Azymuth Acoustics UK

Professional Acoustic Services

# Noise Impact Assessment
# For an External Event Space
# Ref: AA0559RevA

**The Yard**
Cheetham Hill,
Manchester

On behalf of

**Modern City Architecture & Urbanism (MCAU)**
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# 1.0 Introduction

Azymuth Acoustics UK (henceforth Azymuth) has been contracted by Modern City Architecture & Urbanism (MCAU) to perform a Noise Impact Assessment (NIA) in relation to an external event space being proposed at The Yard, Cheetham Hill, Manchester. The Yard is an existing working environment/creative hub.

Manchester City Council (MCC) have provided a planning condition stating that the external areas shall only be available for use by patrons between the hours of 12:00 and 22:00pm every day. The project team are hoping to have the time changed to a 2:30am finish in-line with the licensing at The Yard.

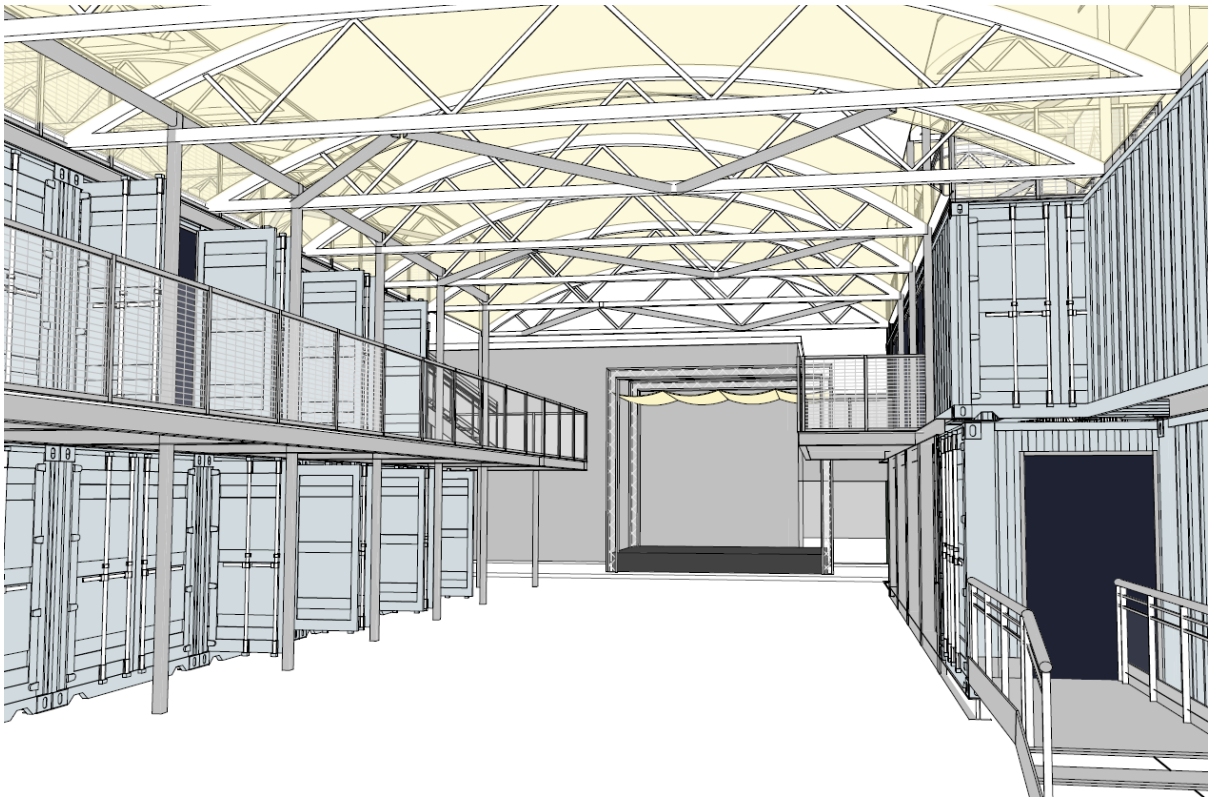

*Figure 1 – View towards stage in external event space*

This noise impact assessment is intended to provide information relating to potential noise levels emitting from the site in order to support the detailed planning application for the development. In particular, the report sets out the following details:

- The results of a baseline noise survey undertaken in the vicinity of The Yard
- The appropriate assessment criteria and guidance relating to noise in the environment as associated with this kind of development
- Recommendations to meet the targets as set out by the assessment criteria

It is assumed that all drawings and information provided by the client is up to date and correct.

# 2.0 Baseline Noise Survey

## 2.1 Measurement Procedures

The instrumentation used for the NIA consisted of a SvanTek 971 type 1 precision sound level meter. The equipment was calibrated before and after measurements. The sound level meter measured A-weighted (fast response) noise levels as well as octave bands noise levels for all measurement record.

Daytime noise level measurements were first undertaken between 12:00hrs - 16:13hrs on Thursday 17th October 2024 and 15:05hrs – 16:09hrs on Wednesday 4th December 2024. Evening measurements were undertaken between 20:08hrs and 22:42hrs on Monday 11th November 2024. The night-time measurements were undertaken between 00:03hrs and 02:16hrs on Tuesday 12th November 2024.

The noise measurements were undertaken using the sound level meter at the position(s) shown in Figure 2 below:

- Position 1: Bent Street (~1.5m from roadside)
- Position 2: Derby Street (~3.5m from roadside)
- Position 3: Broughton Street (~2.5m from roadside)
- Position 4: Cheetham Hill Road (~2m from roadside)
- Position 5: Pillo Rooms (~1.5m from roadside)
- Position 6: Lahori Kebabish / 152 Cheetham Hill Road (~5.5m from roadside)

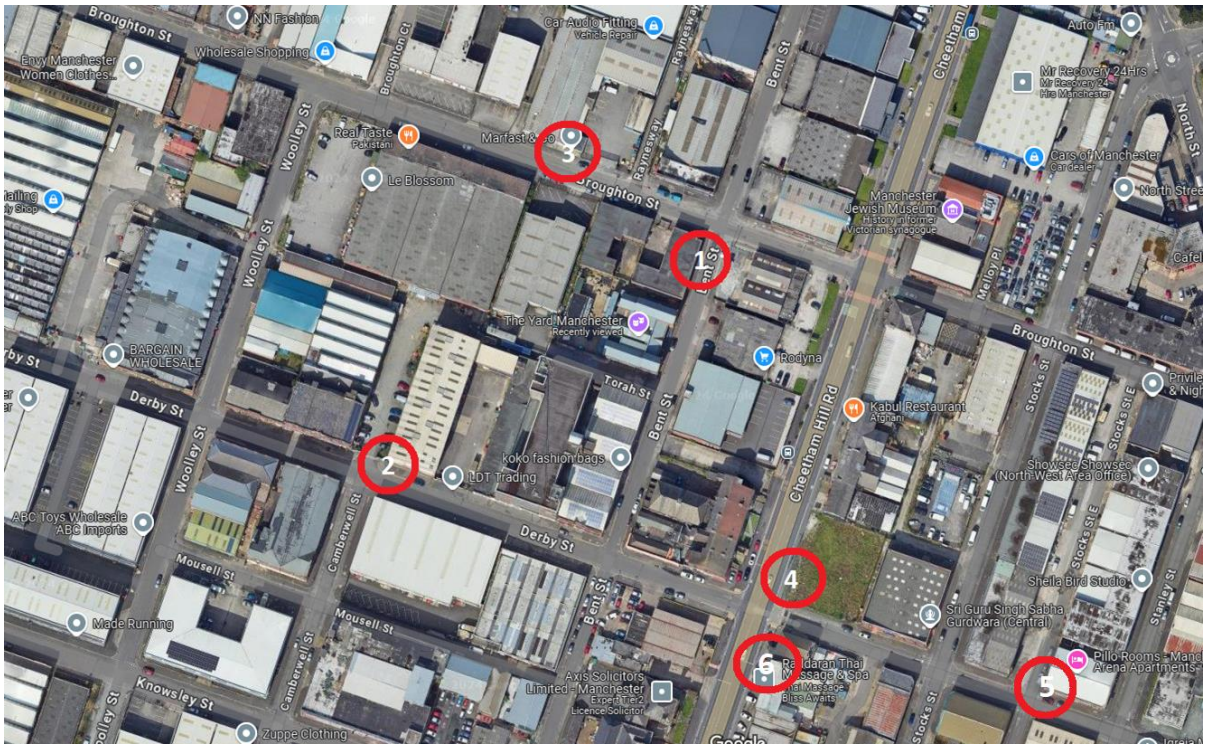


*Figure 2 – Noise measurement position(s)*

## 2.2 Summary of Measurements

### 2.2.1 Noise Survey

The following table summarises the results of the noise measurements undertaken at the proposed site in terms of the average daytime, evening and night-time noise levels. The evening period has been assessed as between 19:00hrs and 23:00hrs.

