Noise Impact Assessment

Site: Crabtree Lane, Openshaw
Reference: 51-413-R1-4
Date: June 25



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EXECUTIVE SUMMARY

Site Address	Crabtree Lane, Openshaw, Manchester M11 1AJ
National Grid Reference	E 388721, N 398031
Proposed Development	Planning application for residential developments comprising houses and apartments along with access and landscaping.
Report Objectives	To identify, measure and assess the potential impact of existing sound sources that have the potential to impact upon the proposed noise sensitive development. The report follows current and relevant British Standards in order to provide a robust assessment.
Surveys Completed	Worst-case attended measurements of commercial sound have been undertaken during representative daytime and night-time periods in a position considered representative of the site. The main sound source was found to be activity associated with SGB which operates a scaffolding yard to the west of the Site. No commercial sound was noted from the units on the other side of the canal to the north nor from those to the west. Measurements of school playground usage was also conducted.
Assessments Completed	E3P has undertaken a BS4142:2014+A1:2019 assessment accounting for sound from SGB impacting upon the proposed development. The predicted rating level has been compared to the existing typical background sound level for the daytime periods within rear garden areas. E3P have also undertaken predictive assessments for uses to the north in the absence of source measurements. Consideration is given to living room and bedroom noise levels in accordance with BS 8233:2014. Consideration has been given to any acoustic characteristics associated with commercial sound. Absolute levels of noise measured on other boundaries have been used to inform the assessment also.
Mitigation Recommendations	Whole dwelling ventilation is assumed to be installed in all plots in accordance with Approved Document Part F. Openable windows are considered acceptable to mitigate overheating in relation to internal noise levels only. A 2.1 m close boarded fence is recommended along the garden edge of plots 17 and 18 on the western area in order to provide a level of protection against potential noise from the industrial premises. As such, E3P have recommended an appropriate specification.
Conclusion and Discussion	With mitigation measures in place, this assessment has shown that no adverse impact is predicted day or night at the receptors due to commercial sound.

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1. INTRODUCTION

1.1. BACKGROUND

E3P were commissioned by Keepmoat to undertake a Noise Impact Assessment for a proposed residential development at a site at Crabtree Lane in Openshaw, to be referred to hereafter as 'the Site'.

This assessment looks to determine the key noise sources in the immediate vicinity of the Site and to assess their impact, if any, upon proposed residential receptors and to specify mitigation measures, where required.

1.2. REPORT OBJECTIVES

The objectives of this report are as follows.

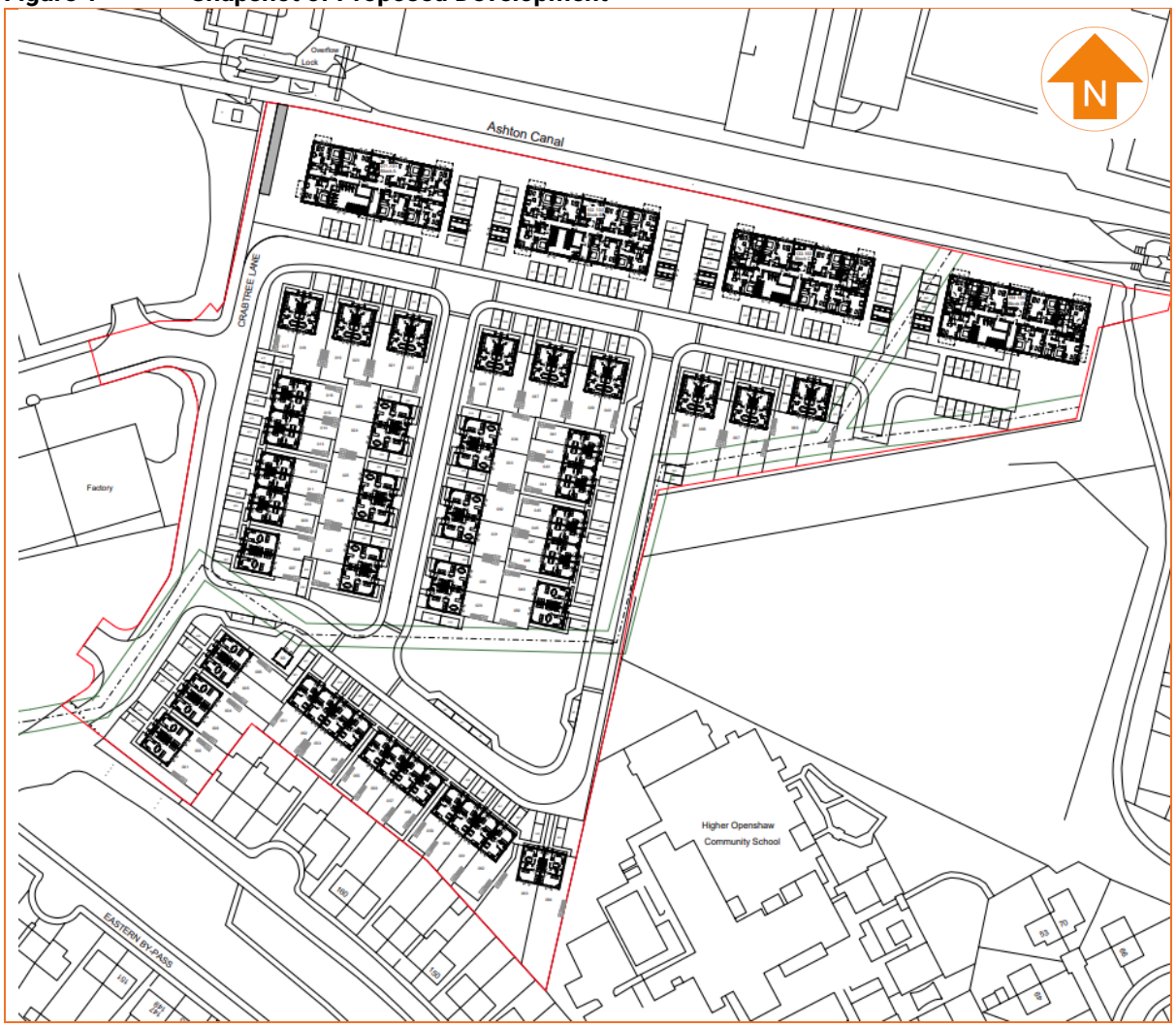
- Establish and measure the existing sound levels across the site, day and night.
- Consider the potential sources of sound impacting the site and to measure source sound levels of all applicable sources.
- Assess internal and external noise levels in accordance with criteria given in BS 8233.
- Assess the impact of commercial sound upon the proposed development in accordance with BS 4142
- Provide advice on mitigation measures, where required.

1.3. PROPOSED DEVELOPMENT

The client intends to develop the site for residential usage with a mix of traditional dwellings and apartments with associated access roads, parking, landscaping and adopted drainage infrastructure.

A snapshot of the proposed development layout is indicated in Figure 1.

Figure 1 Snapshot of Proposed Development



2. ASSESSMENT METHODOLOGY

2.1. NATIONAL PLANNING POLICY FRAMEWORK

To prevent unacceptable risks from pollution, planning policies and decisions should ensure that new development is appropriate for its location. The effects (including cumulative effects) of pollution on health, the natural environment or general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution, should be considered.

