

Date: 7th October 2024

TECHNICAL NOTE ON NOISE SYMMETRY PARK MERSEYSIDE UNITS 03 AND 04

1. BACKGROUND

E3P have previously undertaken a Noise Impact Assessment (NIA) (50-756-R2-2) in order to support a Reserved Matters application for the development of 284,670 sq. ft (Unit 03) and 211,050 sq. ft (Unit 04) (GIA) of storage and distribution floorspace (Use Class B8) with ancillary offices and light industrial (Use Class E(g)), together with the provision of landscaping and infrastructure submitted pursuant to planning permission 20/00494/HYB, to be referred to hereafter as 'the site'.

The NIA concluded:

The assessment has shown that the predicted rating level falls below the typical measured background sound level during the daytime and night-time periods. Consideration has also been given to night-time noise impacts due to car park usage.

In addition to the BS 4142:2014 assessment it is also important to consider internal noise levels within bedrooms with windows open. Here the highest predicted internal noise level would be 26 dB, accounting for a 13 dB reduction due to an open window. This falls below the criterion given in BS 8233:2014 for suitable sleeping conditions.

As such, no mitigation measures are required.

The assessment considered not only Units 03 and 04 but the cumulative effect of the entire site operating with the detail of Units 03 and 04 included.

Following submission of the report, E3P received comments from Environmental Health with concerns on noise due to the proximity of Unit 03 to Old Halsnead and Halsnead Villas. E3P provided responses to these, which are included here for reference. Final comments were received from Ian Gaskell on 13th September 2024, to which this Technical Note primarily relates to.

It has been completed by Lee Faulkner, Associate Director at E3P and a member of the Institute of Acoustics (MIOA) and Institute of Environmental Science (MIEnvSci).

This note should be read in conjunction with the NIA.





2. E3P RESPONSES TO PREVIOUS EHO COMMENTS

E3P received initial comments from Helen Bradshawe at Knowsley Council (KC) dated 8th May 2024. These are shown below. Comments from Knowsley Council are highlighted in italics and include their responses to our comments (E3P).

Comment 1

(KC) Forklift trucks haven't been accounted for and these are likely to have reversing beepers. Should these be the standard beepers they will have potential to impact the nearby residents.

(E3P) E3P do not note any shutter doors or ramps for access for FLT's with the vast majority of the relevant façade occupied with dock levellers. Nor are any storage areas noted outside. The use of FLT's will be at a much lower level than the multiple HGV's loading and movement of these in the parking areas.

(KC) EH accept the explanation, however use of FLT's should be included for worst case assessment. As a tonality has been added for reversing beepers detailed below and due to the receptors being shielded from noise due to the buildings, this will be accepted.

As a side note, given that the yard areas are fully shielded from the receptors and that sound power levels from FLT movements are lower in level than HGV movements and unloading, the inclusion of such is not considered necessary.

Comment 2

(KC) The assessment assumes all HGV's would be fitted with white noise reversing beepers – has this been confirmed by the applicant, as from experience this is unlikely to be the case. A 2dB tonality has been attributed for white noise reverse alarms with tones just perceptible at the receptors. As a worse-case scenario, it should be assumed that the standard beepers will be fitted. Will other vans / vehicles who do not have white noise reversing beepers frequent the site or will it only be HGV's?

(E3P) As the site reversing of HGV's are fully shielded from all receptors, the application of 2 dB for tonality and 3 dB intermittency is considered acceptable and worst-case. Even without white noise reverse alarms, the shielding provided from the buildings and the distance from the receptors would result in, at most, a 2 dB correction.

(KC) Accepted.

Comment 3

(KC) There is the potential for Old Halsnead / Halsnead Villas to hear the reversing beepers and the tonality should have been included within their assessment, to ensure a worst-case scenario.

(E3P) We applied a 3 dB correction to inform a worst-case assessment as at these receptors, intermittent vehicle movements are likely not perceptible due to the high levels of road traffic sound and so the application of the 2 dB correction would revert to the same outcome. Apologies that this wasn't made clear in the assessment. These receptors are fully shielded from the operations, except car park movement, and any acoustic features would be effectively masked by the steady state motorway noise. This was the same application of feature corrections for previous assessments too.

(KC) Accepted.



Comment 4

(KC) The report assesses the 'Lowest Modal' background levels, how have you derived at these values?

(E3P) This was derived via statistical analysis of each separate daytime and night-time period with the lowest from all days/nights monitored used for the assessment.

(KC) Accepted.

Comment 5

(KC) Due to the proximity of Unit 3 and associated road network for the HGV's to get to the units; with a difference of -4 dB above background in the day and that of 0dB in the night, the residents of Old Halsnead / Halsnead Villas will still be affected by the noise, especially of a night. Mitigation measures are to be reviewed. The Old Halsnead property has single glazing – has this been accounted for within the assessment.