| Location | Period | $L_{AFmax}$ | $L_{Aeq}$ | $L_{A10}$ | $L_{A50}$ | $L_{A90}$ |
|---|---|---|---|---|---|---|
| 1) Bent Street | Day | 77.6 | 63.1 | 65.0 | 58.7 | 53.6 |
| 1) Bent Street | Evening | 79.9 | 63.0 | 68.9 | 62.9 | 56.9 |
| 1) Bent Street | Night | 72.7 | 57.1 | 59.8 | 51.5 | 45.1 |
| 2) Derby Street | Day | 76.2 | 62.8 | 66.1 | 58.1 | 51.9 |
| 2) Derby Street | Evening | 82.8 | 68.8 | 68.1 | 56.1 | 49.6 |
| 2) Derby Street | Night | 73.3 | 57.3 | 57.6 | 46.2 | 40.2 |
| 3) Broughton Street | Day | 74.4 | 61.2 | 64.9 | 57.3 | 50.8 |
| 3) Broughton Street | Evening | 81.9 | 66.6 | 68.3 | 61.0 | 53.7 |
| 3) Broughton Street | Night | 72.4 | 57.1 | 57.4 | 47.6 | 44.9 |
| 4) Cheetham Hill Road | Day | 84.8 | 69.3 | 72.0 | 66.7 | 60.9 |
| 4) Cheetham Hill Road | Evening | 82.9 | 70.0 | 72.8 | 65.1 | 57.4 |
| 4) Cheetham Hill Road | Night | 75.8 | 60.8 | 64.5 | 52.1 | 43.6 |
| 5) Pillo Rooms | Day | 71.4 | 55.0 | 55.6 | 49.8 | 47.2 |
| 5) Pillo Rooms | Night | 56.7 | 43.2 | 44.7 | 41.5 | 39.5 |
| 6) 152 Cheetham Hill Road | Day | 80.6 | 67.8 | 70.4 | 66.4 | 60.9 |
| 6) 152 Cheetham Hill Road | Night | 78.2 | 65.2 | 68.9 | 61.7 | 54.3 |

*Table 1 – Summary of noise measurements*

Azymuth assumes that all measured noise levels are typical of the surrounding environment.

Full results of the noise levels recorded during the course of the survey are included in Appendix B of this report.

## 2.3 Description of Noise Climate

The main sources of noise surrounding the site originate from road traffic with many cars entering and leaving the general industrial estate area as well as general traffic along Cheetham Hill Road.

Occasional noise could be heard from the garage across the road at measurement position 1, Bent Street, this was only present during the daytime survey.

The weather during the measurement procedures was dry with wind speeds between 5 and 10mph.

# 3.0 Assessment Criteria

In order to assess the extent of any measures required in order to comply with suitable conditions relating to potential noise sources, Azymuth Acoustics UK has reviewed various guidance documents and standards, these include:

- National Planning Policy Framework (NPPF 2021)
- British Standard 8233:2014
- World Health Organisation Guidelines on Community Noise
- British Standard 4142:2014+A1:2019
- Noise from Pubs and Clubs – IOA Report for DEFRA (2005)
- Manchester City Council Planning and Noise Technical Guidance (October 2022)
- Manchester City Council: Planning Application No. 140163/FO/2024 (Conditions 9 and 10)

## 3.1 National Planning Policy Framework (NPPF) 2021

The NPPF provides guidance to local authorities taking into account noise in making planning decisions. Paragraph 185 of the National Planning Policy Framework (NPPF) states that planning policies and decisions should aim to:

- mitigate and reduce to a minimum to a minimum potential adverse impacts resulting from new development – and avoid noise giving rise to significant adverse impacts on health and quality of life,
- identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason;

The NPPF states that the planning system should distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework. In addition, NPPF states that the planning system should 'prevent both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability'.

## 3.2 British Standard 8233: 2014

BS 8233 provides a code of practice for the sound insulation of a variety of building types affected by general environmental noise. It provides recommendations for control of noise in and around buildings and suggests appropriate internal ambient noise level criteria / limits for a variety of different situations including residential properties.

The following table summarises the noise limits suggested by BS 8233 applying to residential properties:

| Activity | Room | Good Design Range $L_{Aeq,T}$ dB | |
|---|---|---|---|
| | | 07:00-23:00hrs | 23:00-07:00hrs |
| Resting | Living Room | 35 | - |
| Dining | Dining Room / Area | 40 | - |
| Sleeping (daytime resting) | Bedroom (at night) | 35 | 30 |

*Table 2 – Noise Limits for Residential Properties Suggested in BS 8233*

## 3.3 World Health Organisation Environmental Noise Guidelines (ENG) 2018

The main purpose of the 2018 WHO guidelines is to provide recommendations for protecting human health from exposure to environmental noise originating from the following sources: transportation (road traffic, railway and aircraft), wind turbines and leisure activities.

The guidelines set out to define recommended exposure levels for environmental noise in order to protect population health. Exposure limits are average levels defined over a period of one year, measured outdoors in free field at the most exposed façade. It should be noted that the document does not provide guideline limit values for multiple noise sources in combination.

The 2018 guidelines supersede the Community Noise Guidelines from 1999. Nevertheless, the document recommends that all CNG indoor guideline values and any values not covered by the current guidelines should remain valid. As such, the following guidance would remain appropriate:

For protection against sleep disturbance inside dwellings, night-time noise levels should not exceed 30dB $L_{Aeq}$ for continuous noise and 45dB $L_{Amax}$ for typical single sound events (which are exceeded 15 times or more per night – see ProPG Appendix A.12 for more details).

To protect the majority of people from being seriously annoyed during the daytime, the outdoor sound level from steady, continuous noise (interpreted as noise from all sources combined) should not exceed 55dB $L_{Aeq}$ on balconies, terraces and in outdoor living areas.

It should be noted that exposure levels defined in ENG and CNG are for guidance purposes as relates potential adverse health impacts and should not be interpreted as absolute limits or regulations.

## 3.4 British Standard 4142:2014+A1:2019

"Methods for assessing and rating industrial sound" describes methods for rating and assessing sound of an industrial and/or commercial nature. The methods described in this British Standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

- Typically, the greater the difference between background sound and industrial/commercial noise, the greater the magnitude of the impact.
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.
- A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.
- A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.

BS 4142 notes that: "Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact."

## 3.5 Noise from Pubs and Clubs – IOA Report for DEFRA (2005)

Noise from Pubs and Clubs was the final report for a contract led by the Department for Environment, Food and Rural Affairs (DEFRA) to review existing knowledge of noise from entertainment sources such as Pubs and Clubs. The overall aim of the publication was to recommend criteria and measurement methods for assessing the noise from Pubs and Clubs for use by Environmental Health Officers (EHOs) and others.

The report considered it inappropriate to use only A-weighted target levels for music noise intrusion due to the impact of bass elements in music. A relatively common application of absolute criteria is to use Noise Rating (NR) curves to provide a target internal level in design work.

The absolute limit, as suggested in the report, is given below:

- Bedrooms: NR25 during night-time periods only (23:00hrs to 07:00hrs)
- Living Rooms: NR35 during day-time periods only (07:00hrs to 23:00hrs)

## 3.6 Manchester City Council Planning and Noise Technical Guidance (October 2022)

Manchester City Councils technical guidance as relates to planning and noise states the following for noise from entertainment venues:

Noise from entertainment venues, e.g. noise from recorded music, live bands, or karaoke, can be particularly annoying for local residents and businesses if not adequately contained within the venue.

When considering the potential impact of a proposal for an entertainment venue, consultants should consider the overall noise level ($L_{Aeq}$) and the 63Hz and 125Hz octave band noise levels ($L_{eq}$). Music noise in the 63Hz and 125Hz octave bands, often described as 'bass noise', is particularly difficult to contain and the impulsive and non-steady character of low frequency music noise is particularly disturbing for local residents exposed to it.

Therefore, a criterion that would achieve a condition of 'inaudible' / 'virtually inaudible' which is applicable for new residential developments that are structurally connected to entertainment venues (or vice versa) would be:

'Music noise levels in the 63Hz and 125Hz octave centre frequency bands ($L_{eq}$) should be controlled so as not to exceed (in habitable rooms) 47dB and 41dB ($L_{eq,5min}$), respectively'.

A planning application for a new entertainment venue that is structurally detached from other building uses should demonstrate that music noise from the proposal will not be 'audible' in nearby residential properties, assuming that the residential properties in question have their windows open. The criterion here is:

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

## 3.7 Manchester City Council: Planning Application No. 140163/FO/2024

The following planning conditions have been provided by Manchester City Council (MCC) in relation to noise at the proposed development.