The national planning policy framework states that planning policies and decisions should aim to:

- Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development.
- Mitigate and reduce to a minimum, other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions.
- Recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established.
- Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

2.2. NATIONAL PLANNING PRACTICE GUIDANCE

Noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment. When preparing local or neighbourhood plans, or taking decisions about new development, there may also be opportunities to consider improvements to the acoustic environment.

Local planning authorities' plan-making and decision-making should take account of the acoustic environment and in doing so consider:

- Whether or not a significant adverse effect is occurring or is likely to occur.
- Whether or not an adverse effect is occurring or is likely to occur.
- Whether or not a good standard of amenity can be achieved.

In line with the explanatory note of the NPSE, this would include identifying whether the overall effect of the noise exposure (including the impact during the construction phase, where applicable) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.

The "observed effect levels" are as follows:

- Significant observed adverse effect level: This is the level of noise exposure above which significant adverse effects on health and quality of life occur.
- Lowest observed adverse effect level: This is the level of noise exposure above which adverse effects on health and quality of life can be detected.
- No observed effect level: This is the level of noise exposure below which no effect at all on health or quality of life can be detected.

Table 1 summarises the noise exposure hierarchy, based on the likely average response.

Table 1 Noise Exposure Hierarchy

Perception	Examples of outcomes	Increasing effect level	Action
Not Applicable	No effect	No observed effect	No specific measures required.
Noticeable and Not Intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No observed adverse effect	No specific measures required
Lowest Observed Adverse Effect Level			
Noticeable and Intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television, speaking more loudly, or having to close windows for some of the time because of the noise where there is no alternative ventilation. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed adverse effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Noticeable and Disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion, having to keep windows closed most of the time because of the noise where there is no alternative ventilation. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant observed effect	Avoid
Noticeable and Very Disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening, loss of appetite, significant/medically definable harm (auditory and non-auditory).	Unacceptable adverse effect	Prevent

The subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any situation. These factors include the following:

- The source and absolute level of the noise together with the time of day it occurs. Some types and level of noise will cause a greater adverse effect at night than if they occurred during the day. The adverse effect can also be greater simply because there is less background noise at night.

- For non-continuous sources of noise, the number of noise events, and the frequency and pattern of occurrence of the noise can be important.

- The spectral content of the noise and the general character of the noise. The local topology and topography should also be considered along with the existing and, where appropriate, the planned character of the area.

More specific factors to consider when relevant:

- Where applicable, the cumulative impacts of more than one source should be considered along with the extent to which the source of noise is intermittent and of limited duration.

- Consideration should also be given to whether adverse internal effects can be completely removed by closing windows and, in the case of new residential development, if the proposed mitigation relies on windows being kept closed most of the time. In both cases, a suitable alternative means of ventilation is likely to be necessary.

- If external amenity spaces are an intrinsic part of the overall design, then the acoustic environment of those spaces should be considered so that they can be enjoyed as intended.

2.3. BUILDING REGULATIONS: APPROVED DOCUMENT F – VOLUME 1: DWELLINGS (JUNE 2022)

Approved document F Volume 1: Dwellings (ADF) provides guidance set by the Department for Levelling Up, Housing and Communities, that relates to means of ventilation within dwellings. The ventilation strategy specified within the ADF are as follows.

> *1.9 The ventilation strategy in this approved document relies on a combination of all of the following.*
>
> *a. Extract ventilation from rooms where water vapour or pollutants are likely to be released (e.g. bathrooms and kitchens), to minimise their spread to the rest of the building. Ventilation fans may be either intermittent operation or continuous operation.*
>
> *b. Whole dwelling ventilation to provide fresh air to the building and to dilute, disperse and remove water vapour and pollutants not removed by extract ventilation.*
>
> *c. Purge ventilation to remove high concentrations of pollutants and water vapour. Purge ventilation is used intermittently and required only for pollutants produced by occasional activities (e.g. fumes from painting).*
>
> *1.10 Ventilation may be delivered through natural ventilation, mechanical ventilation or a combination of both.*
>
> *1.11 The ventilation systems in this approved document are examples of systems that comply with Part F of the Building Regulations. Other ventilation systems may be acceptable if they can be shown to meet an equal level of performance.*

Within the ADF there are three system specific ventilation systems that can be utilised to provide sufficient ventilation. These methods are as follow.

> *1.Natural ventilation with background ventilators and intermittent extract fans (guidance suitable only for less airtight dwellings) - Ventilation provided by thermal, wind or diffusion effects through doors, windows or other intentional openings without the use of mechanically driven equipment. For the purposes of this approved document, natural ventilation refers to a ventilation strategy using background ventilators and intermittent extract ventilation.*
>
> *2.Continuous mechanical extract ventilation - Mechanically driven ventilation that continuously extracts indoor air and discharges it to the outside.*
>
> *3. Mechanical ventilation with heat recovery - A mechanically driven ventilation system that both continuously supplies outdoor air to the inside of the dwelling and continuously extracts indoor air and discharges it to the outside. For the purposes of this approved document, the guidance for mechanical ventilation with heat recovery applies to centralised or decentralised supply and extract systems, with or without heat recovery.*

2.4. BUILDING REGULATIONS: APPROVED DOCUMENT O – OVERHEATING (JUNE 2022)

Approved document O - Overheating (ADO) provides guidance set by the Department for Levelling Up, Housing and Communities, that relates to the mitigation of overheating. In relation to noise the ADO provides the following guidance.

> *3.2 In locations where external noise may be an issue (for example, where the local planning authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11pm to 7am).*
>
> *3.3 Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.*
>
> *a. 40dB LAeq,T, averaged over 8 hours (between 11pm and 7am).*
> *b. 55dB LAFmax, more than 10 times a night (between 11pm and 7am).*
>
> *3.4 Where in-situ noise measurements are used as evidence that these limits are not exceeded, measurements should be taken in accordance with the Association of Noise Consultants'*
>
> *Measurement of Sound Levels in Buildings with the overheating mitigation strategy in use.*
>
> *NOTE: Guidance on reducing the passage of external noise into buildings can be found in the National Model Design Code: Part 2 – Guidance Notes (MHCLG, 2021) and the Association of Noise Consultants' Acoustics, Ventilation and Overheating: Residential Design Guide (2020)*

2.5. BRITISH STANDARD BS 4142: 2014+A1:2019 - METHODS FOR RATING AND ASSESSING INDUSTRIAL AND COMMERCIAL SOUND

This standard describes methods for rating and assessing sound of an industrial or commercial nature which includes:

- Sound from industrial and manufacturing processes.
- Sound from fixed installations which comprise mechanical and electrical plant and equipment.
- Sound from the loading and unloading of goods and materials at industrial and / or commercial premises; and
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from processes or premises, such as that from forklift trucks, or that from train or ship movements on or around an industrial or commercial Site.

The procedure detailed in the standard compares the measured or predicted specific noise level from any of the above with the background sound level at a residential dwelling. The measured background sound level at a receptor should be reliable and should not necessarily ascertain a lowest measured background sound level, but rather to quantify what is typical.

The specific noise level also acknowledges the reference time intervals depending upon whether the noise source operates during daytime (1-hour) or night-time (15-minute) periods.

