

Assessment of the proposed acoustic impacts for the extension of permitted hours for deliveries, servicing, and collections at a coffee shop

Starbucks, Unit 1, Building 2, Manchester New Square



Client: Starbucks Coffee Company

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0. SUMMARY

- 0.1. ACA Acoustics Limited has been commissioned by the client to assess the acoustic impact of a proposed alteration to hours of deliveries, servicing, and collections at a new coffee shop at Unit 1, Building 2, Manchester New Square. These activities are currently approved between the hours of 07:30 – 20:00 hours within Condition 14 pursuant to permission 114585/FO/2016. The applicant is applying to extend these hours to 06:00 – 00:00 hours daily.
- 0.2. The assessment is required to provide evidence that noise emissions from these activities will not be detrimental to the amenity of nearby noise-sensitive properties and complies with the requirements of the Local Authority, Manchester City Council.
- 0.3. A survey has been carried out in the vicinity to establish existing background sound levels. The background sound levels during the most sensitive periods of loading/unloading are LA90 52dB at the monitoring position.
- 0.4. The most sensitive receptors have been assessed as first floor windows of Building 2, Manchester New Square.
- 0.5. Calculations using measured sound level data of deliveries equivalent to those proposed confirm that the rating level at the receptors are LAr 48dB at the first-floor windows, when assessed in accordance with BS 4142:2014+A1:2019.
- 0.6. Noise from deliveries/collections during the proposed hours will not be disturbing or detrimental to the amenity of any nearby residential occupants. It is recommended that there are no acoustic grounds which would prevent the variation of Condition 14.

1. INTRODUCTION

A coffee shop is proposed at Unit 1, Building 2, Manchester New Square, Manchester. Condition 14 of planning permission 114585/FO/2016 currently restricts deliveries, servicing, and collections to the unit within the hours of 07:30 to 20:00 hours daily. The proposed coffee shop operator intends to apply to Manchester City Council to vary Condition 14, extending these hours to 06:00 to 00:00 hours daily.

ACA Acoustics Limited has been commissioned by Pegasus Planning Group on behalf of the client to carry out an assessment of noise emissions from deliveries and collections and, where necessary, to provide recommendations for noise mitigation measures such that Condition 14 may be varied while ensuring that the amenity of nearby noise-sensitive properties is not compromised.

This report presents results of the assessment.

2. ACOUSTIC CRITERIA

The scope of British Standard 4142:2014+A1:2019 advises that *'this British Standard describes methods for rating and assessing sound of an industrial and/or commercial nature ... 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'*. BS 4142:2014+A1:2019 is commonly used to assess the likelihood and validity of complaints from industrial and commercial operations and considered appropriate for this application.

The assessment method of BS 4142:2014+A1:2019 corrects the measured specific noise from the source under investigation to account for influence from extraneous ambient noise, operating time periods and any tonal or intermittent features of the noise source to obtain a rating level for the source. This rating level is compared against the prevailing background noise outside the noise-sensitive property. Section 11 of BS 4142:2014+A1:2019 provides a commentary of the assessment result and states that:

- a) The greater the difference between the rating level and the background sound level, the greater the magnitude of the impact;
- b) A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context;
- c) A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context;
- d) The lower the rating level is 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.

3. REVIEW OF SITE LOCATION & DEVELOPMENT PROPOSALS

The proposals are to extend the approved delivery and refuse collection times from the current 07:30 – 22:00 hours to 06:00 to 00:00 hours. These will involve delivery and refuse trucks stopping by the pavement on Princess Street, and goods cages and wheelie bins moved along the path shown in Figure 1 to and from the store.

The most noise-sensitive receptors have been identified as residential properties at first floor level of the commercial unit. The dominant noise source is traffic on Princess Street to the front of the site. This is a busy road with high levels of traffic activity throughout the day, including a 4-way junction. Traffic activity reduces overnight.