### 3.7.1 Condition 9

*'9) The external areas shown on drawings referenced 1247-MCAU-P-03-0G-002-P05 received by the City Council as Local Planning Authority on 9 August 2024 shall only be available for use by patrons between the hours of 12.00 and 22.00 daily. The external areas shall not allow for the use of amplified sound or any music at any time. Reason - To safeguard the amenities of the occupiers of nearby properties, pursuant to saved policy DC26 of the Unitary Development Plan for the City of Manchester and policies DM1 and SP1 of the Manchester Core Strategy'*

### 3.7.2 Condition 10

*'10) The premises shall not be open outside the hours of operation for each of the uses as set within the use class key shown on approved drawings referenced 1247-MCAU-P03-0G-010-P01 (Use Class Ground Floor Plans) and 1247-MCAU-P-03-01-011-P01 (Use Class First Floor Plans), received by the City Council as Local Planning Authority on 31 May 2024. Reason - In interests of amenity and in order to reduce noise and general disturbance, pursuant to saved policy DC26 of the Unitary Development Plan for the City of Manchester and policies SP1 and DM1 of the Manchester Core Strategy'*

## 3.8 Recommended Noise Assessment Criteria

Based on the guidance above it is recommended that the following criteria would be reasonable with the aim of minimising the impact of noise on the surrounding environment.

- Noise levels originating from the proposed premises shall not exceed the background sound level in each octave band at the nearest residential receptors believed to be located on Cheetham Hill Road.
- Music noise levels in the 63Hz and 125Hz octave centre frequency bands ($L_{eq}$) should be controlled so as not to exceed (in habitable rooms) 47dB and 41dB ($L_{eq,5min}$), respectively.

# 4.0 Assessment of Results

## 4.1 SoundPLAN Model

Azymuth has undertaken acoustic modelling with the SoundPLAN noise modelling software to predict and visualise the impact of noise from the site on the surrounding environment.

Azymuth have assumed that there are 2no. speaker stacks ~1.5m tall on the stage. Azymuth have also assumed a typical power output of 500W per channel. It is understood that The Yard monitor noise levels so that they do not exceed 97dBA at front of house.

Azymuth have used the following octave band sound power spectrum for each speaker stack (2no.) at The Yard to reflect this front of house level:

| | Octave Frequency Band Sound Power Level (dB) | | | | | | | | dBA |
|---|---|---|---|---|---|---|---|---|---|
| | 63 | 125 | 250 | 500 | 1k | 2k | 4k | 8k | |
| Live entertainment venue | 98 | 101 | 108 | 105 | 102 | 102 | 99 | 94 | 108 |

*Table 3 – Octave band sound power level for live entertainment venue*

A worst-case scenario has been modelled which involves the external live event space operating at full capacity for the entirety of its proposed operational hours (12:30hrs to 02:30hrs).

Azymuth are awaiting further information regarding the exact technical specification of The Yard's sound system.

### 4.1.1 Grid Noise Map (GNM)

Azymuth have produced the following GNM to visualise the effect of noise emitting from the premises on the surrounding environment.

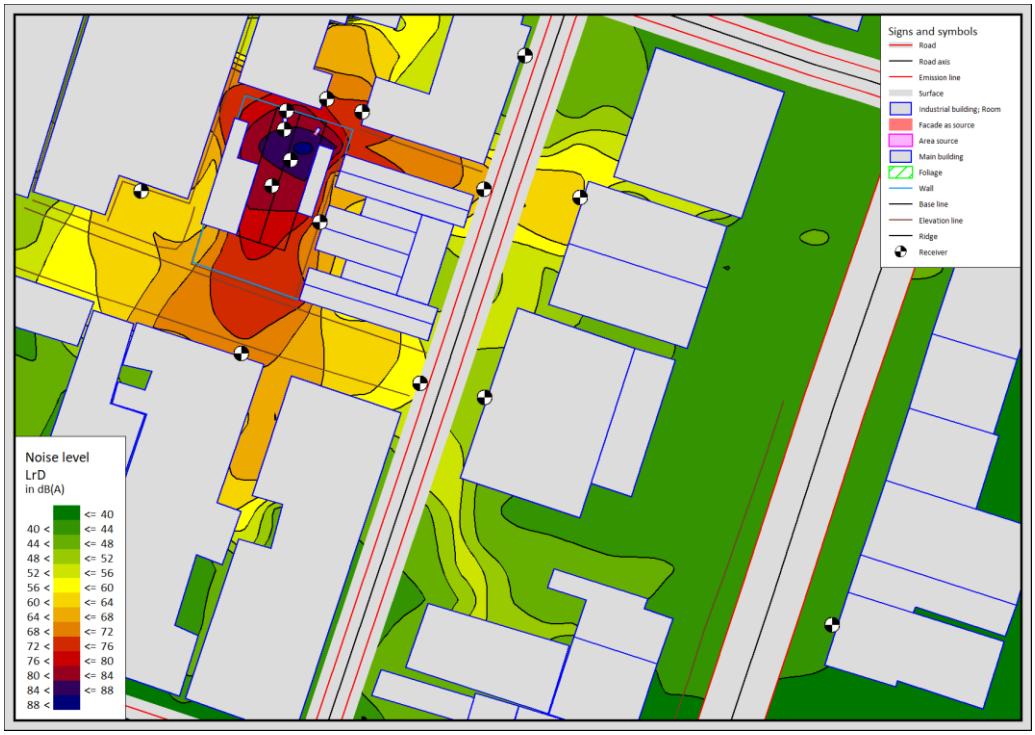


*Figure 3 – GNM, live music event at The Yard (ground floor level)*

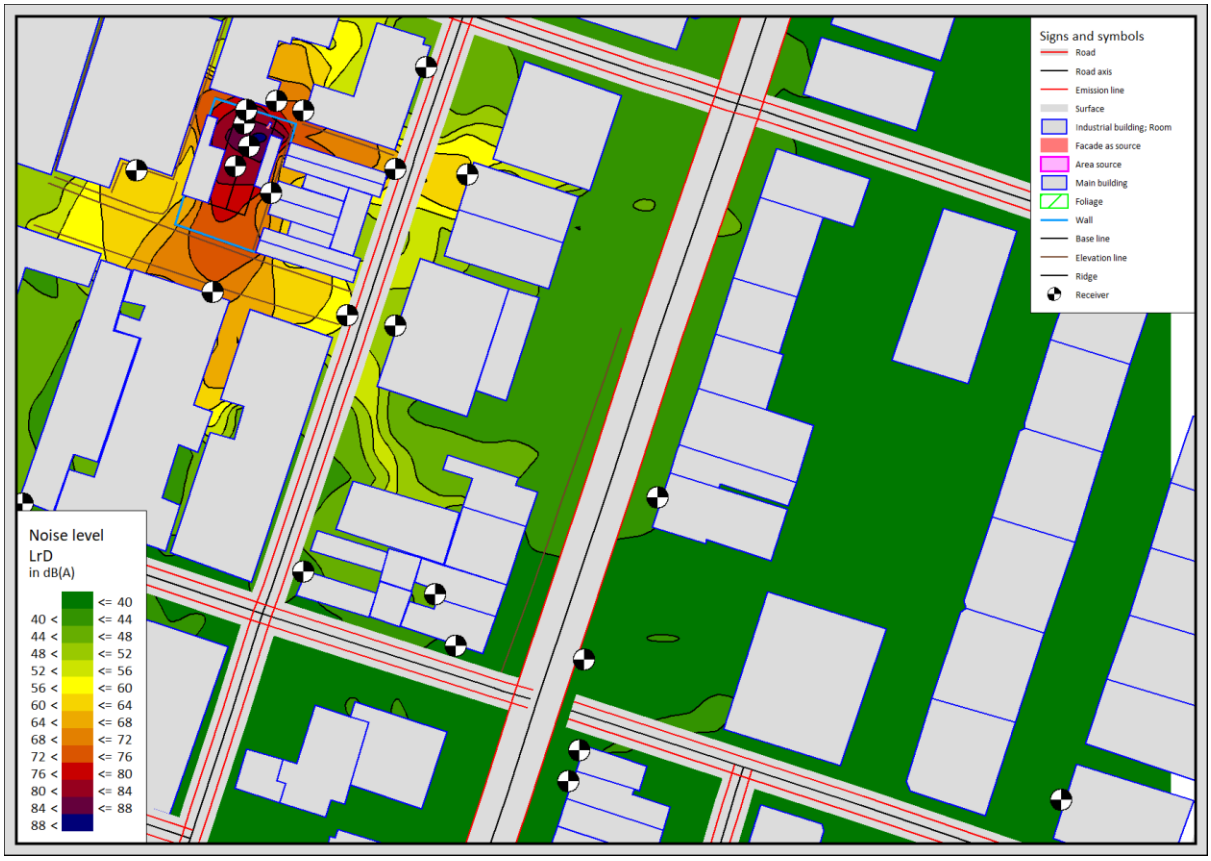


*Figure 4 – GNM wider view, live music event at The Yard (ground floor level)*

## 4.2 BS 4142 Assessment – Possible Residential Dwellings

The following table identifies the nearest noise sensitive receptors, the predicted sound level as a result of live entertainment noise at these receptors and how this noise level relates to the background sound level. A worst-case scenario has been assessed which involves an event on from 12:00pm to 02:30am.