There are several 'penalties' which can be attributed to the specific sound level depending upon the 'acoustic features' of the sound level under investigation as follows:

Tonality

- +2 dB: where the tonality is just perceptible.
- +4 dB: where the tonality is clearly perceptible; and
- +6 dB: where the tonality is highly perceptible.

Impulsivity

- +3 dB: where the impulsivity is just perceptible.
- +6 dB: where the impulsivity is clearly perceptible; and
- +9 dB: where the impulsivity is highly perceptible.

Intermittency

- +3dB: where the intermittency is readily distinctive against the acoustic environment.

In addition to the above, there is a penalty for 'other sound characteristics' of +3 dB where a sound exhibits characteristics that are neither tonal nor impulsive, though are readily distinctive against the acoustic environment. BS 4142 goes on to state that the rating level is equal to the specific sound level if there are no such features present or expected to be present.

Assessment of the rating level relative to the background sound level can yield the following commentary:

- Typically, the greater this difference (between the rating level and the background sound level), the greater the magnitude of impact.
- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context; and
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an 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.

2.6. BRITISH STANDARD BS 8233:2014+A1:2019 – GUIDANCE ON SOUND INSULATION AND NOISE REDUCTION FOR BUILDINGS

The scope of this standard is the provision of recommendations for the control of noise in and around buildings including residential dwellings. It suggests appropriate criteria and limits for different situations, which are primarily intended to guide the design of new buildings or refurbished buildings undergoing a change of use, rather than to assess the effect of changes in the external noise climate.

The standard suggests suitable internal noise levels within different types of buildings, including residential dwellings, as shown in Table 2.

Table 2 BS 8233:2014 Recommended Internal Noise Levels

Criterion	Typical situation	Design criterion, $L_{Aeq,t}$ (dB)
Suitable resting and sleeping conditions	Living Room	35
	Bedroom	30

BS 8233 goes on to recommend noise levels for gardens:

> *It is desirable that the external noise level does not exceed 50 dB LAeq,T, with an upper guideline value of 55 dB LAeq,T which would be acceptable in noisier environments. However, it is also recognised that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors might be warranted.*

BS 8233 goes on to say:

> *In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces but should not be prohibited.*

3. SURVEY RESULTS

E3P have previously undertaken survey works on site in September 2021 for an initial application for a smaller site area. This included extensive commercial measurements along the western and northern boundary. As such, these results are included here to supplement the most recent surveys in November 2024 and to provide a worst-case dataset.

3.1. SOUND CLIMATE

Whilst on site it was noted that the only potential source of sound was SGB to the west, both in 2021 and 2024. Before and after the surveys below, the surveyor attended the northern site to determine whether any activity from the northern units were audible. However, at the time of the surveys, the units appeared to be closed or disused.

Other than commercial sound from SGB, other sources were noted to be distant road traffic and occasional movements along Crabtree Lane, birdsong and aircraft. Pedestrians along the canal were also noted to be a source of sound. Distant commercial sound was noted from further west but was at a lower level and those captured from SGB.

No sound was noted from the commercial premises to the south west with these also seeming to be closed/derelict in 2021 and 2024.

No commercial sound is noted from the north during any survey.

In 2021, It was not possible to access the south eastern corner of the site with the school. However, in November 2024 we could access this area and capture source data for outdoor play.

3.2. SEPTEMBER 2021 COMMERCIAL SURVEY

E3P have undertaken detailed measurements of all existing commercial operations surrounding the Site. The surveys were carried out over the following time periods:

- Tuesday 28th September 2021 between 05:45 and 10:00; and
- Wednesday 29th September 2021 between 12:00 and 15:30.

Background sound levels were measured concurrently when no activity from nearby commercial premises was noted.

E3P undertook a site walkover during each period and noted that the only commercial sound audible was that from SGB to the west. The units to the north appeared derelict with no noise noted at 05:40, 10:05, 11:55 and 15:40.

The measurements were undertaken at the following position:

- Noise Measurement Position A (NMPA) – Located on the western edge of Crabtree Lane approximately 2 m from palisade fencing associated with SGB. The microphone of the sound level meter was located at a height of 1.5 m above local ground level in free-field conditions. Sound sources consisted of HGV movements, moving of materials in the yard and vehicle movements.

