

## 40 Chorlton Street

### Acoustic Report to Discharge Condition 14 of Decision Notice 120392/FO/2018

**Date:** 24 March 2021

**Client Name:** Seddon Construction

**Document Reference:** WIE13555-100-TN-210323

This document has been prepared and checked in accordance with  
Waterman Group's IMS (BS EN ISO 9001: 2015, BS EN ISO 14001: 2015 and BS EN ISO 45001:2018)

| Issue | Prepared by                                                                                                              | Checked & Approved by                                                                                             |
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## 1. Introduction

Planning permission was granted in August 2018 for the redevelopment of 40 Chorlton Street to provide an apart hotel (Use Class C1) with restaurant and bar use at ground floor (Use Class E). Planning permission was granted under Decision Notice 120392/FO/2018 subject to a number of planning conditions. Condition 14, the subject of this note, pertains to noise associated with the Class A3 and Class A4 use classes, the conditions is reproduced below.

*"The premises shall be acoustically insulated and treated to limit the break out of noise in accordance with a noise study of the premises and a scheme of acoustic treatment that has been submitted to and approved in writing by the City Council as local planning authority. The scheme shall be implemented in full before the use commences or as otherwise agreed in writing by the City Council as local planning authority.*

*Where entertainment noise is proposed the  $L_{Aeq}$  (entertainment noise) shall be controlled to 10dB below the  $LA_{90}$  (without entertainment noise) in each octave band at the facade of the nearest noise sensitive location, and internal noise levels at structurally adjoined residential properties in the 63Hz and 125Hz octave frequency bands shall be controlled so as not to exceed (in habitable rooms) 47dB and 41dB, respectively.*

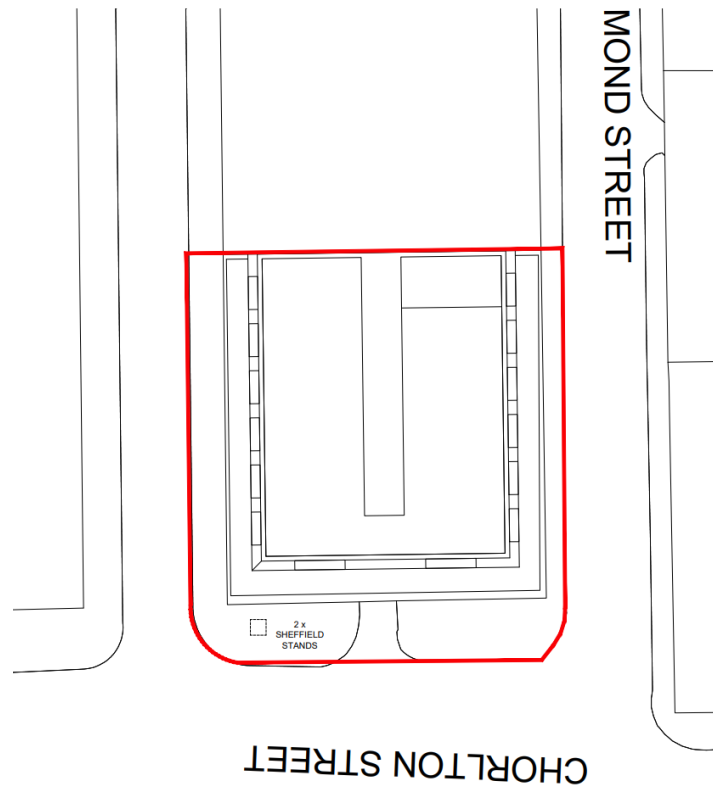
*Reason - To safeguard the amenities of the occupiers of the building and occupiers of nearby properties."*

Waterman Infrastructure & Environment Limited has been appointed by Seddon to prepare a report to discharge Condition 14.

## 2. The Site

The development is located at 40 Chorlton Street Manchester and is bound to the north east by Chorlton Street to the south by Canal Street, to the south west by 10 Chorlton Street and to the north by Richmond Street. The location of the development is presented as Figure 2-1.