Although exact locations of the nearest residential receptors are unclear, Azymuth have assumed that there may be residential accommodation on the upper floors of some of the buildings on Cheetham Hill Road above the existing commercial units. It is not apparent where there may or may not be residential accommodation in the vicinity of the site. If other residencies are made known, then Azymuth can assess the potential noise impact at these locations.

Azymuth have applied a penalty of +3dB to the assessment to account for the music that shall be played during events which may be distinguishable at the nearest noise sensitive receptors.

The daytime predicted noise level (worst-case) has been assessed against the lowest measured background level (night).

| Receiver | Distance from Source to Receiver (~m) | Noise Level at Receptor (dBA) | Background Sound Level at Receptor, $L_{90}$ (dBA) | Penality for Tonality, Impulsivity and/or Intermittency (dBA) | Noise Rating Level (dBA) | Rating Level re. Background Sound Level |
|---|---|---|---|---|---|---|
| **Nearest (Assumed) Residential Receptors for BS 4142** | | | | | | |
| 133 Cheetham Hill Road (assumed) | 96 | 38.3 (Day) | 43.6 (Night) | +3 | 41.3 | **-2.3** |
| 162 Cheetham Hill Road (assumed) | 104 | 42.5 (Day) | 43.6 (Night) | +3 | 45.5 | **+1.9** |
| 150-152 Cheetham Hill Road (assumed) | 140 | 38.6 (Day) | 43.6 (Night) | +3 | 41.6 | **-2.0** |
| Pillo Rooms (24 Derby Street) | 220 | 31.7 (Day) | 39.5 (Night) | +3 | 34.7 | **-4.8** |

*Table 4 – BS 4142 assessment of noise originating from The Yard*

The predicted noise levels at 133 Cheetham Hill Road are below the backgorund sound level at the assumed residential receptor and therefore produce no noise impact as per BS 4142.

The predicted noise levels at 162 Cheetham Hill Road marginally exceed the background sound level at the assumed residential receptor and therefore would produce some form of noise impact as per BS 4142.

### 4.2.1 Octave Band BS 4142 Assessment – Possible Residential Dwellings

The below tables provides an octave band analysis of the nearest assumed residential receptors.

| Receptor | Octave Band Noise Levels (dB) | | | | | | | | SPL (dBA) |
|---|---|---|---|---|---|---|---|---|---|
| | 63Hz | 125Hz | 250Hz | 500Hz | 1kHz | 2kHz | 4kHz | 8kHz | |
| Predicted Level ($L_{eq}$) @ 133 Cheetham Hill Road | 36.0 | 32.0 | 37.7 | 34.8 | 32.7 | 32.0 | 25.7 | 9.0 | 38.3 |
| Measured Background Level ($L_{90}$) | 43.7 | 38.4 | 36.5 | 36.4 | 39.9 | 37.6 | 30.2 | 19.8 | 43.6 |
| Penalty for Tonality, Impulsivity and/or Intermittency | - | - | - | - | - | - | - | - | +3 |
| Noise Rating Level | 36.0 | 32.0 | 37.7 | 34.8 | 32.7 | 32.0 | 25.7 | 9.0 | 41.3 |
| **Rating Level re. Background Sound Level** | **-7.7** | **-6.4** | **+1.2** | **-1.6** | **-7.2** | **-5.6** | **-4.5** | **-10.8** | **-2.3** |

*Table 5 – Octave band BS 4142 assessment for 133 Cheetham Hill Road*

| Receptor | Octave Band Noise Levels (dB) | | | | | | | | SPL (dBA) |
|---|---|---|---|---|---|---|---|---|---|
| | 63Hz | 125Hz | 250Hz | 500Hz | 1kHz | 2kHz | 4kHz | 8kHz | |
| Predicted Level ($L_{eq}$) @ 162 Cheetham Hill Road | 39.9 | 35.5 | 45.0 | 40.8 | 35.9 | 33.7 | 26.8 | 9.8 | 42.5 |
| Measured Background Level ($L_{90}$) | 43.7 | 38.4 | 36.5 | 36.4 | 39.9 | 37.6 | 30.2 | 19.8 | 43.6 |
| Penalty for Tonality, Impulsivity and/or Intermittency | - | - | - | - | - | - | - | - | +3 |
| Noise Rating Level | 39.9 | 35.5 | 45.0 | 40.8 | 35.9 | 33.7 | 26.8 | 9.8 | 45.5 |
| **Rating Level re. Background Sound Level** | **-3.8** | **-2.9** | **+8.5** | **+4.4** | **-4.0** | **-3.9** | **-3.4** | **-10.0** | **+1.9** |

*Table 6 – Octave band BS 4142 assessment for 162 Cheetham Hill Road*

| Receptor | Octave Band Noise Levels (dB) | | | | | | | | SPL (dBA) |
|---|---|---|---|---|---|---|---|---|---|
| | 63Hz | 125Hz | 250Hz | 500Hz | 1kHz | 2kHz | 4kHz | 8kHz | |
| Predicted Level ($L_{eq}$) @ 152 Cheetham Hill Road | 38.3 | 34.9 | 39.8 | 36.9 | 32.0 | 30.9 | 23.6 | 3.6 | 38.6 |
| Measured Background Level ($L_{90}$) | 43.7 | 38.4 | 36.5 | 36.4 | 39.9 | 37.6 | 30.2 | 19.8 | 43.6 |
| Penalty for Tonality, Impulsivity and/or Intermittency | - | - | - | - | - | - | - | - | +3 |
| Noise Rating Level | 38.3 | 34.9 | 39.8 | 36.9 | 32.0 | 30.9 | 23.6 | 3.6 | 41.6 |
| **Rating Level re. Background Sound Level** | **-5.4** | **-3.5** | **+3.3** | **+0.5** | **-7.9** | **-6.7** | **-6.6** | **-16.2** | **-2.0** |

*Table 7 – Octave band BS 4142 assessment for 150-152 Cheetham Hill Road (above Apna Lahori Kebabish)*

| Receptor | Octave Band Noise Levels (dB) | | | | | | | | SPL (dBA) |
|---|---|---|---|---|---|---|---|---|---|
| | 63Hz | 125Hz | 250Hz | 500Hz | 1kHz | 2kHz | 4kHz | 8kHz | |
| Predicted Level ($L_{eq}$) @ Pillo Rooms | 31.6 | 27.6 | 33.6 | 28.6 | 25.7 | 24.5 | 15.6 | -10.3 | 31.7 |
| Measured Background Level ($L_{90}$) | 48.2 | 41.8 | 37.6 | 34.5 | 36.4 | 30.2 | 22.5 | 17.5 | 39.5 |
| Penalty for Tonality, Impulsivity and/or Intermittency | - | - | - | - | - | - | - | - | +3 |
| Noise Rating Level | 31.6 | 27.6 | 33.6 | 28.6 | 25.7 | 24.5 | 15.6 | -10.3 | 34.7 |
| **Rating Level re. Background Sound Level** | **-6.6** | **-14.2** | **-4.0** | **-5.9** | **-8.7** | **-5.7** | **-6.9** | **-27.3** | **-4.8** |

*Table 8 – Octave band BS 4142 assessment for 24 Derby Street (Pillo Rooms)*

## 4.3 Noise Assessment for Office and Commercial Premises

It should be noted that events at The Yard shall often be taking place at times out with the typical working hours of the surrounding local businesses, if these businesses are closed during events i.e. weekends, then there shall be no perceived impact.

The indoor ambient noise level guidance for restaurants, offices and stores etc., as stated in BS 8233, is based on various design ranges as shown in the Table below. Assuming ~13dB of attenuation for a partly open window we are able to derive external noise limits for these receptors.

| Location | Design Range $L_{Aeq,T}$ (dB) Inside these premises | External Noise Limit with Partly Open Window $L_{Aeq,T}$ (dB) |
|---|---|---|
| Restaurant | 40-55 | 68 |
| Open Plan Office | 45-50 | 63 |
| Department Store | 50-55 | 68 |

*Table 9 – Typical design range noise levels in non-domestic buildings, BS 8233*

The below Table assesses the noise produced by The Yard at the nearest commercial receptors and how this relates to the external noise limits with reference to BS 8233.

