

fisher acoustics

Union, St Johns, Vita T2, Manchester

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External Terrace Seating Noise Study

September 2024

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# fisher acoustics

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PROJECT TITLE                      UNION, ST JOHNS, VITA T2, MANCHESTER

REPORT TITLE                      EXTERNAL TERRACE SEATING NOISE STUDY

CLIENT                              UNION LIVING MANCHESTER 1 LIMITED  
                                                 HORSESHOE FARM  
                                                 ELKINGTON WAY  
                                                 ALDERLEY EDGE  
                                                 CHESHIRE  
                                                 SK9 7GU

REPORT REFERENCE                      PR0635-REP04-MPF

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## **1.0 SUMMARY**

The proposed first floor amenity lounge at Union T2, Manchester provides access to external seating on the northern and southern roof terrace for the use of residents. Fisher Acoustics Ltd has been commissioned by Union Living Manchester 1 Limited to carry out an environmental noise assessment relating to the proposed external seating.

This report determines the potential levels of noise at the closest residential receptors due to patrons on the roof terraces

The study has found that residential amenity is expected to be maintained at the sensitive receptors given the proposed provision of external seating.

## 2.0 INTRODUCTION

The proposed first floor lounge at Union T2, Manchester provides access to external seating on the northern and southern roof terrace for the use of occupants. Fisher Acoustics Ltd has been commissioned by Union Living Manchester 1 Limited to carry out an environmental noise assessment relating to the proposed external seating.

The potential levels of external noise at the closest residential receptors due to patrons on the roof terraces have been determined. The calculated noise levels have been compared to appropriate noise limits to check that residential amenity can be maintained.

The steps undertaken in compiling this study are as follows:

- Reference to the results of daytime environmental noise surveys at and around the proposed development site in order to determine the existing levels of noise at sensitive receptors around the site
- Determination of allowable levels of environmental noise due to patrons of the roof terraces such that external residential amenity can be maintained
- Calculation of potential levels of patron noise at the closest residential receptors and comparison to the suggested noise limits

### 3.0 DESCRIPTION OF PROPOSALS

The 1<sup>st</sup> floor roof terraces are to provide external seating to the amenity lounge within Union T2. The roof terraces are located to the north and south-west of the Vita T2 building. Seating for up to forty patrons is proposed on the north terrace and thirty patrons on the south terrace of Union T2.

It is proposed that the terraces would be accessible by residents of the building between the hours of 12:00 pm to 10:00 pm Monday to Saturday and 11:00 am to 7:00 pm on Sunday.

Figure 1 shows the 1<sup>st</sup> floor layout at Union T2.