Figure 2 Noise Measurement Positions – September 2021

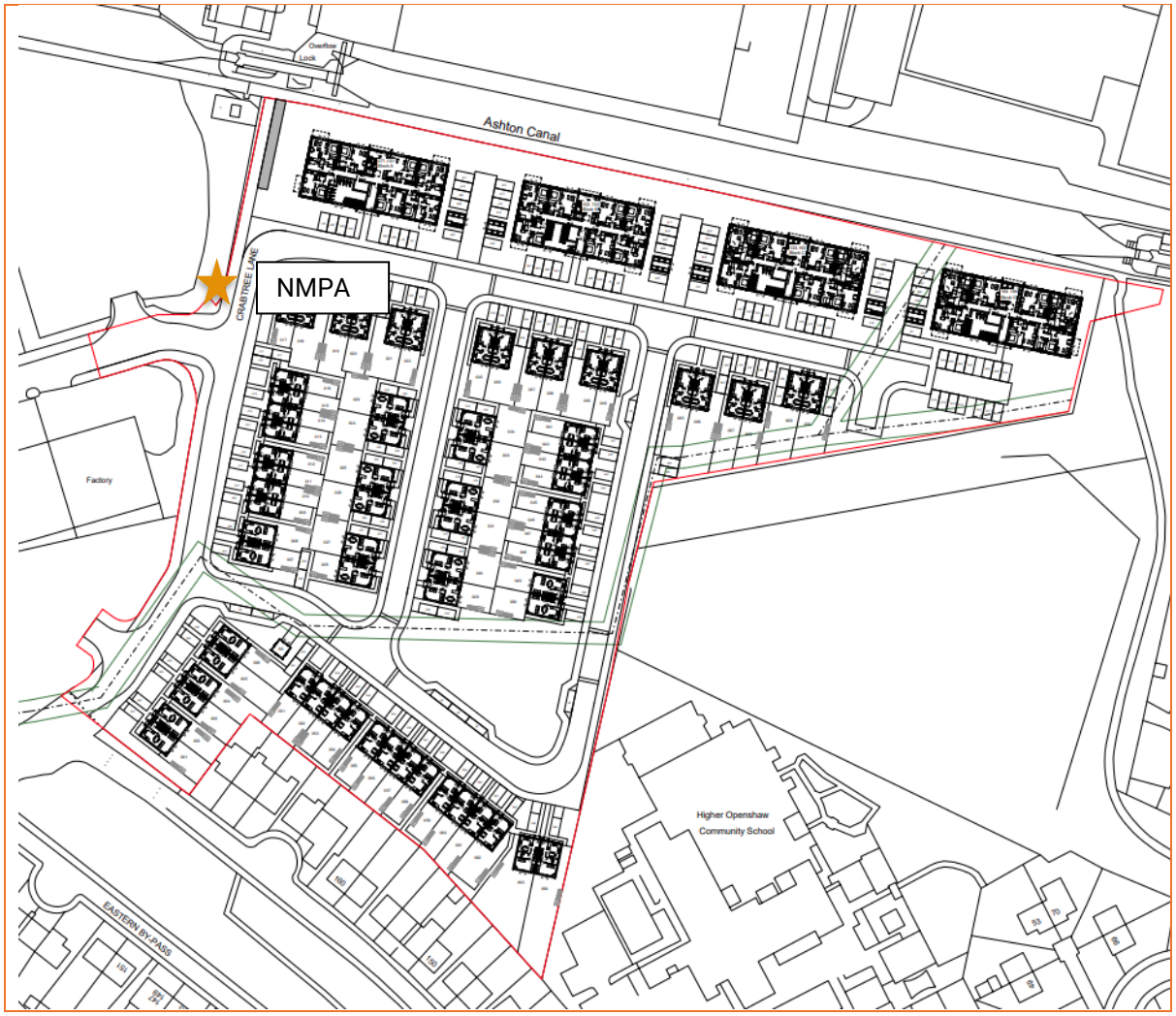


Table 3 details the hourly measured noise levels for the above measurement position and dominant sound sources for the entire measurement periods undertaken. Measurements were completed with a sampling period of 20 ms to allow post analysis of the noise levels.

Table 3 Measured source noise levels – September 2021

Time period	Dominant source	Measured source noise level, $L_{Aeq,T}$ (dB)	Measured residual noise level, $L_{Aeq,T}$ (dB)	Lowest measured background sound level, L_{A90} (dB)
05:45-06:00	Running water from canal, distant road traffic	-	49.3	47.5
06:00-06:15	Road traffic and birdsong	-	49.0	47.9
06:15-06:30	**Material movement at SGB**	50.2	49.0	48.6
06:30-06:45	Road traffic and aircraft	-	50.4	49.0
06:45-07:00		-	50.4	48.9
07:00-08:00	**HGVs and material movement at SGB, birdsong**	52.2	50.9	**48.9**
08:00-09:00	**Material movement at SGB**	52.5	50.9	49.2
09:00-10:00	**HGVs and material movement at SGB, birdsong**	52.9	51.4	49.1
12:00-13:00	**HGVs and material movement at SGB**	53.8	52.1	50.3
13:00-14:00	**HGVs and material movement at SGB**	**54.7**	**52.2**	50.7
14:00-15:00	**HGVs and material movement at SGB, birdsong**	54.3	51.8	50.1

The levels highlighted in bold in the Table are considered worst-case.

During the survey, conditions remained dry and wind speeds rarely exceeded 10 mph. All sound level meters used were in calibration and were calibrated before and after measurements.

3.3. NOVEMBER 2024 COMMERCIAL SURVEY

E3P have undertaken detailed measurements of all existing commercial operations surrounding the Site. The surveys were carried out over the following time periods:

- Friday 15th November 2024 between 09:28 and 12:21; and
- Tuesday 19th November 2024 between 13:01 and 15:08.

From the previous measurements we note that SGB operate from 06:15 and so additional measurements during this period were not required. Background sound levels were measured concurrently when no activity from nearby commercial premises was noted.

The only commercial sound notable was from SGB and further west with no commercial noise from the north. School playground sound was noted and is detailed in Section 3.4 below.

The measurements were undertaken at the following position:

- Noise Measurement Position 1 (NMP1) – Located on the south western edge of the site with Crabtree Lane adjacent to the commercial premise to the south west. The microphone of the sound level meter was located at a height of 1.5 m above local ground level in free-field conditions. Sound sources consisted of HGV movements, moving of materials in the yard and vehicle movements at SGB and beyond.

- Noise Measurement Position 2 (NMP2) – Located on the western edge of Crabtree Lane adjacent to SGB boundary. The microphone of the sound level meter was located at a height of 1.5 m above local ground level in free-field conditions. Sound sources consisted of HGV movements, moving of materials in the yard and vehicle movements associated with SGB and beyond.

- Noise Measurement Position 3 (NMP3) – Located on the northern boundary towards the west on the edge of the canal. The microphone of the sound level meter was located at a height of 1.5 m above local ground level in free-field conditions. Sound sources consisted of running water, birdsong and distant commercial sound from the west.

- Noise Measurement Position 4 (NMP4) – Located on the northern boundary towards the east on the edge of the canal. The microphone of the sound level meter was located at a height of 1.5 m above local ground level in free-field conditions. Sound sources consisted of running water, birdsong, school playground and distant commercial sound from the west.

Figure 3 details the NMPs.