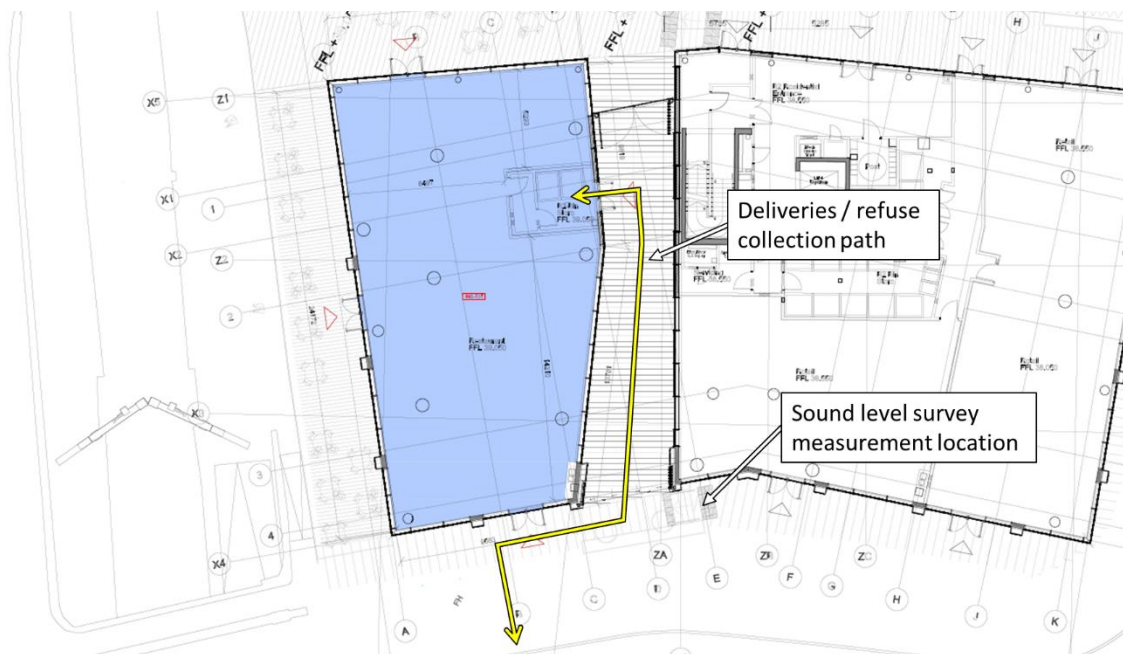


Figure 1: Layout showing deliveries and refuse collection paths and sound level survey measurement position

4. BACKGROUND SOUND LEVEL SURVEY

A sound level survey was carried out by Tommy Burn of ACA Acoustics Limited. The survey was manned, at the location indicated in Figure 1, and undertaken between 20:00 – 00:00 hours on the 19th and 06:00 – 08:00 on the 20th June 2023. The meter was calibrated before and checked after both surveys with no change noted. The weather during the survey was warm and dry with little breeze. Meteorological conditions were not considered to have impacted measured sound levels.

Equipment	Serial Number
Svantek Class 1 sound level meter type SVAN971, complete with MOLES weatherproof and lockable outdoor environmental kit	84045
Svantek calibrator type SV33B. Compliant to IEC 60942-1:2003	83826

Table 1: Equipment used

Results of the attended surveys are shown in Figure 2 below:

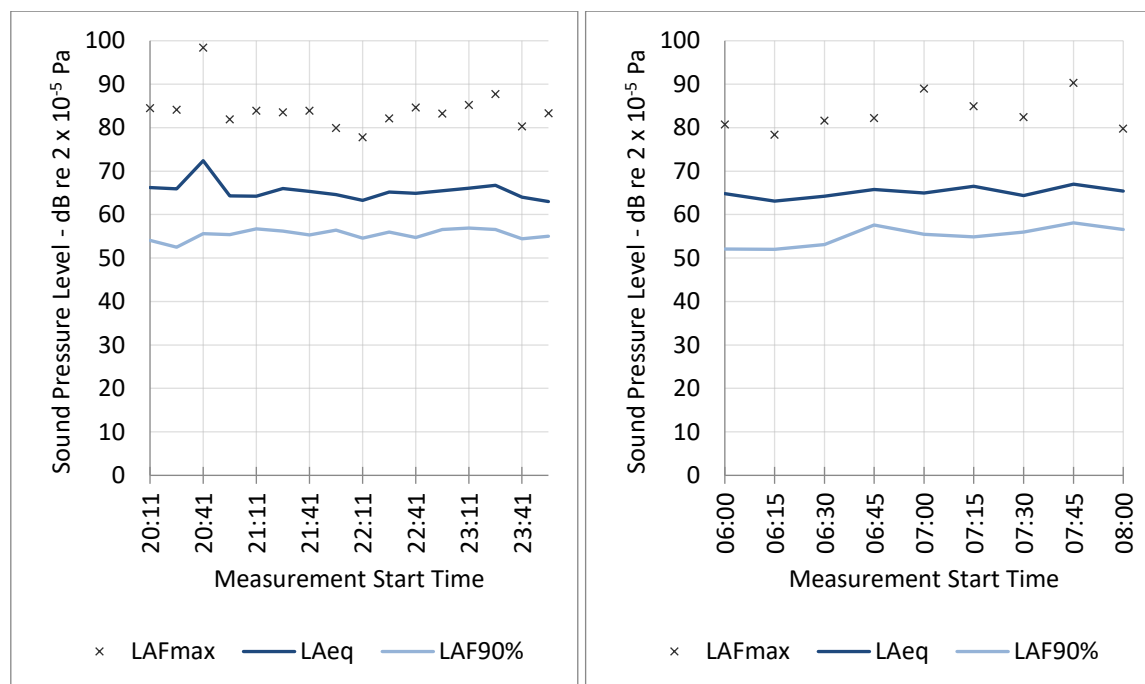


Figure 2: Sound level survey results

In accordance with BS 4142:2014+A1:2019 the prevailing background sound level is not necessarily taken to be the lowest recorded values, but rather the level that best represents the typical background sound level in the area over a defined period. A statistical analysis of the measured background sound levels over the two surveys has been carried out, generally following suggested guidance contained in Section 8 of the Standard. Distribution of the measured LA90 sound levels during the sound level survey period in accordance with the proposed extended delivery and refuse collection times are shown in Figure 3 below.

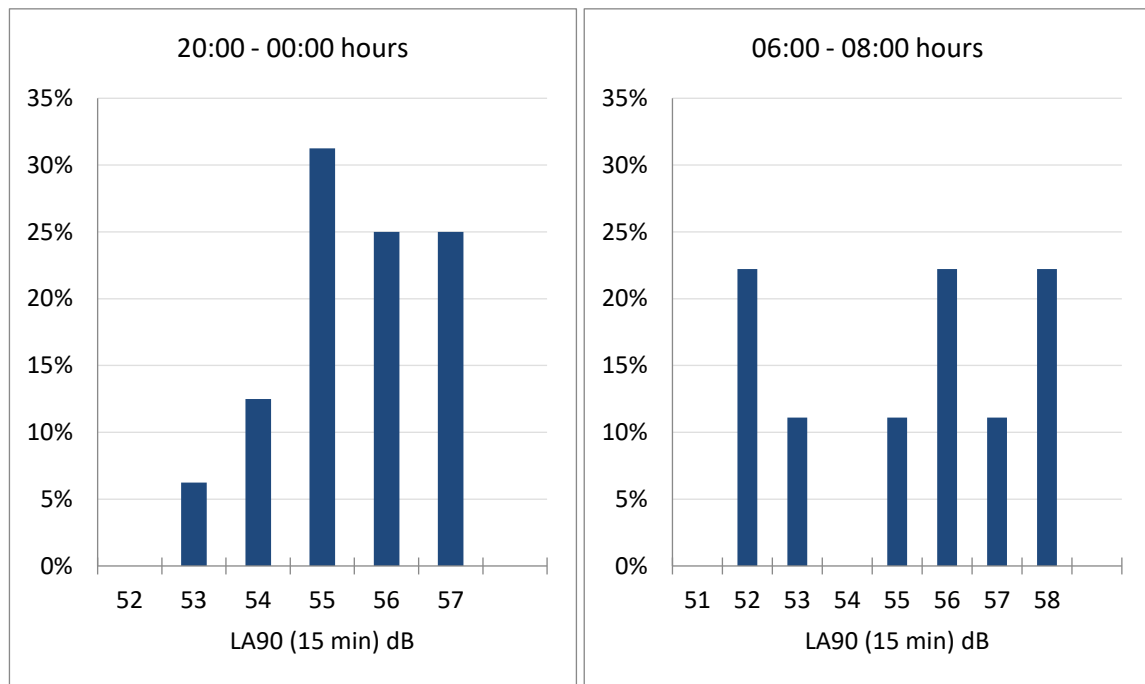


Figure 3: Statistical analysis of measured LA90 sound levels

The lower measured sound level during the morning of LA90 52dB has been used as the basis for the assessment. This is the lowest background sound level measured and will ensure a robust assessment.

The pertinent results of the survey are summarised in Table 2 below.