The assessment is representative of a worst-case scenario in which events are taking place during the typical working hours of the surrounding businesses.

| Receiver | Distance from Source to Receiver (~m) | Noise Level at Receptor (dBA) | External Noise Limit (dBA) | Noise Level re. External Noise Limit |
|---|---|---|---|---|
| **Commercial Receptors (not covered by BS 4142)** | | | | |
| Salford Training (rear) | 4 | 71.1 (Day) | 63 | +8.1 |
| Torah Street (adjacent building) | 15 | 71.9 (Day) | 68 | +3.9 |
| Parisian (rear) | 35 | 49.5 (Day) | 68 | -18.5 |
| Automania | 38 | 62.8 (Day) | 68 | -5.2 |
| Steakout 212 | 70 | 42.0 (Day) | 68 | -24 |

*Table 10 – BS 8233 assessment of noise at commercial premises*

The above assessment assumes that there are openable windows at the worst-affected facades of the surrounding commercial receptors, this may not be the case in various instances.

There is no specific design range for garages (Automania) contained within BS 8233 so the highest limit has been used. Due to the high noise levels produced by garages the noise limit is likely to be much greater in practice.

# 5.0 Mitigation

## 5.1 Noise Barrier

Azymuth would recommend the installation of a 3m high solid barrier/fence to the perimeter of the outdoor events space in the areas shown below:

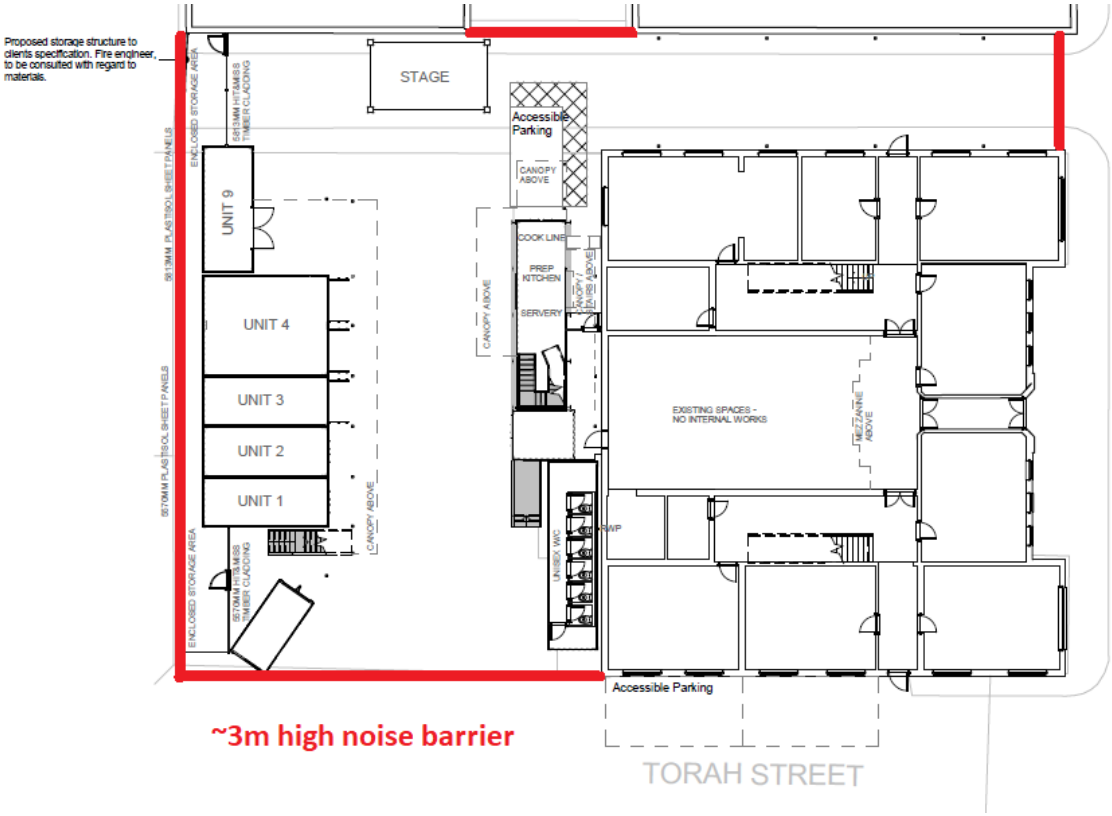


*Figure 5 – Proposed location of 3m high noise barrier*

NB the noise barrier will not be required in areas where there are pre-existing solid structures of height greater than 3m.

## 5.2 SoundPLAN Model

Azymuth have remodelled the noise from The Yard with the inclusion of this proposed 3m high noise barrier.

*Figure 6 – GNM, live music event at The Yard with noise barriers (ground floor level)*

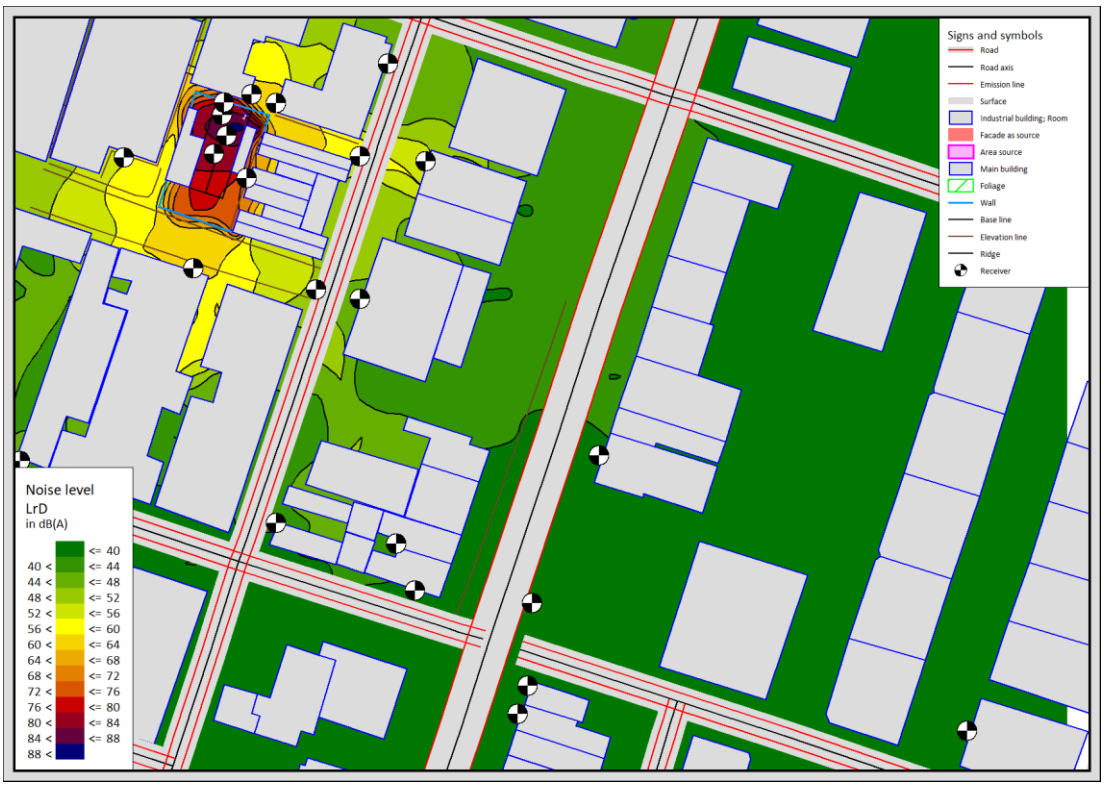


*Figure 7 – GNM wider view, live music event at The Yard with noise barriers (ground floor level)*

## 5.3 Mitigated BS 4142 Assessment – Possible Residential Dwellings

The below table follows the exact same assessment methodology used within Section 4.2 however this time the 3m noise barriers have been included in the prediction.

| Receiver | Distance from Source to Receiver (~m) | Noise Level at Receptor (dBA) | Background Sound Level at Receptor, $L_{90}$ (dBA) | Penality for Tonality, Impulsivity and/or Intermittency (dBA) | Noise Rating Level (dBA) | Rating Level re. Background Sound Level |
|---|---|---|---|---|---|---|
| **Nearest (Assumed) Residential Receptors for BS 4142** | | | | | | |
| 133 Cheetham Hill Road (assumed) | 96 | 36.4 (Day) | 43.6 (Night) | +3 | 39.4 | **-4.2** |
| 162 Cheetham Hill Road (assumed) | 104 | 39.2 (Day) | 43.6 (Night) | +3 | 42.2 | **-1.4** |
| 150-152 Cheetham Hill Road (assumed) | 140 | 36.9 (Day) | 43.6 (Night) | +3 | 39.9 | **-3.7** |
| Pillo Rooms (24 Derby Street) | 220 | 30.1 (Day) | 39.5 (Night) | +3 | 33.1 | **-6.4** |