Figure 3 Noise Measurement Positions – November 2024

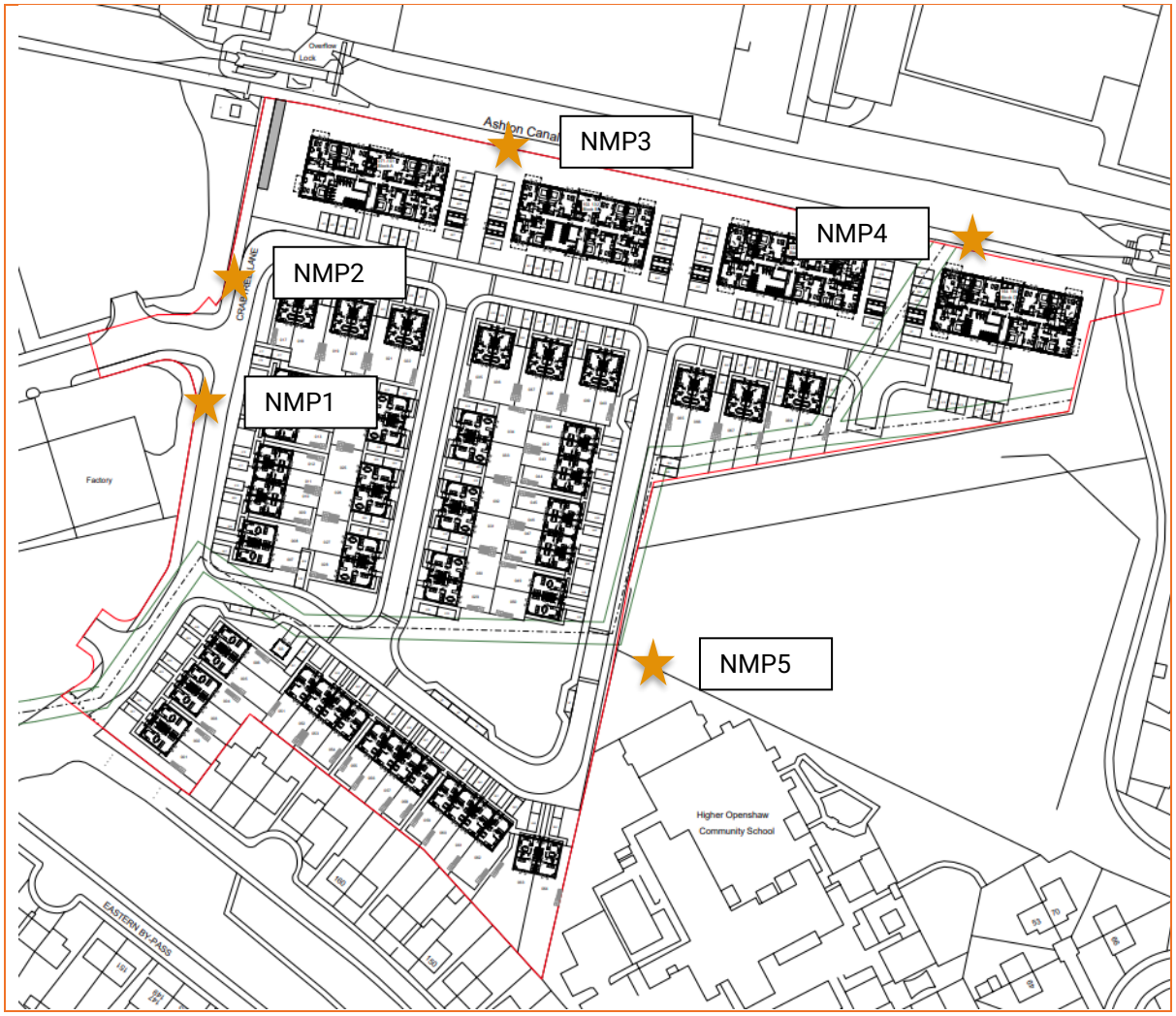


Table 4 details the measured noise levels for the above measurement positions and dominant sound sources for the entire measurement periods undertaken.

Table 4 Measured source noise levels – November 2024

Noise Measurement Position	Time period	Dominant source	Measured source noise level, $L_{Aeq,T}$ (dB)	Measured residual noise level, $L_{Aeq,T}$ (dB)	Average measured background sound level, L_{A90} (dB)
NMP1	09:28-09:53	HGV movements, general banging and moving material at SGB and beyond	47.2	44.2	41.6
NMP2	09:58-10:28		42.7	43.0	**39.9**
NMP3	10:33-11:03	Distant commercial from the west and school playground sound	45.7	45.3	42.2
NMP4	11:53-12:23	Running water and school playground	-	51.2	46.6
NMP1	13:01-13:31	HGV movements, general banging and moving material at SGB and beyond	**48.8**	48.2	45.7
NMP2	13:36-14:06		**49.3**	47.5	45.2
NMP3	14:11-14:36	Distant commercial and road traffic	43.6	45.4	41.7
NMP4	14:41-15:11		45.0	48.1	44.1

The levels highlighted in bold in the Table are considered worst-case.

The worst-case measured source noise level is noted to be 48.8 and 49.3 dB. These are corrected for on-time in an hour period, resulting in a source noise level of 45.8 dB and 46.3 dB. The worst-case measured background sound level is 40 dB.

These levels, although lower than in 2021, are comparable as the 2021 surveys were conducted within 2 m of the boundary of SGB whilst these measurements correlate to positions further from the source. As such, both levels can be used to inform the assessment

During the survey, conditions remained dry and wind speeds rarely exceeded 10 mph. All sound level meters used were in calibration and were calibrated before and after measurements.

3.4. NOVEMBER 2024 SCHOOL SOURCE

E3P have undertaken measurements of activity associated with the school to the south. The surveys were carried out over the following time periods:

- Friday 15th November 2024 between 11:11 and 11:41.

The measurements were undertaken at the following position:

- Noise Measurement Position 5 (NMP5) – Located tom the south east of the boundary adjacent to the external play area at the school. The microphone of the sound level meter was located at a height of 1.5 m above local ground level in free-field conditions. Sound sources consisted of children playing.

Table 5 details the measured noise levels for the above measurement position.

Table 5 Measured source noise levels – School Source

Noise Measurement Position	Time period	Dominant source	Measured source noise level, $L_{Aeq,T}$ (dB)	Measured residual noise level, $L_{Aeq,T}$ (dB)
NMP5	11:11-11:41	School children playing and shouting	42.1	-

3.5. JUNE 2025 COMMERCIAL SURVEY

E3P have undertaken attended measurements along the northern boundary to supplement the data from November 2024. The surveys were carried out over the following time periods:

- Tuesday 17th June 2025 between 12:30 and 16:00; and
- Wednesday 18th June 2025 between 06:10 and 10:00.

The measurements were undertaken at the following position:

- Noise Measurement Position 6 (NMP6) – Located on the north western edge of the site with the Ashton Canal adjacent to the proposed apartment block. The microphone of the sound level meter was located at a height of 1.5 m above local ground level in free-field conditions. Sound sources consisted of distant traffic and distant intermittent commercial sound.
- Noise Measurement Position 7 (NMP7) – Located on the northern edge of the site with the Ashton Canal adjacent to the proposed apartment block. The microphone of the sound level meter was located at a height of 1.5 m above local ground level in free-field conditions. Sound sources consisted of distant traffic and distant intermittent commercial sound.
- Noise Measurement Position 8 (NMP8) – Located on the north eastern edge of the site with the Ashton Canal adjacent to the proposed apartment block. The microphone of the sound level meter was located at a height of 1.5 m above local ground level in free-field conditions. Sound sources consisted of distant traffic and distant intermittent commercial sound.

Figure 4 details the NMPs.