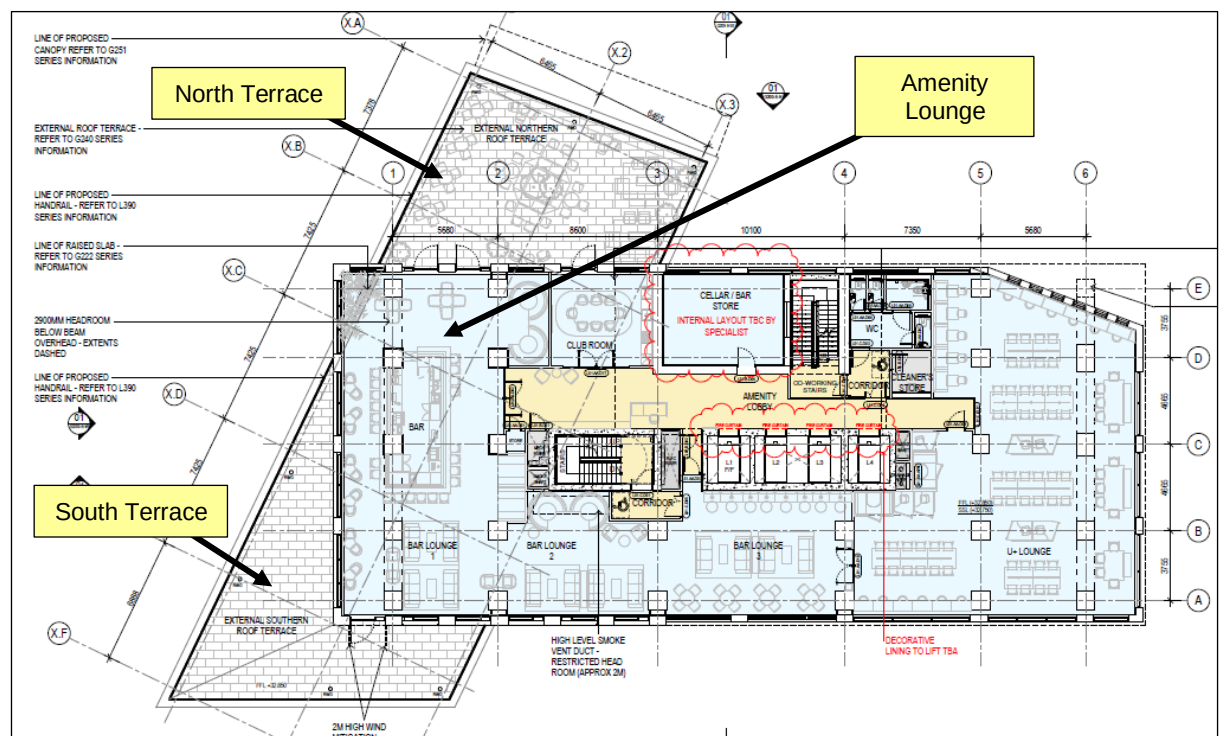


Figure 1: Location of 1<sup>st</sup> floor roof terrace

#### 4.0 PLANNING CONDITION

Planning condition 44 of the Planning Permission for Vita T2, application number: 132952/JO/2022, dated: 30 March 2022, 44 states:

- *“Prior to the first use of the terrace, an assessment shall be submitted for approval in writing. This shall include capacity and operational hours, and shall be approved before the terrace is first used. In relation to external terrace patron noise, an assessment shall be submitted for approval to the City Council, as local planning authority, with calculations provided to determine how ratings have been established at the receptors, including the distance from source to receptor used in calculations.*

*Reason - To safeguard the amenities of the occupiers of the building and occupiers of nearby properties, pursuant to policy DM1 of the Core Strategy for the City of Manchester.”*

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## 5.0 RELEVANT GUIDANCE DOCUMENTS

### NATIONAL PLANNING POLICY

The National Planning Policy Framework (NPPF), published in December 2023 by the Ministry of Housing, Communities and Local Government 'sets out the Government's planning policies for England and how these are expected to be applied'.

Clause 180 of the National Planning Policy Framework states that 'Planning policies and decisions should contribute to enhance the natural and local environment by ... preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability.'

Clause 191 of the National Planning Policy Framework states that '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 the 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 the quality of life;
- b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and
- c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.'

The National Planning Policy Framework document cross references the 'Explanatory Note to the Noise Policy Statement for England'. The 'Noise Policy Statement for England' (NPSE) was published by the Department for Environment, Food and Rural Affairs in March 2010.

The NPSE does not give suggested external noise criteria for commercial developments. In the absence of specific criteria, reference shall be made in this document to established guidance and principles.

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### **National Planning Practice Guidance – Noise**

‘Planning Practice Guidance – Noise’ is a web-based resource provided by the Ministry of Housing, Communities and Local Government (last revision date 22 July 2019) which gives guidance on Planning considerations in relation to noise.

The document identifies the subjective grading of noise and the recommended actions and different effect levels. Again, as ‘Planning Practice Guidance – Noise’ does not refer to objective criteria, reference shall be made in this document to established guidance and principles, as established in British Standards and the local planning policy.

### **LOCAL PLANNING POLICY**

Manchester City Council’s Core Strategy was adopted on 11th July 2012 and is the key Development Plan Document in the Local Development Framework (LDF).

Section 13.6 ‘Development Management’ of the Core Strategy states that ‘all new developments should follow the ‘Development Principles’ and accord with the design guidance set out in the Supplementary Planning Documents.

Policy DM 1, ‘Development Management’ of the Core Strategy states that:

- 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 .....noise, vibration.... This could also include proposals which would be sensitive to existing environmental conditions, such as noise.