*Table 11 – BS 4142 assessment of noise originating from The Yard with noise barriers*

### 5.3.1 Mitigated Octave Band BS 4142 Assessment – Possible Residential Dwellings

The below tables provides an octave band analysis of the nearest assumed residential receptors with the inclusion of noise barriers at The Yard.

| Receptor | Octave Band Noise Levels (dB) | | | | | | | | SPL (dBA) |
|---|---|---|---|---|---|---|---|---|---|
| | 63Hz | 125Hz | 250Hz | 500Hz | 1kHz | 2kHz | 4kHz | 8kHz | |
| Predicted Level ($L_{eq}$) @ 133 Cheetham Hill Road | 7.5 | 14.3 | 27.6 | 29.6 | 30.7 | 31.2 | 24.8 | 6.2 | 36.4 |
| Measured Background Level ($L_{90}$) | 43.7 | 38.4 | 36.5 | 36.4 | 39.9 | 37.6 | 30.2 | 19.8 | 43.6 |
| Penalty for Tonality, Impulsivity and/or Intermittency | - | - | - | - | - | - | - | - | +3 |
| Noise Rating Level | 7.5 | 14.3 | 27.6 | 29.6 | 30.7 | 31.2 | 24.8 | 6.2 | 39.4 |
| **Rating Level re. Background Sound Level** | **-36.2** | **-24.1** | **-8.9** | **-6.8** | **-9.2** | **-6.4** | **-5.4** | **-13.6** | **-4.2** |

*Table 12 – Octave band BS 4142 assessment for 133 Cheetham Hill Road*

| Receptor | Octave Band Noise Levels (dB) | | | | | | | | SPL (dBA) |
|---|---|---|---|---|---|---|---|---|---|
| | 63Hz | 125Hz | 250Hz | 500Hz | 1kHz | 2kHz | 4kHz | 8kHz | |
| Predicted Level ($L_{eq}$) @ 162 Cheetham Hill Road | 11.4 | 18.2 | 32.8 | 33.5 | 32.6 | 32.8 | 26.2 | 7.5 | 39.2 |
| Measured Background Level ($L_{90}$) | 43.7 | 38.4 | 36.5 | 36.4 | 39.9 | 37.6 | 30.2 | 19.8 | 43.6 |
| Penalty for Tonality, Impulsivity and/or Intermittency | - | - | - | - | - | - | - | - | +3 |
| Noise Rating Level | 11.4 | 18.2 | 32.8 | 33.5 | 32.6 | 32.8 | 26.2 | 7.5 | 42.2 |
| **Rating Level re. Background Sound Level** | **-32.2** | **-20.2** | **-3.7** | **-2.9** | **-7.3** | **-4.8** | **-4.0** | **-12.3** | **-1.4** |

*Table 13 – Octave band BS 4142 assessment for 162 Cheetham Hill Road*

| Receptor | Octave Band Noise Levels (dB) | | | | | | | | SPL (dBA) |
|---|---|---|---|---|---|---|---|---|---|
| | 63Hz | 125Hz | 250Hz | 500Hz | 1kHz | 2kHz | 4kHz | 8kHz | |
| Predicted Level ($L_{eq}$) @ 152 Cheetham Hill Road | 11.2 | 18.1 | 30.1 | 31.5 | 30.2 | 30.4 | 23.0 | 1.1 | 36.9 |
| Measured Background Level ($L_{90}$) | 43.7 | 38.4 | 36.5 | 36.4 | 39.9 | 37.6 | 30.2 | 19.8 | 43.6 |
| Penalty for Tonality, Impulsivity and/or Intermittency | - | - | - | - | - | - | - | - | +3 |
| Noise Rating Level | 11.2 | 18.1 | 30.1 | 31.4 | 30.2 | 30.4 | 23.0 | 1.1 | 39.9 |
| **Rating Level re. Background Sound Level** | **-32.5** | **-20.3** | **-6.4** | **-5.0** | **-9.7** | **-7.2** | **-7.2** | **-18.7** | **-3.7** |

*Table 14 – Octave band BS 4142 assessment for 150-152 Cheetham Hill Road (above Apna Lahori Kebabish)*

| Receptor | Octave Band Noise Levels (dB) | | | | | | | | SPL (dBA) |
|---|---|---|---|---|---|---|---|---|---|
| | 63Hz | 125Hz | 250Hz | 500Hz | 1kHz | 2kHz | 4kHz | 8kHz | |
| Predicted Level ($L_{eq}$) @ Pillo Rooms | 4.5 | 11.1 | 23.1 | 23.3 | 24.5 | 24.3 | 15.6 | -12.1 | 30.1 |
| Measured Background Level ($L_{90}$) | 48.2 | 41.8 | 37.6 | 34.5 | 36.4 | 30.2 | 22.5 | 17.5 | 39.5 |
| Penalty for Tonality, Impulsivity and/or Intermittency | - | - | - | - | - | - | - | - | +3 |
| Noise Rating Level | 4.5 | 11.1 | 23.1 | 23.3 | 24.5 | 24.3 | 15.6 | -12.1 | 33.1 |
| **Rating Level re. Background Sound Level** | **-43.7** | **-30.7** | **-14.5** | **-11.2** | **-11.9** | **-5.9** | **-6.9** | **-29.6** | **-6.4** |

*Table 15 – Octave band BS 4142 assessment for 24 Derby Street (Pillo Rooms)*

# 6.0 Summary

Azymuth has been contracted by Modern City Architecture & Urbanism (MCAU) to undertake a Noise Impact Assessment (NIA) in relation to an external event space proposed at The Yard, Cheetham Hill, Manchester.

A baseline noise survey was undertaken in the vicinity of the site. Daytime background levels were measured to be between 50-54dB $L_{A90}$ in the vicinity of the site and ~61dB $L_{A90}$ on Cheetham Hill Road. The evening background levels were measured to be between 49-57dB $L_{A90}$. Night-time background levels were measured to be between 39-45dB $L_{A90}$ in the vicinity of the site.

Azymuth have produced a noise model in SoundPLAN 8.2 to predict and visualise the effect of noise on the surrounding environment. A worst-case scenario has been modelled which involves the external event space operating at full capacity throughout the entirety of its proposed operational hours. Different receptors, both residential and commercial, have been assessed.

Internal noise levels at the adjacent commercial receptors shall exceed the internal design range as contained within BS 8233, assuming that events are taking place during operating hours and ~13dB attenuation through a partly open window. Internal noise levels at other nearby commercial receptors shall be acceptable. If events are taking place outside the working hours of local businesses, then there shall be no impact.

Azymuth have assessed the noise impact at various residential receptor locations which include the serviced apartments 'Pillo Rooms' on Derby Street. Azymuth have assumed other residential receptor locations located at 133, 152 and 162 Cheetham Hill Road.

The noise levels at the assumed worst-case residential receptors are between 0.4dB and 5.5dB above the background sound level at these receptors respectively. These levels suggest that there will be some form of impact at 133 and 162 Cheetham Hill Road due to events taking place at The Yard.

Noise levels shall broadly exceed the Manchester City Council target of 5dB below the background sound level in each octave band at the nearest residential receptors with no mitigation in place.

In order to mitigate noise levels Azymuth have recommended a 3m high noise barrier/fence to the perimeter of The Yard's external event space, Azymuth have then remodelled the scenario with this noise barrier in place in SoundPLAN.

Predicted noise levels shall broadly be 5dB below the background sound level in each octave band at the assumed residential receptors thus partly complying with the Manchester City Council targets.

As with any event space it is important to ensure that noise levels do not routinely exceed the 97dBA front of house level that The Yard have adopted, this shall ensure that noise impacts are reduced to a minimum and that any complaints are unlikely with The Yard operating as 'good neighbours'.

It should be noted that all residential receptor locations are speculative and unconfirmed. It should also be highlighted that The Yard have been hosting outdoor music events since 2021 and have had no issues or noise complaints from local businesses or residents. As per BS 4142, 'not all adverse impacts will lead to complaints'.

# Appendix A – Glossary of Acoustic Terms

**Decibel (dB)**
This is the unit used to measure sound. The human ear has an approximately logarithmic response to acoustic pressure over a very large dynamic range (typically 20 micro Pascal to 100 Pascal).