Figure 4 Noise Measurement Positions – June 2025

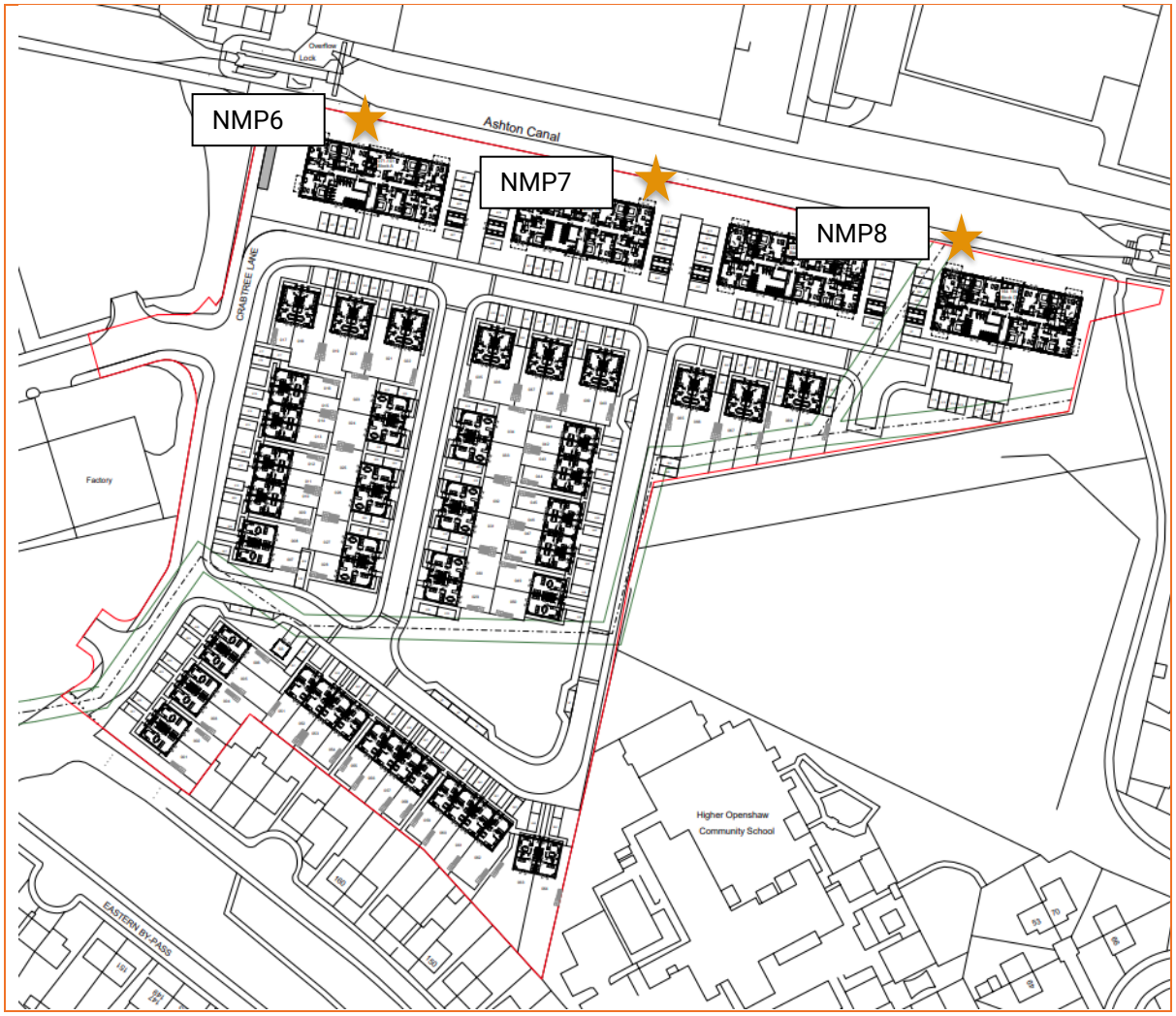


Table 6 details the measured noise levels for the above measurement positions and dominant sound sources for the entire measurement periods undertaken.

Table 6 Measured source noise levels – June 2025

NMP	Time period	Dominant source	Measured source noise level, $L_{Aeq,T}$ (dB)	Commercial on-time (seconds)	Measured residual noise level, $L_{Aeq,T}$ (dB)	Average measured background sound level, L_{A90} (dB)
NMP6	12:30-14:06	Distant traffic – no commercial	-	-	50.3	44.0
NMP7	14:11-15:16		-	-	47.6	42.8
NMP8	15:21-16:01	Distant traffic with brief metallic rattling from north	49.6	85	50.9	47.0
NMP6	06:11-07:16	Distant traffic – no commercial	-	-	47.2	45.5
NMP7	07:26-08:56		-	-	44.6	42.9
NMP8	09:01-10:01	Distant traffic with brief metallic rattling from north	51.0	639	50.6	44.3

The worst-case measured source noise level is noted to be 49.6 and 51.0 dB. These are corrected for on-time in an hour period, resulting in a source noise level of 33.3 dB and 43.5 dB. The worst-case measured background sound level is 43 dB.

During the survey, conditions remained dry and wind speeds rarely exceeded 10 mph. All sound level meters used were in calibration and were calibrated before and after measurements.

The equipment outlined in Table 6 was used for the noise survey.

Table 7 Noise Measurement Equipment and Calibration Dates

Measurement position	Equipment description	Manufacturer & type number	Serial number	Calibration due date
NMP1 to NMP5	Sound Level Meter	01dB Fusion	14616	10th July 2026
	Pre-amplifier	01dB Pre22	20951	
	Microphone	GRAS 40CD	494264	
	Calibrator	Cirrus CR 515	99206	9th July 2025
NMP6 to NMP8	Sound Level Meter	Fusion	14226	7th December 2025
	Pre-amplifier	Pre22	2135072	
	Microphone	40CD	470570	
	Calibrator	CR 515	99204	8th August 2025

The sound level meters were field calibrated before and after measurements with no significant drift witnessed.

4. NOISE IMPACT ASSESSMENT – EASTERN COMMERCIAL NOISE

The assessment considers the potential impact of commercial sound upon proposed receptors during daytime and night-time periods.

For the BS 4142:2014+A1:2019 assessments, penalties are applied to the specific sound level in order to provide the rating level. These penalties relate to the acoustic features of the sound source. Accordingly, the following subjective features have been accounted for in the assessment, in accordance with the subjective method detailed in BS 4142:2014+A1:2019, for the units as a whole operation.

Table 8 Acoustic penalties

Source	Characteristic	Attributable penalty	Comment
SGB	Tonality	-	No tonality detected.
	Impulsivity	-	No impulsivity detected during on site measurements.
	Intermittency	3 dB	Unloading/loading activities and movement of material are intermittent in nature
	Other Sound Characteristics	-	Other penalties applied.

4.1. DAYTIME ASSESSMENT

Table 8 details the BS 4142 assessment for receptors along the western boundary. The highest ambient noise level is used to inform the assessment with reasonable assumptions made on operational on-times for the source.

Table 9 Worst-case Daytime BS 4142 Assessment – Closest Receptors

RESULTS		RELEVANT CLAUSE	COMMENTARY
Measured ambient sound level	49.3 dB $L_{Aeq,1hr}$	7.1 7.3 7.3.6	Source consisted of materials/items being moved within the yard and HGV movements and reverse alarms.
Residual sound level	50.3 dB $L_{Aeq,16hr}$	7.3.3 7.3.5	Residual sound was noted to be road traffic and birdsong.
Background sound level	40 dB $L_{A90,1hr}$	8.1.3 8.3 8.4 8.5	E3P have taken the lowest average measured 5 minute background sound level during the daytime period when no source was noted to inform a worst-case assessment.
Assessment made during the daytime, so reference time interval is 1 hour		7.2	
Specific sound level	42.9 dB $L_{Aeq,1hr}$	7.3.4 7.3.5 7.3.6 7.3.7	Ambient sound level minus residual sound level. Time correction of -1.8 dB applied as source was only noted for up to 20 minutes in a 30 minute period at a time during the survey.
Acoustic feature correction	3 dB	9.2	Penalty for intermittency applied.
Rating level	46 dB $L_{A,r}$	9.2	
Background sound level	$L_{A90,1hr}$ = 40 dB	8	
Excess of rating over background sound level	(46 – 40) dB = 6 dB in excess	11	The closest proposed receptors that face SGB.
Assessment indicates likely indication of an adverse impact, depending on the context			
Uncertainty of the assessment	Significant	10	The excess of the background sound level is considered marginally significant and in this instance the uncertainty of the measurement does not have any significance to the outcome of the assessment.

Table 8 indicates that the predicted rating level exceeds the background sound level by 6 dB. BS 4142 provides the following advice:

> *A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.*

Given the 6 dB exceedance, the impact of commercial sound is considered adverse in rear garden areas. As such, mitigation measures are required.

As well as external noise levels, internal levels with windows open are considered. An open window is assumed to provide 13 dB reduction. As such, internal specific noise levels are expected to be up to 30 dB which is 5 dB below the BS 8233 criteria. Accordingly, internal noise levels are considered acceptable.

Furthermore, it is assumed that a Part F compliant system would be installed where residents would not need to open windows for ventilation.

4.2. NIGHT-TIME ASSESSMENT

SGB was noted to operate prior to 07:00 with material movement and HGV movements noted between 06:20 and 07:00 in 2021, albeit not very often and at a relatively low level compared to during the day.