Figure 2-1 Site Redline Boundary

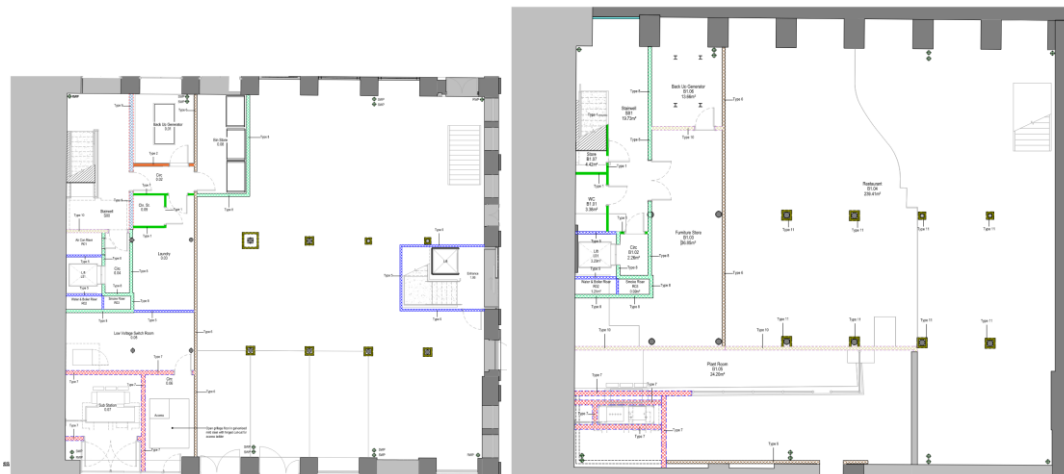


## 3. The Development

The development includes for the provision of a restaurant/bar (Use Class A3/A4) although at this stage this area would be provided as shell and core only with existing glazing retained. The building owner would subsequently replace/enhance glazing if required once the final tenant is known.

Above ground floor there would be six floors providing apart-hotel bedrooms. Entertainment noise would not be generated from the apart-hotel elements of the development, as such this document has focused upon the proposed restaurant/ bar use. The location of the restaurant and bar use is presented as Figure 3-1. It should be noted that the restaurant/bar area does not abut the party wall and as such with reference to Condition 14 only noise breakout is of concern.

Figure 3-1 Restaurant/Bar Location



## 4. Baseline Conditions

### 4.1 Noise Sensitive Receptors

A review of the site and its surrounds has been completed and the closest noise sensitive receptors identified. The closest identified noise sensitive receptors are presented as Table 4-1.

Figure 4-1 Noise Sensitive Receptors

| NSR | Description                   | Distance from Site Boundary               |
|-----|-------------------------------|-------------------------------------------|
| A   | Apartments at 10 Canal Street | Immediately adjacent to the site boundary |

Although additional sensitive receptors are present these are further removed from the development than those identified in Figure 4-1, as such compliance with Condition 14 at NSR A would suggest compliance at all NSRs close to the development.

### 4.2 Baseline Noise Monitoring

A baseline noise survey was conducted from 30<sup>th</sup> November – 5<sup>th</sup> December 2017 to establish and quantify the existing noise climate on, and within the vicinity of, the development site.

Long-term monitoring was carried out on the site via two long term noise monitoring kits running concurrently; both were located on the second floor of the building (approx. 12m above ground level), one facing onto Canal Street and the other onto Richmond Street.

Full details of the monitoring locations can be found in Table 4-2.

Figure 4-2 Noise Monitoring Locations

| Monitoring Location | Description                                                                                                             | Observations and Predominant Noise Sources                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LT1                 | <p>Façade measurement on northern site boundary facing Richmond Street.</p> <p>Microphone situated approx. 12m AGL.</p> | <p>Noise climate dominated by road traffic noise from Chorlton Street and surrounding road network. Noise from external plant along Richmond Street contributed somewhat to the overall noise climate (constant, 50Hz), however, was not perceptible during set up.</p> <p>Noise climate during night-time period consisted of a mix of noise from traffic (Chorlton Street), nearby entertainment venues, pedestrians and noise from nearby plant.</p> |
| LT2                 | <p>Façade measurement on southern site boundary facing Canal Street</p> <p>Microphone situated approx. 12m AGL.</p>     | <p>Noise climate dominated by road traffic noise from Chorlton Street and surrounding road network. Pedestrian passers-by contributed somewhat to the overall noise climate in the area.</p> <p>Noise climate during night-time period dominated by noise from nearby entertainment venues, pedestrians on Canal Street, and traffic noise from Chorlton Street.</p>                                                                                    |

All noise measurements were taken with calibrated precision grade (Class 1) frequency (third-octave band) sound level meters to provide a detailed description of the prevailing environmental noise characteristics. The sound level meters were set to record over consecutive 5-minute periods the  $L_{eq}$ ,  $L_{90}$ ,  $L_{10}$ , and  $L_{max}$  noise indices in the A-weighting network over a  $125ms^{-1}$  fast response time constant interval for the duration of each survey. The indices are described in Appendix A of this report, but roughly translated they describe in turn the average, background, road traffic, and maximum noise level.