‘Planning & Noise, Technical Guidance’, dated October 2022 has been issued by the Environmental Protection, Environmental Health and The Neighbourhoods Service sections of Manchester City Council. The document provides guidance to applicants and consultants concerning the assessment and prediction of environmental noise associated with a particular development. Reference is also made in the document to the relevant supporting information and guidance documents that Developers are expected to refer to when submitting a planning application.

## 6.0 PUBLISHED GUIDANCE ON EXTERNAL PATRON NOISE

No formal published guidance is available that gives recommended assessment criteria for noise due to patrons in an external area.

### DEFRA REPORT 'NOISE FROM PUBS AND CLUBS'

The Final Report of 'Noise from Pubs and Clubs' commissioned by the Department for Environment, Food and Rural Affairs and published in March 2005 states 'there is not yet an adequate body of data which could support the development of a rating method for [people noise]'.

However, reference can tentatively be made to the 'Draft Code of Practice on the Control of Noise from Pubs and Clubs' published by the Institute of Acoustics in 1999. This document states:

- 'Trials in relation to identifying specific noise /eve/ criteria for music, singing and speech noise, which occurs more than 30 times per year are in progress. However, at this stage, these trials have not provided sufficient information to allow for the inclusion of definitive noise control criteria in this Code of Practice for these sources. However, the Working Party has decided that, in order to stimulate debate on this important subject, the entertainment industry, the public and enforcers will benefit from an early publication of this draft Code of Practice which includes examples of the type of criteria that may eventually be appropriate. These examples are given in paragraphs 5.2.3 and 5.2.4. These examples concern external criteria.

Sections 5.2.3 and 5.2.4 of the draft Code of Practice are reproduced below.

#### 5.2.3 Noise limits between 23:00 and 10:00 hours (example only)

- *The LAeq,5min level measured 1 metre outside a window to a habitable room, with entertainment taking place, shall show no increase when compared with the representative LAeq,5min level measured from the same position, under the same conditions and during a comparable period with no entertainment taking place; and*
- *The Leq,5min level in the 63 Hz and 125 Hz octave bands measured 1 metre outside a window to a habitable room, with entertainment taking place, should show no increase when compared with the representative Leq, 5min level in the 63 Hz and 125 Hz octave bands measured from*

*the same position, under the same conditions and during a comparable period with no entertainment taking place.*

**5.2.4 Noise Limits between 10:00 and 23:00hours (Example only)**

- a) *For venues where live and/ or non-live amplified music events take place more than twice in a week, the limits in Section 5.2.3 shall apply.*
- b) *For venues where more than 30 events take place per calendar year but these events do not occur more than twice per week, the following limits shall apply:*
- The LAeq,5min level measured 1 metre outside a window to a habitable room, with entertainment taking place, shall be no more than 3 dB higher than the representative LAeq,5min level measured from the same position, under the same conditions and during a comparable period with no entertainment taking place; and*
  - The Leq,5min in the 63 Hz and 125 Hz octave bands measured 1 metre outside a window to a habitable room, with entertainment taking place, shall be no more than 3 dB higher than the representative Leq,5min in the 63 Hz and 125 Hz octave bands measured from the same position, under the same conditions and during a comparable period with no entertainment taking place.*

**GUIDELINES FOR ENVIRONMENTAL NOISE IMPACT ASSESSMENT (2014)**

The Guidelines for Environmental Noise Impact Assessment, published in 2014 by the Institute of Environmental Management & Assessment discusses the significance of a change in noise level due to a new noise source. In broad terms, the impact of a change in sound levels due to a new noise source in an area can be classified as identified in Table 1.

| Sound level change | Impact Classification |
|--------------------|-----------------------|
| ≥ 0 dB and < 3 dB  | Negligible            |
| ≥ 3 dB and < 5 dB  | Minor                 |
| ≥ 5 dB and < 10 dB | Moderate              |
| ≥ 10 dB            | Major                 |

**Table 1:** Impact from a change in sound levels

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## 7.0 ENVIRONMENTAL NOISE SURVEYS

In order to determine the prevailing ambient noise levels at and around the site, surveys of the existing noise environment at the site have been carried out by Fisher Acoustics.

A manned day time survey was conducted between 16:30 and 17:20 on Friday 13 March 2020. A second daytime and night-time noise survey was carried out between 13:35 on Friday 26 April 2024 and 11:50 on Tuesday 30 April 2024.