As it is reasonable to assume that residents will be inside, asleep, during these periods, consideration to internal average and maximum noise levels is given.

The highest measured $L_{Aeq,15mins}$ was noted to be 50 dB. When considering standard thermal double glazing (4 / 20 / 4 providing 31 dB R_w), internal noise levels are considered acceptable and will likely be less than 19 dB. However, with windows open for background ventilation, levels are likely to be approximately 37 dB, some 7 dB in excess of the criterion. As such, residents would need to keep windows closed along the boundary.

It is noted that the client intends to install Continuous Mechanical Extract Ventilation in all plots with trickle ventilators installed in habitable rooms.

As well as average noise levels, consideration has been given to the maximum measured noise level, noted to be 71 dB $L_{Amax,fast}$ when activity was taking place. Maximum noise levels between 06:00 and 07:00 when no activity was noted ranged between 60.8 and 65.8 dB. When considered standard thermal double glazing, internal noise levels are considered acceptable and will likely be less than 40 dB. However, with windows open for background ventilation, levels are likely to be approximately 58 dB, some 13 dB in excess of the criterion. This does not differ from the above requirements but will dictate the performance of any window mounted or through wall ventilators.

5. NOISE IMPACT ASSESSMENT – NORTHERN COMMERCIAL NOISE

The assessment considers the potential impact of commercial sound upon proposed receptors during daytime and night-time periods from the northern commercial premises.

As noted in Section 3.0, very little activity and noise was noted from these units either through the types of current operators or the units not being operational at the time. As such, worst-case assumptions are made based on typical noise levels from these types of units, and use class, despite the measured noise levels. For this, the units are split in accordance with the corresponding receptor, as follows:

- Block A and B – Elcometer (Blue Building).
- Block C and D – North West building.

For the blue building, it is noted that a service yard and roller shutter are located on the western elevation. As such, here we can assume HGV deliveries, FLT movements and noise break-out with an assumed internal noise level of 80 dB, typical of a B2/B8 use.

For the north west white building, the service yard is on the northern elevation with the only potential source of noise a bank of plant items on the western elevation. As such, it is assumed that plant items here could have a combined sound power level of 95 dB which is typical of bank of condensers with sound power levels of 86 dB. This is a predictive assessment as the exact potential plant is unknown but this is considered a reasonable assumption.

As such, the following main sources are assessed:

- Block A and B – Elcometer (Blue Building) – HGV delivery (75 dB L_{wA}), FLT (75 dB L_{wA} based on a moving point source), Noise break-out (74 dB L_{wA} based on 80 dB internal and -6 dB for internal to external break-out).
- Block C and D – North West building – Plant (95 dB L_{wA}).

For the BS 4142:2014+A1:2019 assessments, penalties are applied to the specific sound level in order to provide the rating level. These penalties relate to the acoustic features of the sound source. Accordingly, the following subjective features have been accounted for in the assessment, in accordance with the subjective method detailed in BS 4142:2014+A1:2019, for the units as a whole operation.

Table 10 Acoustic penalties

Source	Characteristic	Attributable penalty	Comment
Northern B2/B8	Tonality	-	Just perceptible tonality potential for Blocks C and D.
	Impulsivity	-	No impulsivity detected during on site measurements.
	Intermittency	3 dB	Unloading/loading activities for Block A and B.
	Other Sound Characteristics	-	Other penalties applied.

5.1. DAYTIME ASSESSMENT

Tables 11 and 12 details the BS 4142 assessment for receptors along the northern boundary for Block A and B and Block C and D respectively.

Table 11 Worst-case Daytime BS 4142 Assessment – Block A and B

RESULTS		RELEVANT CLAUSE	COMMENTARY
Source Sound Power Level	80.8 dB L_{wA}	7.1 7.3 7.3.6	HGV delivery (78 dB L_{wA}), FLT (75 dB L_{wA} based on a moving point source), Noise break-out (74 dB L_{wA} based on 80 dB internal and -6 dB for internal to external break-out).
Residual sound level	N/A	7.3.3 7.3.5	Predictive assessment.
Background sound level	43 dB $L_{A90,1hr}$	8.1.3 8.3 8.4 8.5	E3P have taken the lowest average measured background sound level during the daytime period when no source was noted to inform a worst-case assessment.
Assessment made during the daytime, so reference time interval is 1 hour		7.2	
Specific sound level	39.7 dB $L_{Aeq,1hr}$	7.3.4 7.3.5 7.3.6 7.3.7	Calculated based on a distance of 45 m from the centre of the service yard to the closest facade.
Acoustic feature correction	3 dB	9.2	Penalty for intermittency applied.
Rating level	43 dB $L_{A,r}$	9.2	
Background sound level	$L_{A90,1hr}$ = 43 dB	8	
Excess of rating over background sound level	(43 – 43) dB = 0 dB	11	For Block A and B.
Assessment indicates the specific sound source having a low impact, depending on the context			
Uncertainty of the assessment	Not Significant	10	The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an 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.

Table 11 indicates that the predicted rating level achieves the background sound level at Blocks A and B. As such, no adverse impact is predicted.

As well as external noise levels, internal levels with windows open are considered. An open window is assumed to provide 13 dB reduction. As such, internal specific noise levels are expected to be up to 27 dB which is 8 dB below the BS 8233 criteria. Accordingly, internal noise levels are considered acceptable.

Furthermore, it is assumed that a Part F compliant system would be installed where residents would not need to open windows for ventilation.

Table 12 Worst-case Daytime BS 4142 Assessment – Block C and D

RESULTS		RELEVANT CLAUSE	COMMENTARY
Source Sound Power Level	90 dB L_{wA}	7.1 7.3 7.3.6	Assumed plant items with combined sound power level of 95 dB(A)
Residual sound level	N/A	7.3.3 7.3.5	Predictive assessment.
Background sound level	43 dB $L_{A90,1hr}$	8.1.3 8.3 8.4 8.5	E3P have taken the lowest average measured background sound level during the daytime period when no source was noted to inform a worst-case assessment.
Assessment made during the daytime, so reference time interval is 1 hour		7.2	
Specific sound level	41.5 dB $L_{Aeq,1hr}$	7.3.4 7.3.5 7.3.6 7.3.7	Calculated based on a distance of 70 m from the centre of the plant area to the closest façade in accordance with ISO 9613-2:2024
Acoustic feature correction	2 dB	9.2	Penalty for just perceptible tonality.
Rating level	44 dB $L_{A,r}$	9.2	
Background sound level	$L_{A90,1hr}$ = 43 dB	8	
Excess of rating over background sound level	(44 – 43) dB = 1 dB	11	For Block C and D.
Assessment indicates the specific sound source having a low impact, depending on the context			
Uncertainty of the assessment	Not Significant	10	The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an 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.

Table 12 indicates that the predicted rating level exceeds the background sound level by 1 dB at Blocks C and D. As such, no adverse impact is predicted.

As well as external noise levels, internal levels with windows open are considered. An open window is assumed to provide 13 dB reduction. As such, internal specific noise levels are expected to be up to 29 dB which is 6 dB below the BS 8233 criteria. Accordingly, internal noise levels are considered acceptable.

Furthermore, it is assumed that a Part F compliant system would be installed where residents would not need to open windows for ventilation.

