

# JAMESON ACOUSTICS

Consultants in acoustics,  
noise and vibration

## Technical Note

|            |                                |
|------------|--------------------------------|
| Our Ref    | 22042-TN-1-R0                  |
| Date       | 17 January 2024                |
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| Our Client | One Manchester                 |
| Issued To  | Euan Kellie Property Solutions |

## Phase 2 & 3, Newton Heath Planning Noise Addendum

### Introduction

This technical note provides a response to noise comments raised by Manchester City Council (MCC) in relation to the above proposed development and the submitted Noise Impact Assessment Report 22042-RP-1-R1.

This note is intended to provide an addendum to the noise assessment report to address delivery noise impacts from the adjacent Lidl Store and present further information relating to the AVO assessment for green zone windows.

### Lidl – Delivery Noise Impacts

#### MCC COMMENT:

*EH are in receipt of a noise assessment report by Jameson dated Aug 23. More information is needed regarding the delivery hours, number of vehicles and route of the HGVs for Lidl to ensure that the noise of this does not impact the proposed residential. If there is no impact: EH accept the glazing specification stated in 7.2.2.*

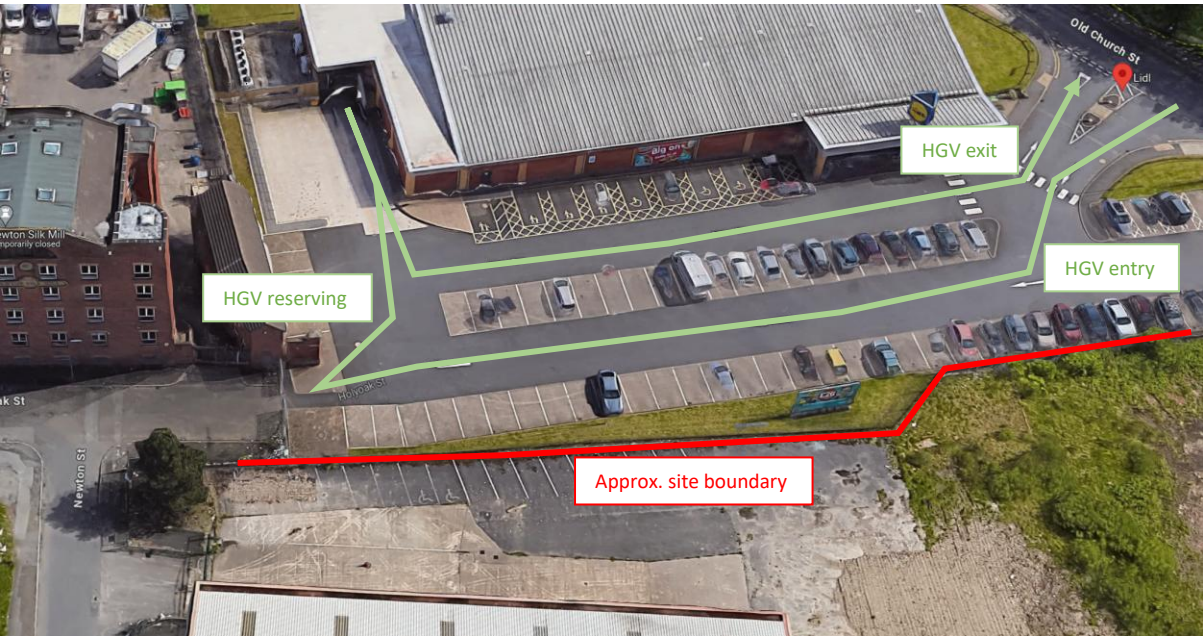
#### REVIEW:

Jameson Acoustics has previously undertaken noise level measurements of supermarket delivery activities at numerous sites. Measurements capture noise levels from HGVs entering the site and manoeuvring into position, unloading activities (involving wheeled cages of products transferred to/from lorries directly into the loading bay port) and HGVs exiting the site. These are summarised below, with results normalised to a reference distance of 5 metres. Note, the  $L_{Aeq}$  noise levels have been converted into single event ‘sound exposure levels’ (SEL) by normalising the single event  $L_{Aeq}$  level to one-second.

| Event                                   | SEL (dBA) at 5m | $L_{Amax,f}$ (dB) at 5m |
|-----------------------------------------|-----------------|-------------------------|
| HGV arriving and reserving (20 seconds) | 84              | 78                      |
| Loading/unloading activities (10 min)   | 84              | 80                      |
| HGV departing (10 seconds)              | 81              | 78                      |

We understand the deliveries to Lidl could occur anytime during the day/night, but are often in the early morning hours. We shall assume this to be between the hour of 04:00-05:00 hr for a worst-case assessment, when the prevailing noise climate is low (lowest recorded noise level of 47 dB  $L_{Aeq,15min}$  at survey Position 2 in our Report).