Monitoring Position	Period	Representative Background Sound Level at Most Sensitive Time LA90
Overlooking Princess Street	06:00 – 08:00 & 20:00 – 00:00	52dB

Table 2: Summary sound level survey results

5. ACOUSTIC ASSESSMENT

Sound levels from the proposed deliveries and refuse collections are classified as commercial noise sources. As a result, assessment has been undertaken in accordance with the methodology stipulated in BS 4142:2014+A1:2019.

Sound levels from movements of goods cages have previously been measured at various sites. Sound levels from goods cages include a high-level rattling sound near to the 1kHz frequency band

which can be subjectively audible. Commercial wheelie bins typically have more of a lower “rumble” characteristic which would typically be less noticeable and at a lower overall sound level. Therefore, the assessment has been carried out using sound levels for deliveries; noise from collections will typically be lower.

ACA Acoustics have assumed that typically around two cages of goods will be delivered during a single delivery event. Each of these will include two trips, one to the coffee shop. Empty cages from the previous delivery will be returned to the delivery lorry. Each cage is likely to take around 15 minutes to process.

The assessment has been undertaken assuming two movement events will occur within a 15-minute period.

Assessment of the specific sound level from the cages is detailed within Table 3 below.

Description	Sound level
Goods cages being moved - sound level at 10 meters	SEL 51dBA
Time to move cages between the bin store and the loading point at the pavement: 30 seconds each, two movements per 15-minute period. $51 + 10 \times \log_{10}\left(\frac{0.5}{15}\right) + 10 \log_{10}(2) = 39dBA$	L _{Aeq15m} 39dB at 10 meters
Specific sound level at nearest first floor windows, nominally 5 meters distance from the pavement: $39 + 20 \times \log_{10}\left(\frac{10}{5}\right) = 45dBA$	L _{Aeq15m} 45dB

Table 3: Calculation of specific sound level

Specific sound level of the goods cages used during a delivery over a 15-minute period are L_{Aeq} 45dB at the nearest residential windows at 1st floor level.

Assessment of the calculated rating level from the movement of goods in accordance with BS 4142:2014+A1:2019 is provided in Table 4 below.

Description	Most affected residential Receptor	Relevant Clause	Commentary
Calculated specific sound level to receptor	LAeq 45dB	7.1 7.3.6	Two cage movements (refer Table 3)
Background sound level	LA90 52dB	8.1.3 8.3	Measured representative background sound level.
Acoustic feature correction	3dB	9.2	Measured level not tonal, however movement of the cages may incorporate some impulsive characteristics.
Rating level	LAr 48dB	9.2	
Excess of rating level over background sound level	-4dB	11	Assessment indicates low likelihood of adverse impact, depending on the context

Table 4: BS 4142:2014+A1:2019 Assessment

Table 4 shows that the rating level from the loading of goods will not exceed the representative background LA90 sound level to outside the closest noise-sensitive properties. Sound levels from refuse collections will be subsequently lower.

BS 4142:2014+A1:2019 requires an assessment to consider the context of the development, rather than simply adhering to numerical values. Considering the calculated numerical value of the specific sound, allowing a reduction through partially open windows of 15dBA, as recommended in BS 8233:2014, sound levels inside the neighbouring dwellings will be approximately 30dBA (45dBA - 15dBA). This does not exceed guideline night-time levels to bedrooms of LAeq 30dB, set out in BS 8233:2014 and is further confirmation that sound levels from loading activity should not be detrimental to the amenity of any noise-sensitive receptors in the vicinity.

The client has advised that there is likely to be one delivery daily. Having daily deliveries could increase the potential adverse impact, although having only one delivery with a small number of cage movements would counteract this.

The author considers that the context of the assessment does not alter the initial estimate of the impact, and that sound levels from the loading activity should not be detrimental to the amenity of any residential occupiers in the vicinity.

6. CONCLUSION

An application for the variation of Condition 14 pursuant to permission 114585/FO/2016 is to be submitted to Manchester City Council to allow for deliveries, servicing, and collections at Unit 1, Building 2, Manchester New Square, Manchester between the hours of 06:00 – 00:00 hours.

The calculated rating level for goods movements to the most affected properties, when assessed in accordance with BS 4142:2014+A1:2019, is LAr 48dB. This does not exceed the prevailing background sound level in the vicinity. At this level BS 4142:2014+A1:2019 proposes that noise from loading activities during the period from 06:00 – 00:00 hours will have a low adverse impact.

It is the author's opinion that the development will not be detrimental to the amenity of nearby residential occupants and the application to vary Condition 14 should not be refused on noise grounds.