



## PROJECT TECHNICAL MEMORANDUM

**JOB TITLE** : Co-op Ancoats, Blossom St.  
**PROJECT NO** : 26354  
**DATE** : 3 April 2020  
**FROM** : Will Bailey  
**ISSUED TO** : Co-op Group

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**RE: CO-OP ANCOATS, BLOSSOM STREET, ANCOATS. SOUND INSULATION TESTING AND PLANT ASSESSMENT.**

### 1.0 Introduction

Manchester City Council have granted permission for the operation of a new Co-op Store unit on Blossom Street in Ancoats subject to the following conditions.

Condition 12 pertains to airborne sound insulation performance and states the following:

*"The approved scheme shall be implemented and within 3 months of first use, a verification report will be required to validate that the work undertaken conforms to the recommendations and requirements approved as part of part (a) of this planning condition. The verification report shall include post completion testing to confirm the noise criteria has been met"*

Noise transfer criteria were set in the Environmental Noise Assessment report 26354/ENIA. Criteria were stipulated as to achieve sound reduction of 50 dB  $D_{nTw} + C_{tr}$  into first floor residential units.

Condition 10 pertains to plant noise emissions and states the following:

*"The approved scheme shall be implemented and within 3 months of first use, a verification report will be required to validate that the work undertaken conforms to the recommendations and requirements approved as part of part (a) of this planning condition. The verification report shall include post completion testing to confirm the noise criteria has been met."*

Plant noise criteria were set in the Environmental Noise Assessment report 26354/ENIA. Noise limits were set at 42 dB for daytime operation and 38 dB for night time operation.

Hann Tucker Associates have therefore undertaken airborne sound insulation testing and plant noise measurements of the completed unit in order to demonstrate compliance with the above conditions.



## 2.0 Condition 12: Airborne Sound Insulation

### 2.1 Criteria

We understand that the developer has stipulated that the party floor separating the commercial and residential units must achieve a minimum airborne sound reduction performance of 50 dB DnTw + Ctr. Manchester City Council has stipulated that meeting this criterion is a condition of granting planning permission for the store development.

### 2.2 Test Methodology

Sound insulation tests were carried out by Hann Tucker Associates across a single floor/ceiling partition into 1 No bedroom and 1 No living room in general accordance with the following standard:

- BS EN ISO 140-4:1998 'Acoustics – Measurement of sound insulation in buildings and of building elements – Part 4: Field measurement of airborne sound insulation between rooms'

For each test, the sound level differences were determined by generating a broadband, random diffuse sound field within the source room and measuring spatially-averaged  $\frac{1}{3}$  octave band noise levels within both source and receive rooms. Receive levels are corrected for background noise where necessary. The level difference between the source room noise levels and the corrected receive room noise levels give the wall's level difference, D.

Reverberant decays were recorded in the receive room in order to correct to a standardised level difference,  $D_{nT}$ , as below.

$$D_{nT} = D + 10 \log_{10} \left( \frac{T}{T_0} \right) \text{ where } T_0 = 1.0 \text{ seconds}$$

The  $\frac{1}{3}$  octave band results are then compared with a standard curve to give the  $D_{nT}$ , allowing comparison with the minimum airborne sound insulation requirements set out above.

### 2.3 Measurement results

The results of the airborne sound insulation tests are summarised below.

| Ref | Location                           | Element | Result, $D_{nT,w} + C_{tr}$ (dB) |
|-----|------------------------------------|---------|----------------------------------|
| AF1 | Co-op store to Apt 102 Living Room | Floor   | $\geq 70^1$                      |
| AF2 | Co-op Store to Apt 102 Bedroom     | Floor   | $\geq 70^1$                      |

<sup>1</sup>Maximum background noise correction used across entire frequency range. Actual results could be higher than stated.



The results of the airborne sound insulation tests exceed the required 50 dB  $D_{nTw} + C_{tr}$  criterion set by the developer. As such, this result should serve as sufficient for the discharge of Condition 12.