5.2. NIGHT-TIME ASSESSMENT

No northern units were noted to operate during the night. However, it is considered that they potentially could. As it is reasonable to assume that residents will be inside, asleep, during these periods, consideration to internal average and maximum noise levels is given.

The highest predicted specific sound level from both assessments is 42 dB. When considering standard thermal double glazing (4 / 20 / 4 providing 31 dB R_w), internal noise levels are considered acceptable and will likely be less than 12 dB. Furthermore, with windows open for background ventilation, levels are likely to be approximately 29 dB, some 1 dB below the criterion. As such, residents could open windows on this boundary based on these assumptions.

It is noted that the client intends to install Continuous Mechanical Extract Ventilation in all plots with trickle ventilators installed in habitable rooms.

As well as average noise levels, consideration has been given to the maximum noise level. For this assumption, a HGV delivery has been used based on library source data and a level of 95 dB at 1 m.

When distance corrected, this results in a façade noise level of 62 dB. When considering standard thermal double glazing, internal noise levels are considered acceptable and will likely be less than 35 dB. However, with windows open for background ventilation, levels are likely to be approximately 49 dB, some 4 dB in excess of the criterion. However, the need to open windows for background ventilation is not required but this assessment will dictate the performance of any window mounted or through wall ventilators.

6. NOISE IMPACT ASSESSMENT – SCHOOL PLAYGROUND

The noise levels at NMP5 are noted to be 42 dB at the boundary with the main playground/outdoor area.

This level of noise falls comfortably below the 50-55 dB design range for rear gardens and internal noise levels would be suitably low and below BS 8233 requirements.

As such, no mitigation measures are required.

7. MITIGATION

7.1. EXTERNAL AMENITY AREA – COMMERCIAL TO THE WEST

As shown in Section 4.1, gardens along the western boundary would experience an exceedance of the 40 dB background sound level by up to 6 dB. As such, any exposed garden edges will require a close boarded fence or brick wall at a height of 2.1 m in order to provide at least partial line of sight removal to residents in the centre of the garden.

A 2.1 m high barrier would result in a path difference of up to 0.01 m assuming a source height of 1.5 m and receiver height of 1.8 m. This results in a predicted reduction of 6.4 dB, which is more than sufficient in reducing rating levels to equal or below the background sound level.

The barriers can be of wooden fence or brick wall construction but must be free from holes, be sealed at the base and have a minimum mass of 10kg/m^2. Locations of barriers are shown below in Figure 5.

Figure 5 Acoustic Barrier Location



7.2. FAÇADE INSULATION AND VENTILATION

The previous section determined that a dMEV system is to be installed across the site and that standard thermal double glazing will be sufficient for all plots.

Any ventilation system should ensure that internal BS 8233 levels are not exceeded during operation and that any trickle ventilators have a minimum performance equal to or greater than the glazing when in the open position.

8. CONCLUSIONS AND DISCUSSION

E3P were commissioned by Keepmoat to undertake a Noise Impact Assessment for a residential development on land off Crabtree Lane in Openshaw.

This assessment looked to determine the key noise sources in the vicinity of the Site and undertake an assessment of any impacts upon proposed noise sensitive receptors.

Attended background and ambient sound surveys were undertaken during daytime and night-time periods in order to capture commercial sound from all surrounding uses. It was found that the only commercial sound present was due to SGB to the west. No noise, day or night, was noted from the northern units.

E3P has undertaken a detailed assessment of commercial sound in accordance with BS 4142:2014+A1:2019, at the closest proposed receptors to SGB.

The assessment has shown that the predicted rating levels during the daytime periods exceed the background sound level. Accordingly, a 2.1 m high barrier is proposed at exposed garden edges of Plots 17 and 18 .

This assessment has shown that there should be no adverse impact upon residential receptors due to existing commercial sound should the mitigation measures be installed. As such, noise should not be a determining factor in the determination of the planning application.

END OF REPORT

APPENDIX I
LIMITATIONS



GENERAL

1. This report and any associated works (together comprising the "Services") were compiled and carried out by E3P for the client (as present in Section 1) under the E3P “Terms of Business” or with those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.
2. Unless explicitly agreed otherwise, in writing, this report has been prepared under E3P Standard Terms and Business as included within our proposal to the Client.
3. Project-specific appointment documents may be agreed upon at our discretion and a charge may be levied for both the time to review and finalise appointment documents and also for associated changes to the appointment terms. E3P reserves the right to amend the fee should any changes to the appointment terms create an increased risk to E3P.
4. The report needs to be considered in light of the proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

NOISE AND VIBRATION IMPACT ASSESSMENTS

5. Where a noise or vibration survey is required to inform an assessment, E3P will endeavour to ensure that all noise and vibration measurements taken are robust, representative and reliable in order to inform an accurate assessment.
6. Where mitigation measures are specified in this report, it should be noted that these measures are relative to a specific sound or vibration source, both in terms of the measured sound pressure and vibration level and the character of the sound source. Where either the sound pressure level or the character of the sound varies following completion of the sound survey, E3P cannot be held responsible for any subsequent variations in the proposed mitigation performance.
7. The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walkover inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects responses may not have been received from all parties. E3P cannot be held responsible for any disclosures that are provided post-production of our report and will not automatically update our report.
8. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, E3P reserves the right to review such information and, if warranted, to modify the opinions accordingly.
9. E3P does not warrant work/data undertaken/provided by others.

APPENDIX II
GLOSSARY



NOISE

Noise is defined as unwanted sound. Human ears are able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble) and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality or impulsiveness may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source. The most widely used weighting mechanism that best corresponds to the response of the human ear is the “A”-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or LAeq, LA90 etc., according to the parameter being measured.

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective but, as a general guide, a 10 dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions. An indication of the range of sound levels commonly found in the environment is given in the following table.

Table 13 Typical Sound Pressure Levels

SOUND PRESSURE LEVEL	LOCATION/EXAMPLE
0	Threshold of hearing
20-30	Quiet bedroom at night
30-40	Living room during the day
40-50	Typical office
50-60	Inside a car
60-70	Typical high street
70-90	Inside a factory
100-110	Burglar alarm at 1 m away
110-130	Jet aircraft on take off
140	Threshold of pain

ACOUSTIC TERMINOLOGY

Table 14 Terminology

DESCRIPTOR	EXPLANATION
dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2E-05 Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. "A" weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
LAeq, T	LAeq is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.
LAmax	LAmax is the maximum A-weighted sound pressure level recorded over the period stated. LAmax is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall Leq noise level but will still affect the noise environment. Unless described otherwise, it is measured using the "fast" sound level meter response.
L10 and L90	If a non-steady noise is to be described, it is necessary to know both its level and the degree of fluctuation. The Ln indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L10 is the level exceeded for 10% of the time and as such can be regarded as the "average maximum level". Similarly, L90 is the "average minimum level" and is often used to describe the background noise. It is common practice to use the L10 index to describe traffic noise.
Free-field Level	A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally, as measured outside and away from buildings.
Fast	A time weighting used in the root-mean-square section of a sound level meter with a 125-millisecond time constant.
Slow	A time weighting used in the root-mean-square section of a sound level meter with a 1000-millisecond time constant.
dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2E-05 Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. "A" weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.