Full details of the instrumentation used for the noise measurements, including calibration certificates are available on request. Overall, weather conditions were ideal for the measurement of noise, it being fine and dry, with just a light wind from variable directions ( $<5ms^{-1}$ ) prevailing.

A summary of the measured daytime (07:00 to 23:00 hour), night-time (23:00 to 07:00 hour) noise levels for the survey period are provided in Table 4-3.

Figure 4-3 Summary of unattended baseline noise measurements.

| Monitoring Location<br>(Table 1) | Day      | Period | Duration | L <sub>Aeq,T</sub><br>dB | L <sub>A10,T</sub><br>dB | L <sub>A90,T</sub> dB |                  |     | L <sub>AFmax,5min</sub><br>dB  |
|----------------------------------|----------|--------|----------|--------------------------|--------------------------|-----------------------|------------------|-----|--------------------------------|
|                                  |          |        |          | Ave <sup>1</sup>         | Ave <sup>2</sup>         | Min                   | Ave <sup>3</sup> | Max | 95 <sup>th</sup><br>Percentile |
| LT1                              | Thursday | Night  | 8 hour   | 63                       | 63                       | 52                    | 54               | 60  | 87                             |
|                                  | Friday   | Day    | 16 hour  | 65                       | 66                       | 54                    | 57               | 63  | 87                             |
|                                  |          | Night  | 8 hour   | 69                       | 67                       | 54                    | 59               | 64  | 95                             |
|                                  | Saturday | Day    | 16 hour  | 63                       | 65                       | 54                    | 58               | 61  | 82                             |
|                                  |          | Night  | 8 hour   | 67                       | 69                       | 56                    | 62               | 64  | 89                             |
|                                  | Sunday   | Day    | 16 hour  | 64                       | 65                       | 55                    | 57               | 63  | 83                             |
|                                  |          | Night  | 8 hour   | 67                       | 69                       | 56                    | 62               | 64  | 89                             |
|                                  | Thursday | Night  | 8 hour   | 62                       | 63                       | 45                    | 57               | 62  | 85                             |
|                                  | Friday   | Day    | 16 hour  | 64                       | 65                       | 52                    | 57               | 66  | 86                             |
|                                  |          | Night  | 8 hour   | 67                       | 67                       | 48                    | 63               | 67  | 89                             |
| LT2                              | Saturday | Day    | 16 hour  | 67                       | 67                       | 48                    | 57               | 65  | 96                             |
|                                  |          | Night  | 8 hour   | 69                       | 70                       | 49                    | 67               | 69  | 90                             |
|                                  | Sunday   | Day    | 16 hour  | 63                       | 63                       | 48                    | 53               | 67  | 83                             |
|                                  |          | Night  | 8 hour   | 63                       | 63                       | 46                    | 58               | 62  | 86                             |

**Notes:** <sup>1</sup> Logarithmic average of measured values. <sup>2</sup> Arithmetic average of measured values. <sup>3</sup> Modal average of measured values.

As the site does not exhibit the normal diurnal fluctuations in noise, i.e. it is louder during the night time than during the daytime; a combination of the highest 1-hour ambient noise level measured during the night time and the 95<sup>th</sup> percentile L<sub>max</sub> octave band night-time noise levels will be used to assess noise ingress and calculate required façade performance.

To support assessment against the requirements of Condition 14 the background noise levels in terms of L<sub>90</sub> are presented for each octave band in Table 4-4.

Figure 4-4 Background Noise Levels

| Period               | dB L <sub>90</sub> Octave Band Centre Frequency (Hz) |     |     |     |      |      |      |
|----------------------|------------------------------------------------------|-----|-----|-----|------|------|------|
|                      | 63                                                   | 125 | 250 | 500 | 1000 | 2000 | 4000 |
| Day (0700 to 2300)   | 63                                                   | 58  | 55  | 55  | 53   | 49   | 43   |
| Night (2300 to 0700) | 61                                                   | 58  | 55  | 58  | 56   | 51   | 44   |

## 5. Noise Impact Assessment

### 5.1 Building Façade

Elevation drawings are provided below as Figure 5-1 with the location of the restaurant windows identified in red.