The measurement locations used for the surveys are identified on Figure 2 and are representative of the positions of the façades of the proposed building and are described below:

- Location 1 (7): Representative of proposed northwest elevation of the Proposed Development, at a microphone height of 5 m above ground level
- Location 2: Representative of proposed northeast elevation of the Proposed Development, at a microphone height of 26 m above ground level, 1m from the facade

The measured noise levels can be used to establish appropriate environmental noise criteria for the sensitive properties around the site.

The long-term noise environment at and around the site is determined by road traffic on Trinity Way and rail traffic on the Ordsall Chord.

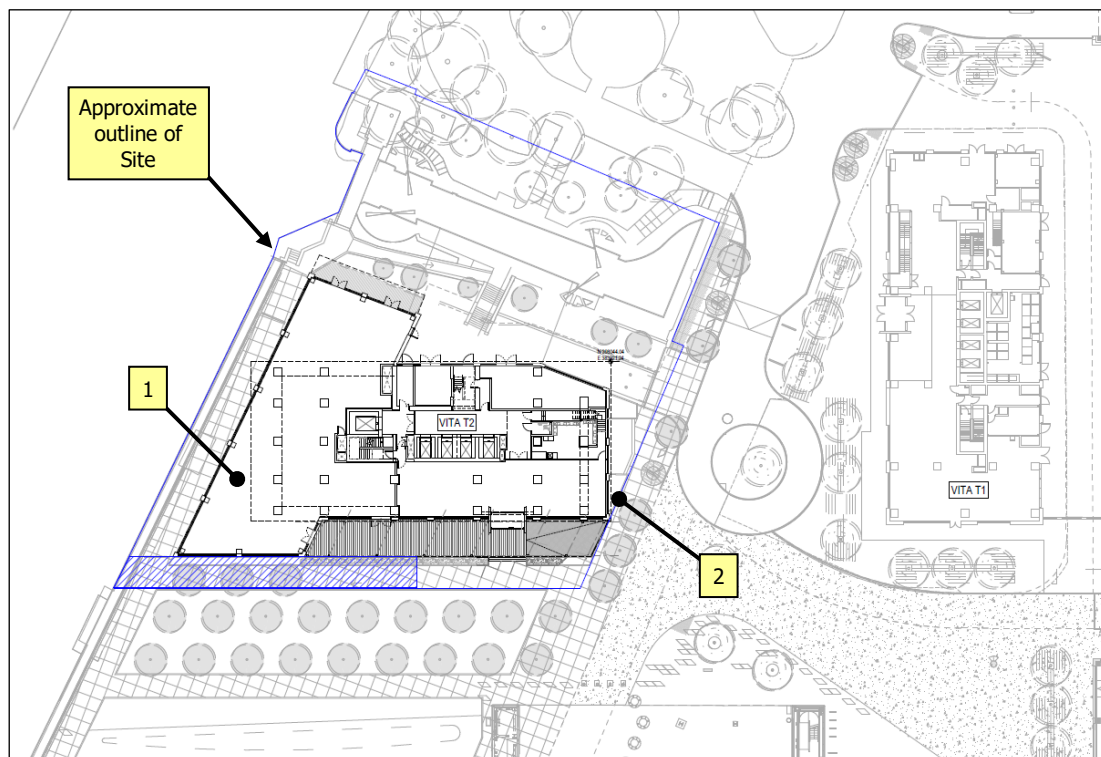


**Figure 2:** Noise survey measurement locations

The measured noise levels during the day and night at and around the Site are summarised in Table 2.