(E3P) Given the outcomes of the assessment, no mitigation measures were recommended. With single glazed units, a sound reduction of 25 dB is expected. The highest specific noise level predicted here is 45 dB. With single glazed windows, internal noise levels are expected to be 20 dB, which falls well below the daytime and night-time criteria. With windows open (-10 dB), internal noise levels are predicted to be 35 dB during the day and 29 dB at night, both achieving the criteria.

(KC) Environmental Health do not accept this statement, an open window would be -10dB reduction, if the window is fully open – which is acceptable during summer, then this would be -5dB. In which case the nighttime value would be 34dB at night and 40dB during the day, which are both above the WHO guidelines.

Comment 6

(KC) No information has been provided for fixed plant items, including air source heat pumps (ASHPs) – no information is included within the assessment. The report concludes that any plant noise must be at least 10dB below the background sound level so as not to result in an exceedance due to the levels at Old Halsnead being equal to the background sound levels. Is this achievable?

(E3P) In the absence of detailed information we cannot assess the plant noise. Given the units are likely to be installed on elevations away from receptors, the achievement of this criteria is considered achievable. Plant details will be provided in line with condition 60.

(KC) Accepted.

Following the above, further comments were received from Ian Gaskell, dated 19th August 2024:

Further to the response from the consultant, whilst I understand what they are saying, we still have concerns with the total rating level being the same as the background level, and particularly at night.



In their response they state, "Technically, the 'industrial' noise sources are minimal with dominant sources being road traffic and car park noise." Is this road traffic due to the development? If the noise is from the development, it shouldn't matter if it's from the industrial noise sources or from other activities associated with the development. We still need to ensure the best practicable measures are put in place to minimise the potential impact on nearby residents as much as possible. If you introduce a noise source at a similar level to the existing background level it will result in an increase in the background level, which we are trying to avoid. Given there is no mitigation proposed, could some be put in place to reduce the total rating level, so it is around 5dB below the background at Old Halsnead?

E3P then provided a response:

It is important to note that the predicted night-time rating level at Old Halsnead is equal to that previously predicted for Unit 2, as per the attached report (50-756-R1-2 for Unit 02). As noted in Table 4.3 of that report, a rating level of 42 dB was predicted, mostly due to car park noise, with a difference of 0 dB considered acceptable and subsequently approved. With Units 3 and 4 added to the cumulative noise assessment, this rating level remains unchanged, this is due to the proximity and dominance of Unit 2 car park opposed to the partially shielded and added distance from the road and car park at Unit 3. As such, the level of impact and noise at the receptor is unchanged from that approved as part of Unit 2. If -5 dB difference is required, off-site mitigation at a previously approved and built unit would be required which is not considered acceptable. Any mitigation at Unit 3 would not influence expected rating levels at Old Halsnead.

The above was then followed by final comments from Ian Gaskell, as follows, which will be address in Section 3 of this Technical Note:

I still have concerns with regards to the maximum noise levels of the cars using this road, of a night in particular. The applicant's response referred to a 42dB rating level which is effectively the noise level averaged over time, not the maximum level.

The design of the road is likely to encourage cars to drive fast along it. I cannot see any assessment of the maximum noise levels of this. There is a car park assessment, but the maximum value used was 75dB (at 2 metres – car door slam) and I believe an accelerating car would be louder. There is also no mitigation between the road and the neighbouring property. It is considered that the noise is likely to be heard at night.

The assessment of the car park predicted a level of 45dB at the receptor (external) and this was compared against the WHO guideline value of 60dB which allows for the window to be open (slightly) (an assumption of a 15dB drop in the noise level. When windows are open fully (which is likely in summer) there will be no 15dB reduction.

[the guideline is 45dB internally for single sound events]

It is considered that putting traffic calming measures in place wouldn't work here as cars would still accelerate once they have driven over them and the cars driving over them may also cause noise.



There is also an outdoor seating / amenity space, as can be seen below. There is no mitigation in place between this space and the nearby residents and this may also generate noise complaints.



3. NOISE ASSESSMENT OF UNIT 03 ACCESS ROAD

Given the comments above, this section will look at two separate aspects:

- ✿ Maximum noise level assessment of vehicles accelerating along the access; and
- ✿ Consideration of potential noise impact due to usage of the outdoor seating area.

3.1. MAXIMUM NOISE LEVEL ASSESSMENT – ROAD TRAFFIC

In order to inform the assessment, a worst-case maximum noise level for a passing car, which will use the access road, is required. However, as the road is yet to be built and speed limits set, an exact maximum noise level is not possible. Accordingly, E3P propose to use worst-case data for an accelerating HGV, as measured previously to inform an assessment to discharge condition 14 of the Hybrid Application which focused on the main access road and its impact on Park Villas.

The main concern from the EHO was the impact of accelerating/braking HGVs entering and leaving the site via Cronton Road.

Here, E3P captured worst-case levels of noise of passing HGVs, the client arranged for a Yodel articulated truck to attend site between 00:00 and 01:30 on a weekday night in order to capture a sample number of pass-bys, with the HGV entering and driving up to Unit 1, which is constructed, turning around and travelling out of the site.

