	2	1552	2	1552	2	1552	2
4	Fairfield Street west	30	5032	97	5032	97	5245	128	5032	97	5032	97	5262	123
5	Fairfield Street east	30	18909	773	18909	773	18980	783	18909	773	18942	774	19043	785
6	Great Ancoats Street	30	32279	1170	32279	1170	32349	1180	32341	1171	32373	1171	32424	1177
7	Ashton Old Road	30	23681	716	23681	716	23751	726	23743	716	23775	717	23826	723
8	Chancellor Lane	30	19050	219	19050	219	19050	219	19174	221	19206	221	19257	227
9	Mancunian Way (at Hoyle St)	30	38921	1208	38921	1208	38992	1218	38921	1208	39020	1210	39096	1219
10	A6 London Road north	20	12153	206	12153	206	12153	206	12307	207	12307	207	12383	216
11	A6 Downing Street, Ardwick Green South	30	21474	520	21474	520	21474	520	21934	525	21940	525	21991	531
12	Princess Street	20	6658	81	6658	81	6658	81	6761	82	6826	83	6877	89
13	Upper Brook Street	30	16371	277	16371	277	16371	277	16473	278	16735	284	16786	289
14	Oxford Road north	30	16371	277	16371	277	16371	277	16473	278	16473	278	16524	283
Cells Highlighted in grey indicate links used in the road traffic construction and operational noise assessments.														

Appendix 16.6

Road Traffic Noise Predictions