Figure 5-1 Restaurant/Bar Elevations



The indicative façade construction is summarised as Table 5-1 below. Further assessment would be required once the final tenant is identified.

Table 5-1: Indicative Façade Construction Materials

| Façade Element        | Description                                  | Octave Band Centre Frequency (Hz) |     |     |     |    |    |    |        |
|-----------------------|----------------------------------------------|-----------------------------------|-----|-----|-----|----|----|----|--------|
|                       |                                              | 63                                | 125 | 250 | 500 | 1k | 2k | 4k | Rw+ctr |
|                       |                                              | Internal Noise Level              |     |     |     |    |    |    |        |
| Glazing               | 8A/16/8 Guardian Acoustic Glazing            | 31                                | 26  | 29  | 41  | 46 | 47 | 57 | 37     |
| Solid Façade Elements | Brick wall with wall lining to internal face | 33                                | 46  | 39  | 44  | 52 | 57 | 58 | 46     |

### 5.2 Source Noise Levels

The future occupant of the restaurant/bar area is not known; however, the space has been designed with restaurant use in mind. Notwithstanding this, to allow for a reasonable worst case assessment source noise levels obtained during a busy weekend at The Alchemist have been utilised for the purpose of the assessment. The source noise levels are presented below.

Table 5-2 Source Noise Levels

| Scenario     | Internal Noise Levels (Leq dB) at Octave Band Centre Frequency (Hz) |     |     |     |      |      |      | dB(A) |
|--------------|---------------------------------------------------------------------|-----|-----|-----|------|------|------|-------|
|              | 63                                                                  | 125 | 250 | 500 | 1000 | 2000 | 4000 |       |
| Busy Weekend | 77                                                                  | 82  | 83  | 89  | 89   | 85   | 76   | 91    |

### 5.3 Predicted Noise Levels

Noise levels at the façade of the closest NSR to the development (refer to Table 4-1) a 3-dimensional noise model of the development has been prepared using the software package CADNA-A. The facades leading to the bar/restaurant areas have been modelled as area sources based upon the façade construction data presented as Table 5-1 and the source noise data presented as Table 5-2.

The calculations have been completed for the closest residential window at 10 Canal Street as presented in Figure 5.1.

The assessment results are presented as Table 5-2 below.

Figure 5-2 Assessment of Predicted Noise Levels

| Period                  |                        | dB L <sub>90</sub> Octave Band Centre Frequency |       |       |     |       |       |       |
|-------------------------|------------------------|-------------------------------------------------|-------|-------|-----|-------|-------|-------|
|                         |                        | 63                                              | 125   | 250   | 500 | 1000  | 2000  | 4000  |
| Day<br>(0700 to 2300)   | Predicted Noise Level  | 22.1                                            | 32.1  | 30.1  | 25  | 20.1  | 16.3  | -2.7  |
|                         | Background Noise Level | 63                                              | 58    | 55    | 55  | 53    | 49    | 43    |
|                         | Difference             | -40.9                                           | -25.9 | -24.9 | -30 | -32.9 | -32.7 | -45.7 |
| Night<br>(2300 to 0700) | Predicted Noise Level  | 22.1                                            | 32.1  | 30.1  | 25  | 20.1  | 16.3  | -2.7  |
|                         | Background Noise Level | 61                                              | 58    | 55    | 58  | 56    | 51    | 44    |
|                         | Difference             | -38.9                                           | -25.9 | -24.9 | -33 | -35.9 | -34.7 | -46.7 |

With reference to Table 5-2 it can be seen that noise breakout from the proposed restaurant and bar use would fall below the existing background noise level and as such Condition 14 can be discharged.

## **6. Summary and Conclusions**

An assessment of noise breakout from the proposed restaurant/bar at basement and ground floor levels of the 40 Chorlton Street development has been undertaken to allow Condition 14 of Decision Notice 20392/FO/2018 to be discharged. The assessment indicates that noise breakout as a result of entertainment noise would fall below the existing background noise levels without entertainment noise by more than 10dB in all 1/1 octave frequency bands and as such Condition 14 can be discharged.