### 3.0 Condition 10: : Plant Noise Egress

#### 3.1 Criteria

Plant noise limits were set by Hann Tucker Associates in the Environmental Noise Impact Assessment report 26354/ENIA. The proposed plant limits were set as follows:

| Plant Noise Emission Criteria (Rating Level) |                                     |
|----------------------------------------------|-------------------------------------|
| Daytime<br>(07:00 – 23:00 hours)             | Night-time<br>(23:00 – 07:00 hours) |
| 42 dBA                                       | 38 dBA                              |

#### 3.2 Daytime assessment

Hann tucker visited the site on 17 March 2020 and performed background and plant noise measurements between 09.00hr and 10.30hr. On the occasions of the site visits, all plant associated with the Co-op store was understood to be running at design duty.

The methodology used was, in part, taken from BS 4142:2012. BS 4142:2014 describes methods for rating and assessing the effects of outdoor sound levels, of an industrial and/or a commercial nature, “on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident”. Plant noise assessment was performed using the methods defined in BS 4142:2014 to arrive at a rating level which is weighted with acoustic features likely to result in adverse comment. In this case, however, plant noise was assessed on a pass/fail basis, with comparison to set plant noise limits.

The impact of a specific sound is indicated by subtracting the existing background noise level from the rating level (i.e. noise level from the proposed items of plant/machinery/etc. plus any acoustic feature corrections).

The noise from the new development is expressed in terms of a rating level and given as a  $L_{Aeq, T}$  noise level. The existing background noise level is expressed in terms of a  $L_{A90, T}$  noise level. T is the assessment time interval, which is 1-hour for operations during daytime hours (07:00 to 23:00 hr) and 15-minutes for operations during night-time hours (23:00 to 07:00 hr).

BS 4142:2014 states that if a noise source contains an ‘acoustic feature’, such as tonality, intermittency or impulsiveness, an appropriate penalty should be applied.

Assessment Summary

| Results                                      |                               | Relevant Clause<br>(BS 4142:2014) | Commentary                                                                                                                                                                                                                                            |
|----------------------------------------------|-------------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Specific sound level calculated at receptor  | $L_{Aeq,1h} = 39 \text{ dB}$  | 7.3.6                             | Accounting for conformal area propagation and occlusion from wall sections                                                                                                                                                                            |
| Acoustic correction feature                  | 2                             | 9.2                               | Additive penalty for tonality perceptible at the emitter.                                                                                                                                                                                             |
| Rating level                                 | 41 dB                         | 9.2                               | Calculated by adding acoustic feature corrections to the specific sound level.                                                                                                                                                                        |
| Background sound level                       | $L_{Aeq,16h} = 42 \text{ dB}$ | 8                                 | -                                                                                                                                                                                                                                                     |
| Excess of rating over background sound level | <b>-1 dB</b>                  | 11                                |                                                                                                                                                                                                                                                       |
| ✓                                            |                               |                                   | The excess rating does not exceed the background level.                                                                                                                                                                                               |
| Uncertainty                                  | Low                           | 10                                | Measurements were made under repeatable conditions and the calculated rating level does not exceed the background noise level and in this instance the uncertainty of the measurement is unlikely to have influence on the outcome of the assessment. |

**3.3 Night-time assessment**

Hann Tucker Associates visited the site between 23.00hr and 23.30hr on 1 April 2020 to conduct background and plant noise measurements for assessment against night-time criteria. It was found that during night-time operation, plant noise levels were not discernible from ambient noise sources and that any running plant was inaudible to the operative on site.

**3.4 Summary**

Plant noise rating in line with BS 4142 indicates that, under daytime operation, plant noise does not exceed the limits set in 26354/ENIA. Additionally, under night-time operation, running plant is not discernible from ambient noise sources and was not found to be audible on site. Therefore, the above assessment should be sufficient to support the discharge of Condition 10.

**4.0 Conclusions**

Hann Tucker Associates visited the site of the Co-op Ancoats store on Blossom Street, Ancoats to perform sound insulation tests and plant noise assessments in order to discharge the remaining planning conditions associated with the planning application for the store development.

The results of sound insulation tests of the ceiling build-up forming the party floor of above residential units exceeds the criteria set for acoustic performance. Therefore no remedial mitigation is required to discharge this condition.



Plant noise rating in line with BS 4142 indicates that noise from plant associated with the Co-op store does not exceed the set limits at nearby residential units during daytime operating hours and during night-time operation. As such, no remedial mitigation is required to discharge this condition.

For and on behalf of  
HANN TUCKER ASSOCIATES

**Will Bailey**