Deliveries occur to the east of the Lidl store, as indicated below. There is a loading bay port (with rubber flaps to the opening perimeter) within the building façade, so that deliveries vehicles can reverse and load/unload directly into an internal service area. See below Photograph.



3D satellite image of Lidl store looking south (© google.co.uk)



Photograph of Lidl service yard (© google.co.uk)

Our assessment of these noise impacts shall be judged based on the anticipated change in ambient noise level. The following Table shows the human response to changes in noise, developed by the Institute of Acoustics and used/accepted by numerous authorities, inspectors (at inquiry) to evaluate the effects of changes in  $L_{Aeq}$  noise levels.

| Change in Noise Level, $L_{Aeq,T}$ (dB) | Response                         | Impact                  |
|-----------------------------------------|----------------------------------|-------------------------|
| $\leq 3$                                | Barely perceptible               | None                    |
| 4-5                                     | Perceptible                      | Slight-to-Moderate      |
| 6-10                                    | Up to a doubling in loudness     | Moderate-to-Significant |
| 11-15                                   | More than a doubling in loudness | Substantial             |
| $>15$                                   | -                                | Severe                  |

If the specific noise source is controlled to a level that does not exceed the prevailing ambient noise climate, the change in noise level would be up to 3 dB  $L_{Aeq}$  which, in accordance with the above table, would provide a positive indication that adverse noise impacts are unlikely.

An alternative approach would be to adopt BS 4142, however, it is important to note that this standard applies 'context' to the assessment. The evaluation of noise impact is not just determined through the objective numeric assessment, but also with consideration for the site context, e.g. is the receptor already exposed to similar noises, how sensitive is the receptor, how often and for how long does the noise occur. It is therefore entirely possible that whilst the objective outcome of the BS 4142 calculation indicates a risk of adverse noise impact, the context of the proposals may reduce this to an acceptable level. In this case, the site is in an urban area bounded by major traffic routes, and in an area surrounding by a mix of commercial and residential properties. In cases such as this, the BS 4142 would almost always indicate a risk of adverse impact when, in fact, that is not the case with consideration for the context of the area. In these cases, an alternative assessment methods for example, the WHO guidelines and/or change in  $L_{Aeq}$  noise level, is often more telling. We feel that is the case here.

The following tables present our calculation of an early morning delivery noise impact as a change in  $L_{Aeq}$  noise level based on the above data. The assessments are made to 2nr the nearest proposed dwelling to the service area; first floor bedroom windows of NSR A and B, as indicated below.



Site plan showing Noise Sensitive Receptor locations

NB: The calculations consider the BS 4142 assessment time base of 15-minutes at night-time.

## NSR A

| Source                                    | HGV arriving | Loading/unloading | HGV departing |
|-------------------------------------------|--------------|-------------------|---------------|
| SEL at 5m (dB)                            | 84           | 84                | 81            |
| No Events/hr                              | 1            | 1                 | 1             |
| $L_{Aeq,15min}$ at 5m (dB)                | 54           | 54                | 51            |
| Distance (m)                              | 16           | 50                | 27            |
| Distance Loss (dB)                        | -10          | -20               | -15           |
| Screening                                 | None         | Partial           | None          |
| Screening Loss (dB)                       | 0            | -5                | 0             |
| Delivery $L_{Aeq,15min}$ at Receptor (dB) | 44           | 29                | 37            |
| Combined Delivery $L_{Aeq,15min}$ (dB)    |              | 45                |               |
| Existing Noise level $L_{Aeq,15min}$ (dB) |              | 47                |               |
| Total Noise Level $L_{Aeq,15min}$ (dB)    |              | 49                |               |
| Change in Noise Level (dB)                |              | +2                |               |

## NSR B

| Source                                    | HGV arriving | Loading/unloading | HGV departing |
|-------------------------------------------|--------------|-------------------|---------------|
| SEL at 5m (dB)                            | 84           | 84                | 81            |
| No Events/hr                              | 1            | 1                 | 1             |
| $L_{Aeq,15min}$ at 5m (dB)                | 54           | 54                | 51            |
| Distance (m)                              | 20           | 50                | 30            |
| Distance Loss (dB)                        | -12          | -20               | -16           |
| Screening                                 | None         | None              | None          |
| Screening Loss (dB)                       | 0            | 0                 | 0             |
| Delivery $L_{Aeq,15min}$ at Receptor (dB) | 42           | 34                | 36            |
| Combined Delivery $L_{Aeq,15min}$ (dB)    |              | 44                |               |
| Existing Noise level $L_{Aeq,15min}$ (dB) |              | 47                |               |
| Total Noise Level $L_{Aeq,15min}$ (dB)    |              | 49                |               |
| Change in Noise Level (dB)                |              | +2                |               |

The above demonstrates that noise level from an early morning delivery is only expected to increase prevailing ambient  $L_{Aeq,1hr}$  noise levels at the nearest dwellings by 2 dB. In accordance with the change in noise level assessment table described above, this would provide an indication of a **low probability of adverse noise impact**.