**dB (A)**
This is a measure of the overall noise level of sound across the audible spectrum with a frequency weighting (i.e. A-weighting) to compensate for the sensitivity of the human ear to sound of different frequencies. The A-weighting curve is implemented in sound level meters using an electronic filter that approximately corresponds to the frequency response of the ear.

**Octave Band Noise Level**
The human ear is sensitive to sound over a range of frequencies between approximately 20Hz to 20kHz. The ear is also generally more sensitive to medium and high frequencies than to low frequencies. In order to define the frequency content of a noise, the spectrum can be divided into frequency bands. The most commonly used frequency bands are octave bands, in which the mid-frequency of each band is twice that of the band below it.

**$L_{Aeq}$**
This is the equivalent steady sound level in dB(A) containing the same acoustic energy as the actual fluctuating sound level over a given time period.

**Reverberation Time (RT or sometimes $T_{30}$ or $T_{60}$)**
This is the time taken for the reverberant sound energy in an enclosure to decay one millionth of its equilibrium value, i.e. by 60dB, after the source has been switched off. The reverberation time is frequency dependent and it is customary to measure its value in octave or one-third octave bands. Reverberation occurs when sound waves are repeatedly reflected from each surface of the room.

**Sound Reduction Index (SRI)**
Difference measured between the amount of energy flowing towards the wall in the source room and the total amount of energy entering the receiving room (usual range 100 - 3150Hz for one third octave band values). The SRI varies with frequency and is measured in a laboratory in either octave or one-third octave bands.

SRI = L1 - L2 + 10 log (S/A), where:
L1 = Noise level in the source room
L2 = Noise levels in the receiving room
S = Surface area of test specimen
A = Equivalent acoustic absorption area in the receiving room

**Weighted Sound Reduction Index ($R_w$)**
This is a weighted single figure descriptor of the sound insulation performance of a partition measured under laboratory conditions. The procedure used to quantify the $R_w$ is to compare the sound reduction index (SRI) in each of the one-third octave bands from 100Hz to 3150Hz against a set of standard reference curves.

## Appendix B – Noise Survey Data

| Start | Position | Time | $L_{Amax}$ | $L_{Aeq}$ | $L_{A10}$ | $L_{A50}$ | $L_{A90}$ |
|---|---|---|---|---|---|---|---|
| Thursday 17th October 2024 | | | | | | | |
| 12:05:00 | 1 | 00:05:00 | 68 | 58.2 | 61.8 | 56.1 | 51.7 |
| 12:10:00 | 1 | 00:05:00 | 78.3 | 62.7 | 65.4 | 59.9 | 54.3 |
| 12:15:00 | 1 | 00:05:00 | 79.3 | 61.4 | 63.5 | 57.4 | 53.1 |
| 12:20:00 | 1 | 00:05:00 | 81.5 | 60.8 | 63.4 | 56.8 | 53.5 |
| 12:25:00 | 1 | 00:05:00 | 77.5 | 63 | 66.8 | 58.2 | 53.4 |
| 12:30:00 | 1 | 00:05:00 | 79.8 | 61.5 | 64.5 | 58.2 | 52.4 |
| 12:38:00 | 2 | 00:05:00 | 78 | 62.8 | 66.6 | 58 | 52.3 |
| 12:43:00 | 2 | 00:05:00 | 73.4 | 60.5 | 64 | 57.2 | 50.2 |
| 12:48:00 | 2 | 00:05:00 | 70.5 | 59.4 | 62.6 | 56.9 | 51.9 |
| 12:53:00 | 2 | 00:05:00 | 73.3 | 61.6 | 65.6 | 57.8 | 52.1 |
| 12:58:00 | 2 | 00:05:00 | 73.9 | 61 | 64.6 | 57.1 | 50.8 |
| 13:03:00 | 2 | 00:05:00 | 77.7 | 61.2 | 64.8 | 57.6 | 51.8 |
| 13:15:00 | 3 | 00:05:00 | 73.2 | 60.7 | 64.5 | 57.5 | 50.1 |
| 13:20:00 | 3 | 00:05:00 | 78.1 | 61.2 | 64 | 55.5 | 50 |
| 13:25:00 | 3 | 00:05:00 | 70 | 60 | 63.5 | 57.4 | 51.8 |
| 13:30:00 | 3 | 00:05:00 | 76.3 | 60.8 | 64.4 | 56.1 | 50.4 |
| 13:35:00 | 3 | 00:05:00 | 77.9 | 61.9 | 64.9 | 57.8 | 51.3 |
| 13:40:00 | 3 | 00:05:00 | 73 | 59.7 | 63.8 | 55.6 | 50.7 |
| 14:06:00 | 4 | 00:05:00 | 89.2 | 69.9 | 71.8 | 65.6 | 59.2 |
| 14:11:00 | 4 | 00:05:00 | 82.7 | 68.4 | 71.5 | 66.6 | 61.8 |
| 14:16:00 | 4 | 00:05:00 | 81.5 | 69.1 | 71.8 | 67.2 | 61.5 |
| 14:21:00 | 4 | 00:05:00 | 80.6 | 69 | 72.3 | 66.8 | 61.8 |
| 14:26:00 | 4 | 00:05:00 | 94.5 | 69.9 | 71.9 | 66.3 | 60.6 |
| 14:31:00 | 4 | 00:05:00 | 80.1 | 69.3 | 72.7 | 67.7 | 60.3 |
| 14:40:00 | 1 | 00:05:00 | 93.4 | 69 | 69.1 | 62.3 | 54.5 |
| 14:45:00 | 1 | 00:05:00 | 77 | 64.6 | 66.5 | 62.7 | 58.3 |
| 14:50:00 | 1 | 00:05:00 | 74.7 | 61.2 | 64.6 | 58.2 | 54.8 |
| 14:55:00 | 1 | 00:05:00 | 76.2 | 61.8 | 64.9 | 59.2 | 53.4 |
| 15:00:00 | 1 | 00:05:00 | 71.9 | 61.1 | 64.9 | 58.2 | 51.6 |
| 15:05:00 | 1 | 00:05:00 | 73.3 | 60.8 | 64.5 | 56.8 | 52.5 |
| 15:14:00 | 2 | 00:05:00 | 77.6 | 63.5 | 67.7 | 58.1 | 50.8 |
| 15:19:00 | 2 | 00:05:00 | 77.2 | 64.1 | 67.8 | 60.1 | 52.8 |
| 15:24:00 | 2 | 00:05:00 | 79.7 | 64.5 | 67.5 | 58.6 | 52.4 |
| 15:29:00 | 2 | 00:05:00 | 73.2 | 63.3 | 67.6 | 59.7 | 55 |
| 15:34:00 | 2 | 00:05:00 | 75.7 | 62.3 | 66.1 | 56.8 | 50.9 |
| 15:39:00 | 2 | 00:05:00 | 84 | 65.7 | 67.9 | 59.7 | 51.7 |
| 15:48:00 | 3 | 00:05:00 | 74 | 62.4 | 66.1 | 59.9 | 53.4 |
| 15:53:00 | 3 | 00:05:00 | 73.7 | 61 | 65.2 | 56.9 | 48.6 |
| 15:58:00 | 3 | 00:05:00 | 77.1 | 63 | 67.1 | 59.4 | 52.5 |
| 16:03:00 | 3 | 00:05:00 | 72.8 | 60.1 | 64.4 | 55.8 | 49.1 |
| 16:08:00 | 3 | 00:05:00 | 72.6 | 61.8 | 65.8 | 59.3 | 52.3 |
| 16:13:00 | 3 | 00:05:00 | 73.7 | 60.9 | 64.8 | 56.5 | 49.8 |
| Monday 11th November 2024 | | | | | | | |
| 20:05:00 | 4 | 00:05:00 | 88.7 | 74 | 77.8 | 71.5 | 63.9 |
| 20:10:00 | 4 | 00:05:00 | 83.2 | 71.7 | 75.1 | 69.4 | 62.6 |