| Location & Date            | Measured Noise Level                 |                       |                     |                                         |                       |                     |
|----------------------------|--------------------------------------|-----------------------|---------------------|-----------------------------------------|-----------------------|---------------------|
|                            | Daytime<br>(defined as 0700 to 2300) |                       |                     | Night time<br>(defined as 2300 to 0700) |                       |                     |
|                            | dB, L <sub>Aeq</sub>                 | dB, L <sub>Amax</sub> | dB L <sub>A90</sub> | dB, L <sub>Aeq</sub>                    | dB, L <sub>Amax</sub> | dB L <sub>A90</sub> |
| 1 - Friday 13 March 2020   | 60                                   | 61 to 73              | 53 to 62            | -                                       | -                     | -                   |
| 2 - Friday 26 April 2024   | 55                                   | 62 to 83              | 47 to 61            | 52                                      | 48 to 79              | 43 to 58            |
| 2 - Saturday 27 April 2024 | 54                                   | 53 to 77              | 47 to 60            | 51                                      | 48 to 76              | 43 to 55            |
| 2 - Sunday 28 April 2024   | 54                                   | 53 to 84              | 46 to 57            | 52                                      | 49 to 73              | 44 to 56            |
| 2 - Monday 29 April 2024   | 58                                   | 56 to 86              | 49 to 69            | 53                                      | 56 to 87              | 44 to 56            |
| 2 - Tuesday 30 April 2024  | 56                                   | 57 to 72              | 51 to 66            | -                                       | -                     | -                   |

**Table 2:** Summary of measured environmental noise levels – existing and proposed receptors

The statistical noise levels (' $L_{Amax}$ ' and ' $L_{A90}$ ') given in Table 2 show the range of noise levels measured over the sample periods. The quoted average ( $L_{Aeq}$ ) noise levels are the average noise levels measured over the full measurement periods in question at each measurement position.

With reference to the results of the noise surveys, the pre-existing ambient noise level at the nearest residential receptors to the proposed external seating (located close to measurement location 1) is considered to be 57 dB  $L_{Aeq}$ .

## 8.0 RESIDENTIAL RECEPTORS

The closest residential dwellings to the Level 1 roof terraces at Union T2 are the apartments and studios within T2 itself. Other nearby residential receptors include the primarily residential tower at Union T1 and the Victoria and Albert Hotel. Figure 3 shows the location of the residential receptors. The residential receptors at Union T2 are much closer to the Level 1 roof terrace than the other identified receptors. Thus, if satisfactory conditions are expected at the T2 receptors, then satisfactory conditions can also be expected at other buildings that are at a greater distance from the T2 Level 1 roof terrace.

The vertical distance between the lowest level of apartments at T2 and the floor of the 1<sup>st</sup> floor roof terrace is 15.5 metres.