In terms of maximum  $L_{Amax}$  noise levels, our calculations predicted the highest peak noise level to be 68 dB  $L_{Amax,f}$  at the nearest bedroom window (HGV entering site, driving through the car park). With consideration for noise intrusion through a partially open window (taken as 13 dB), this would result in an internal noise level of 55 dB  $L_{Amax}$ , which exceeds the WHO guideline of 45 dB  $L_{Amax}$ . This limit applies to not more than 10-15 noise 'event's through the night. Given that there may be several peak noise events during a delivery that could approach/reach this  $L_{Amax}$  level, we would err on the side of caution and advise that this level is unacceptable.

Hence, in order to mitigate the potential noise impact for all residential facades facing the Lidl store, we would propose to amend the overheating strategy to place these facades into the purple acoustic zone in which ventilation solutions will need to remove reliance on openable windows at night in line with Building Regulations Part O.

Please see below the amended overheating acoustic zone plan to reflect this.



Overheating acoustic zones:

Green = openable windows acceptable, Purple/Black = alternative approach required

With this mitigation in place, we can consider the sound reduction of the façade with windows closed.

The composite out-to-in sound level difference afforded by facades in this area of the site is expected to be circa 30 dB based on the façade specifications detailed in our Report (i.e. 28 dB  $R_w + C_{tr}$  windows (closed) and 34 dB  $D_{n,e,w} + C_{tr}$  trickle ventilators open). With this reduction, internal noise levels would reduce to 38 dB  $L_{Amax}$  and would comply with the WHO guidelines for acceptable internal noise event levels at night.

Hence, with the above mitigation in place, we would consider the risk of adverse noise impacts to be **low**.

## Further Details of AVO (Overheating) Acoustic Assessment

### MCC COMMENT:

*Re overheating in 7.3, EH agree with MVHR with a boost function in the black and purple zones. Other mitigation methods discussed should be looked at in conjunction with MVHR. For the other zones, please include the AVO assessment to further justify MEV.*

### REVIEW:

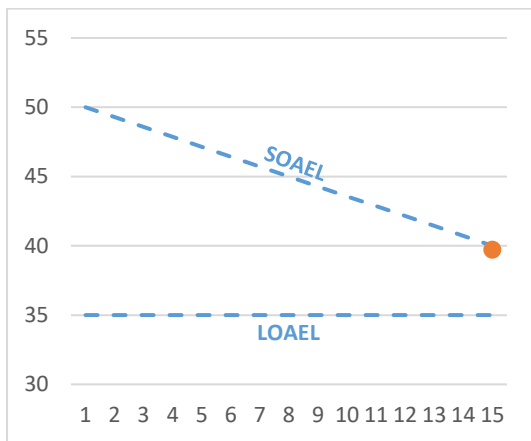
With reference to our report, the overheating acoustic zones were split into three; black, purple and green. For the black and purple zones, the overheating strategy shall assume windows are closed at night (in line with Part O) and MVHR with boost functions provided to reduce reliance on openable windows during the day.

For the green zone, daytime and night-time noise levels are sufficiently low enough to permit openable windows. For night-time, Part O requirements supersede the AVO and, in line with the IOA's 'Guide for Demonstrating Compliance with the Noise Requirements of Part O' the threshold for acceptance can be taken

as 49 dB  $L_{Aeq,8hr}$  and 64 dB  $L_{Amax}$  (upper limits). The calculations and noise modelling results presented in our report demonstrate noise levels at night will fall below these upper limits for the green zone dwellings.

For daytime, incident traffic noise levels are calculated to be in the region of 53 dB  $L_{Aeq,16hr}$ . Based on this value, the following Figure demonstrates that resultant internal noise levels within dwellings would fall below the SOAEL threshold and within the acceptable range, even if windows are open for 'most of the day' (i.e. 15 hours out of the 16 hour day).

NB: The x-axis scale is duration for which 'overheating condition' occurs (in hours), the y-axis is the internal ambient noise level (in dB,  $L_{Aeq,16hr}$ ).



For and on behalf of  
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