| Start | Position | Time | $L_{Amax}$ | $L_{Aeq}$ | $L_{A10}$ | $L_{A50}$ | $L_{A90}$ |
|---|---|---|---|---|---|---|---|
| 20:15:00 | 4 | 00:05:00 | 84 | 69.4 | 73.1 | 66.5 | 59.2 |
| 20:20:00 | 4 | 00:05:00 | 81.8 | 68.6 | 72.1 | 66.6 | 58.7 |
| 20:25:00 | 4 | 00:05:00 | 80.4 | 69.3 | 72.6 | 67.8 | 60.9 |
| 20:30:00 | 4 | 00:05:00 | 81.2 | 69.6 | 73.5 | 66.8 | 59.5 |
| 20:35:00 | 4 | 00:05:00 | 84 | 65.1 | 67.4 | 58.1 | 47.4 |
| 20:40:00 | 4 | 00:05:00 | 78.4 | 62.7 | 67.8 | 52.1 | 45 |
| 20:45:00 | 4 | 00:05:00 | 86.6 | 69.6 | 73.5 | 63.7 | 56.8 |
| 20:50:00 | 4 | 00:05:00 | 80.8 | 70.7 | 74.6 | 68 | 59.9 |
| 21:05:00 | 3 | 00:05:00 | 76.9 | 60.9 | 64.6 | 56.9 | 50.3 |
| 21:10:00 | 3 | 00:05:00 | 82.1 | 60.7 | 68.1 | 59.6 | 53.7 |
| 21:15:00 | 3 | 00:05:00 | 79.4 | 61.9 | 63.6 | 58.2 | 52 |
| 21:20:00 | 3 | 00:05:00 | 90.4 | 69.9 | 71.6 | 63.7 | 54.6 |
| 21:25:00 | 3 | 00:05:00 | 80.7 | 69.5 | 73.5 | 66.5 | 58 |
| 21:36:00 | 1 | 00:05:00 | 80 | 61.7 | 75.3 | 68.2 | 60.1 |
| 21:41:00 | 1 | 00:05:00 | 88.5 | 63.2 | 69.1 | 62.3 | 54.5 |
| 21:46:00 | 1 | 00:05:00 | 77.3 | 64.6 | 66.5 | 62.7 | 58.3 |
| 21:51:00 | 1 | 00:05:00 | 73.9 | 61.7 | 64.6 | 58.2 | 54.8 |
| 22:22:00 | 2 | 00:05:00 | 79.5 | 65.4 | 69.8 | 58.1 | 51.2 |
| 22:27:00 | 2 | 00:05:00 | 81.8 | 64 | 66.8 | 58.2 | 50.7 |
| 22:32:00 | 2 | 00:05:00 | 84.8 | 73.5 | 71.5 | 60.9 | 52.1 |
| 22:37:00 | 2 | 00:05:00 | 81.3 | 62.9 | 63.8 | 51.9 | 47.5 |
| 22:42:00 | 2 | 00:05:00 | 86.5 | 69 | 68.5 | 51.6 | 46.3 |
| Tuesday 12th November 2024 | | | | | | | |
| 00:08:00 | 1 | 00:05:00 | 77.9 | 58.3 | 60.5 | 52.4 | 45.5 |
| 00:13:00 | 1 | 00:05:00 | 73.5 | 57.2 | 59.4 | 51.9 | 45 |
| 00:18:00 | 1 | 00:05:00 | 69 | 54.8 | 57.4 | 49 | 44 |
| 00:26:00 | 1 | 00:05:00 | 69.2 | 56 | 59 | 51.4 | 46.8 |
| 00:31:00 | 1 | 00:05:00 | 72.3 | 56.5 | 60 | 51.6 | 44.6 |
| 00:36:00 | 1 | 00:05:00 | 74.3 | 58.6 | 62.5 | 52.7 | 44.4 |
| 00:44:00 | 2 | 00:05:00 | 74.6 | 55.9 | 55.5 | 45.1 | 40.9 |
| 00:49:00 | 2 | 00:05:00 | 70.8 | 51.6 | 50.5 | 42.7 | 39.7 |
| 00:54:00 | 2 | 00:05:00 | 75.6 | 58.5 | 62.1 | 45.5 | 40.3 |
| 00:59:00 | 2 | 00:05:00 | 76.1 | 57.2 | 56.7 | 46.2 | 38.9 |
| 01:04:00 | 2 | 00:05:00 | 75.9 | 61.1 | 65.2 | 53.3 | 41.9 |
| 01:09:00 | 2 | 00:05:00 | 66.5 | 52.4 | 55.6 | 44.5 | 39.4 |
| 01:18:00 | 3 | 00:05:00 | 73.7 | 57.9 | 60.2 | 47.2 | 42.1 |
| 01:23:00 | 3 | 00:05:00 | 74.8 | 59.7 | 63.9 | 49.2 | 47.3 |
| 01:28:00 | 3 | 00:05:00 | 73.3 | 57.6 | 59.3 | 48.1 | 46.6 |
| 01:33:00 | 3 | 00:05:00 | 68.3 | 51.3 | 49.5 | 47.3 | 46.5 |
| 01:38:00 | 3 | 00:05:00 | 72.1 | 54.4 | 54 | 46.1 | 41.9 |
| 01:46:00 | 4 | 00:05:00 | 76.9 | 61.6 | 65.8 | 55 | 47.2 |
| 01:51:00 | 4 | 00:05:00 | 72.7 | 60.7 | 65.2 | 55.2 | 45.2 |
| 01:56:00 | 4 | 00:05:00 | 76.1 | 61.5 | 66.1 | 53.6 | 43.9 |
| 02:01:00 | 4 | 00:05:00 | 80.3 | 62.7 | 66 | 54.9 | 47.8 |
| 02:06:00 | 4 | 00:05:00 | 76.4 | 58.8 | 62.8 | 48.6 | 40.6 |
| 02:11:00 | 4 | 00:05:00 | 77 | 60.8 | 63.9 | 51.9 | 41.9 |
| 02:16:00 | 4 | 00:05:00 | 71.1 | 56.8 | 61.7 | 45.4 | 38.9 |
| Wednesday 4th December 2024 | | | | | | | |
| 15:10:00 | 5 | 00:05:00 | 66 | 50.8 | 51.1 | 47.5 | 46.1 |

| Start | Position | Time | $L_{Amax}$ | $L_{Aeq}$ | $L_{A10}$ | $L_{A50}$ | $L_{A90}$ |
|---|---|---|---|---|---|---|---|
| 15:15:00 | 5 | 00:05:00 | 70.4 | 54.3 | 56.6 | 48.7 | 46.9 |
| 15:20:00 | 5 | 00:05:00 | 67.5 | 51.7 | 52.7 | 48.1 | 46.9 |
| 15:25:00 | 5 | 00:05:00 | 78.8 | 57.5 | 58.6 | 52.4 | 47.8 |
| 15:30:00 | 5 | 00:05:00 | 72.4 | 57.2 | 60 | 52.4 | 47.8 |
| 15:35:00 | 5 | 00:05:00 | 73.3 | 54.4 | 54.6 | 49.7 | 47.6 |
| 15:44:00 | 6 | 00:05:00 | 77.4 | 67.2 | 70.4 | 65.8 | 59.1 |
| 15:49:00 | 6 | 00:05:00 | 84 | 68.1 | 70.5 | 66.2 | 61.5 |
| 15:54:00 | 6 | 00:05:00 | 78 | 68.4 | 71.1 | 67.7 | 62.2 |
| 15:59:00 | 6 | 00:05:00 | 82.4 | 66.6 | 69.3 | 64.9 | 58.8 |
| 16:04:00 | 6 | 00:05:00 | 82 | 67.9 | 70.6 | 66.6 | 61.3 |
| 16:09:00 | 6 | 00:05:00 | 79.8 | 68.2 | 70.2 | 67.3 | 62.7 |
| Tuesday 10th December 2024 | | | | | | | |
| 23:05:00 | 5 | 00:05:00 | 56.7 | 44.3 | 46.5 | 41.8 | 39.2 |
| 23:10:00 | 5 | 00:05:00 | 58 | 44.1 | 45.3 | 42.2 | 40.6 |
| 23:15:00 | 5 | 00:05:00 | 65.1 | 44.5 | 45.7 | 42 | 39.7 |
| 23:20:00 | 5 | 00:05:00 | 56.8 | 43 | 44.8 | 41.8 | 40 |
| 23:25:00 | 5 | 00:05:00 | 50.7 | 41.1 | 43.1 | 40.4 | 38.6 |
| 23:30:00 | 5 | 00:05:00 | 53.1 | 41.1 | 42.7 | 40.5 | 38.8 |
| 23:40:00 | 6 | 00:05:00 | 75.9 | 65.1 | 69.2 | 61.3 | 52.8 |
| 23:45:00 | 6 | 00:05:00 | 75.1 | 63.8 | 68.5 | 59.5 | 49.9 |
| 23:50:00 | 6 | 00:05:00 | 76.2 | 64.7 | 69.1 | 61.2 | 53.2 |
| 23:55:00 | 6 | 00:05:00 | 75.1 | 64.6 | 68.6 | 61.6 | 55.2 |
| Wednesday 11th December 2024 | | | | | | | |
| 00:00:00 | 6 | 00:05:00 | 82.6 | 67.1 | 70.1 | 64.9 | 59.3 |
| 00:05:00 | 6 | 00:05:00 | 84.3 | 65 | 68.1 | 61.5 | 55.3 |

*Table B1 – Fully tabulated noise measurement results*