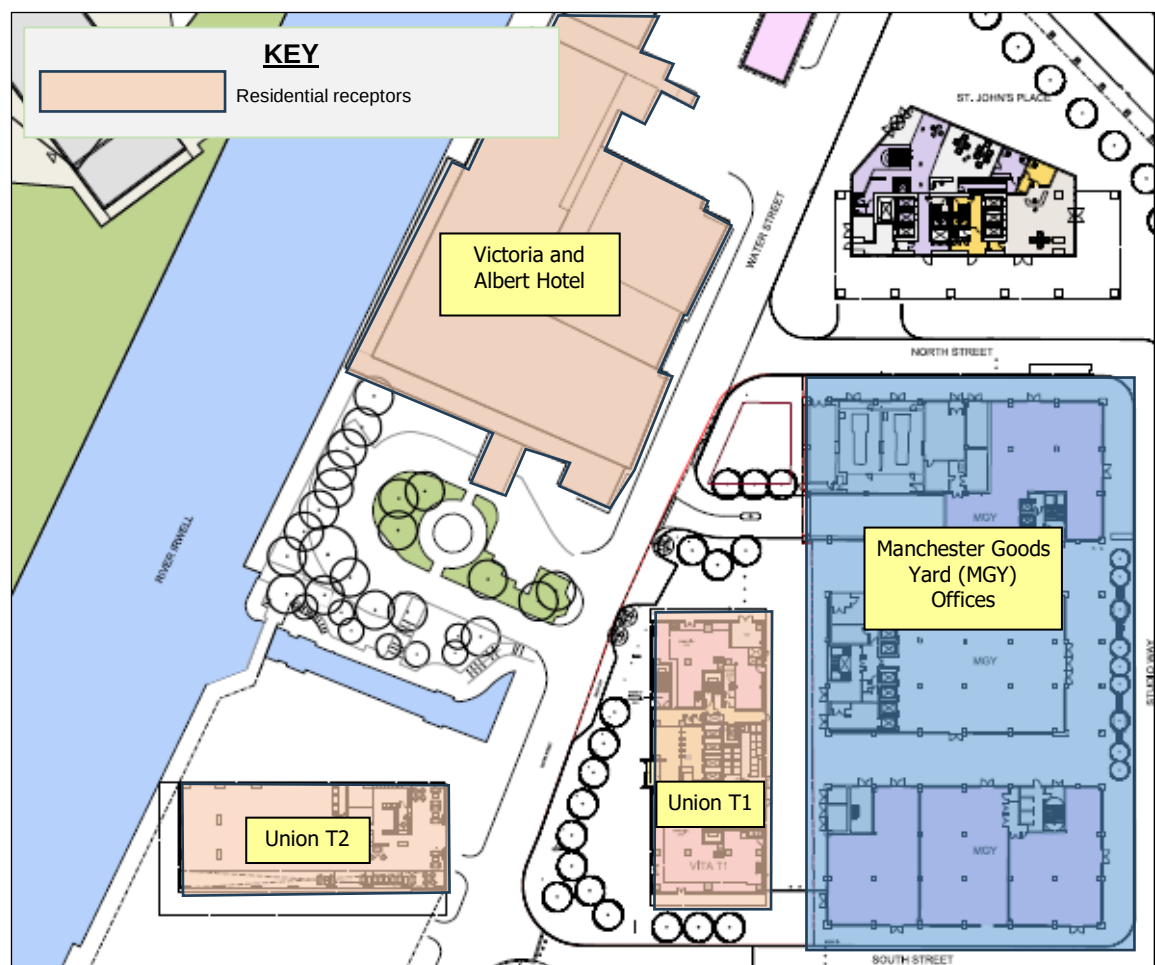


**Figure 3:** Closest residential receptors

## 9.0 NOISE PROPAGATION FROM PROPOSED EXTERNAL SEATING

With reference to Section 6 above, the Guidelines for Environmental Noise Impact Assessment suggest that a change in the ambient external noise level of up to 3dB(A) would have a negligible impact. Given a measured pre-existing external noise level at the closest receptors of 57 dB LAeq, the noise level external to a residential dwelling due solely to the proposed external seating should not therefore be greater than 57 dB LAeq in order for the change in external noise level to be not greater than 3dB(A).

In order to determine the noise level at a receptor due to seated patrons, it is necessary to estimate the number of people that may be talking at any one time. For this purpose, reference can be made to research which indicates that at any one time, just less than one-third of patrons of a restaurant would be expected to be talking simultaneously (ref J.H. Rindel 'Acoustical capacity as a means of noise control in eating establishments', *Proc of Joint Baltic-Nordic Acoustics Meeting*, 2012).

Seating for up to forty patrons is proposed to the north terrace and thirty patrons on the south terrace of Union T2. The research referenced above indicates that at any one time, on the assumption that all of the seats on each terrace are occupied, fourteen people could be talking at any one time on the north terrace and ten people could be talking at any one time on the south terrace.

Calculations of noise propagation from patrons must include an assumed sound power level of a person's voice. Table 3 identifies the sound power level of the human voice at difference voice efforts (ref: ANSI 3.5:1997 'Methods for calculation of the speech intelligibility index'). As a guide, 'normal' voice effort would be that used in normal conversation. 'Raised' voice effort would be similar to that used by a teacher when addressing a full classroom.

| Voice effort | Sound Power Level (dB Leq)<br>@ Octave Band Centre Frequency (Hz) |     |     |     |    |    |    |
|--------------|-------------------------------------------------------------------|-----|-----|-----|----|----|----|
|              | 63                                                                | 125 | 250 | 500 | 1k | 2k | 4k |
| Normal       | 45                                                                | 55  | 65  | 69  | 63 | 56 | 50 |
| Raised       | 48                                                                | 59  | 70  | 75  | 72 | 64 | 57 |

**Table 3:** Sound power of human voice at different effort levels

As the closest receptors lie above the roof terrace seating area, the directivity of the human voice should be taken into account in calculations of noise propagation. The directivity of human speakers has been investigated by W.T. Chu and A.C.C. Warnock and reported in 'Detailed Directivity of Sound Fields Around Human Talkers', IRC-RR 104, National Research Council, Canada (2002)). In the report, several factors were investigated and it concluded that the directivity is not significantly affected by vocal effort or gender.