The access road, although in place, is not yet tarmacked and so any measurements of passing vehicles would be worst-case with increased road noise likely on the road surface, as noted in the Technical Note 50-575-R2-3. Full details are included here with summary information provided below.

A full-size articulated HGV was provided. The vehicle was empty at the time but considering that any movement of the vehicle on a smooth road would be minimal, the actual noise sources of concern will be the acceleration and braking of the vehicle, both captured.

Two measurement positions were chosen for the duration of the survey, as follows:

- ✿ Noise Measurement Position 1 (NMP1): Located to the north of the eastern façade of Park Villas, equidistant from the access road, at a height of 3.2 m above local ground level to replicate first floor windows. The microphone was mounted on a pole in free-field conditions.
- ✿ Noise Measurement Position 2 (NMP2): Located at the road edge, 4 m from the closest edge of the road where the HGV passed along. The microphone was mounted on a tripod at a height of 1.5 m in free-field conditions.

Only NMP2 is of interest here. The driver was instructed to perform five pass-bys, amounting to 5 entrances and 5 exits of the site at typical site speed. A traffic light system was in place and so, although Cronton Road had little to no traffic, the HGV had to come to a complete stop at the junction with Cronton Road and accelerate out, including the release of air brakes on occasions.

The Table below details the measured noise levels for each pass-bys instance, whether it was entrance or exit, for both positions.

**Table 1 Noise Survey Results**

Time	Notes	At roadside (NMP2)	
		$L_{Aeq,T}$	$L_{Amax,fast}$
00:27	Entering site	66.5	75.8
00:30	Exiting Site with long idle due to stuck traffic lights. Airbrake on release.	62.0	83.6
00:37	Entering site	68.5	77.3
00:39	Exiting Site	64.7	74.6
00:43	Entering site	65.9	76.9
00:45	Exiting Site	65.0	75.8
00:49	Entering site	66.8	77.1
00:52	Exiting Site. Airbrake on release.	67.5	84.4
00:56	Entering site	67.1	76.8
00:58	Exiting Site	64.2	73.5

Given that personal vehicles will not include air release, the two highest maximums are removed. As such, the worst-case maximum noise level to be used is noted to be 77.3 dB at 4 m.

To assess the potential impact of accelerating cars along the access, E3P will consider internal maximum noise levels in accordance with WHO Guidelines and assuming open windows. However, the reduction of 13 dB for a partially open window was challenged at the time and a reduction of 5 to 13 dB was noted as a preferred range by Ian Gaskell.

Accordingly, E3P have taken the highest measured maximum noise level above (77.3 dB) from NMP2 and undertaken a simple assessment.

It is assumed that this would occur more than 10-15 times per night and so is considered worst-case. When assuming a reduction for an open window, E3P have reverted to that suggested in Part O when a window is open to mitigate overheating with a reduction of 9 dB suggested in the IOA/ANC Guidance.

As such, assuming a distance of 53 m from the edge of the road to the closest window at Old Halsnead, a partial line of sight removal of -3 dB to allow for level different and window location (the site is at least 3 m below the level of Old Halsnead and the access road runs roughly north to south and windows face parallel to this) and a reduction of 9 dB for an open window, the following is calculated:

- ✳ 77.3 dB – (20 x log (53/4)) = 54.9 dB $L_{Amax,fast}$.
- ✳ Minus 3 dB for line of sight = 51.9 dB $L_{Amax,fast}$.
- ✳ External to internal = 51.9 dB – 9 dB = 42.9 dB $L_{Amax,fast}$.

WHO Guidelines give a criterion of 45 dB. As can be seen, the expected internal noise level would be 2 dB below the criterion, thus no adverse impact is predicted.

This is based on the passing of an accelerating HGV which is considered a highly level of noise than a personal car.

Accordingly, no adverse impact is expected as a result of passing cars along the access road.



3.2. USAGE OF OUTDOOR SEATING AREA

E3P note concern has been raised by the EHO in relation to the above:

There is also an outdoor seating / amenity space, as can be seen below. There is no mitigation in place between this space and the nearby residents and this may also generate noise complaints.

Here, E3P note that a small area is proposed which employees could use as an outdoor seating or smoking area. It is not envisaged that more than 10 people would use this area and the specific noise level from typical conversation would not be significant, especially considering the existing ambient noise levels at Old Halsnead. Indeed, measured levels here range between 45 dB and 60 dB day and night. For any sound from the outdoor seating area to be audible, levels would need to be equal to or higher than existing levels of noise.

If we assume a level of 45 dB existing at Old Halsnead, during the quietest night-time period, and we assume a level of 45 dB is resultant from the outdoor seating area, this results in an expected noise level of 80 dB at 1 m from the outdoor area, assuming a stand-off of 54 m from the edge of this area to the edge of the garden. This level of noise is representative of inside a factory or at the edge of a main A road or motorway and not considered representative of a small outdoor seating area or smoking area.

As such, no adverse impact is expected from this area considering the intended usage, distance to the receptor and existing levels of road traffic noise.

Yours sincerely,
For and on behalf of E3P Ltd

Lee Faulkner
Associate Director