The directivity values presented by Chu and Warnock are given below in Table 4.

| Direction                | Directivity (dB) @ Octave Band Centre Frequency (Hz) |      |      |      |      |      |      |
|--------------------------|------------------------------------------------------|------|------|------|------|------|------|
|                          | 63                                                   | 125  | 250  | 500  | 1k   | 2k   | 4k   |
| 0° Azimuth, 90° Vertical | 0.0                                                  | -0.5 | -2.4 | -3.0 | -1.1 | -3.3 | -3.7 |

**Table 4:** Human voice directivity values

On the basis that there is a direct line of sight from the roof terraces to the receptors and the receptors are relatively close to the source, the sound pressure level at a receptor due to a single person talking can be calculated using:

$$L_p = L_w - 20 \times \log(d) - 8$$

Where  $L_p$  = sound pressure level (dB re  $2 \times 10^{-5}$  Pa)

$L_w$  = sound power level (including any voice directivity correction) (dB re  $1 \times 10^{-12}$  W)

$d$  = distance from source (metres)

Given a total of forty patrons on the north terrace and thirty patrons on the south terrace of Union T2, the calculated sound pressure levels at the nearest residential receptors are as follows:

- Patrons talking at a normal voice level: 45 dB LAeq
- 1/3 of talkers at a raised voice level, 2/3 of talkers at a raised voice level: 49 dB LAeq

Compliance with the identified noise limit of 57 dB LAeq is therefore expected such that residential amenity is expected to be maintained at the closest residential receptors to the proposed 1<sup>st</sup> floor roof terrace external seating. In particular, a negligible change in noise level of +0.6 dB(A) is expected at the closest receptors due to the proposed external seating.

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**APPENDIX A**  
**NOISE SURVEY DETAILS**

**LOCATION**

Union, St Johns, Vita T2, Water Street, Manchester

**DATES AND TIMES**

|                                                                |                |
|----------------------------------------------------------------|----------------|
| Friday Daytime, 13 <sup>th</sup> March 2020                    | 16:20 to 17:15 |
| Friday 26 <sup>th</sup> to Tuesday 30 <sup>th</sup> April 2024 | 13:55 to 11:50 |

**Weather during surveys**

|                                      |            |                                                    |
|--------------------------------------|------------|----------------------------------------------------|
| Friday 13 March 2020                 | Day time   | 2/8 cloud cover, 1 m/s light breeze, no rain, 6°C  |
| Friday 26 <sup>th</sup> April 2024   | Day time   | Sky clear, 2 m/s light breeze, no rain, 11°C       |
|                                      | Night-time | Sky clear, 2 m/s light breeze, no rain, 5°C        |
| Saturday 27 <sup>th</sup> April 2024 | Day time   | 2/8 cloud cover, 4 m/s light breeze, no rain, 11°C |
|                                      | Night-time | 2/8 cloud cover, 4 m/s light breeze, no rain, 6°C  |
| Sunday 28 <sup>th</sup> April 2024   | Day time   | 8/8 cloud cover, 7 m/s light breeze, rain, 11°C    |
|                                      | Night-time | Sky clear, 3 m/s light breeze, no rain, 7°C        |
| Monday 29 <sup>th</sup> April 2024   | Day time   | 5/8 cloud cover, 5 m/s light breeze, no rain, 13°C |
|                                      | Night-time | 2/8 cloud cover, 3 m/s light breeze, no rain, 10°C |
| Tuesday 30 <sup>th</sup> April 2024  | Day time   | Sky clear, 5 m/s light breeze, no rain, 15°C       |

**Personnel present during survey**

Matt Fisher – Fisher Acoustics

**Instrumentation**

Norsonic Type 140 IEC 60651 Type 1 Integrating-Averaging Sound Level Meters (serial no. 1403193)  
Norsonic Type 1251 IEC 60942-1997 Class 1 Sound Calibrators (x2) (serial nos. 31971, 27878)

**Measurement methodology**

Before and after the noise survey the sound level meter was check calibrated to an accuracy of  $\pm 0.3$ dB using the Norsonic Type 1251 Calibrator - no drift in sensitivity was detected. The measurement microphone was installed at the locations identified in this report. All survey measurements were in 'free field' conditions.