

Noise Impact Assessment

Site: Land at Station Road, Stockport
Reference: 51-615
Date: July 25





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EXECUTIVE SUMMARY

Site Address	Secret Lake, Station Road, Stockport, M19 3GW
National Grid Reference	E 388767 , N 394647
Proposed Development	Proposed residential development comprising a number of dwellings along with associated landscaping and parking.
Surveys Completed	E3P attended the boundaries with the surrounding commercial premises to ascertain any potential noise impact during worst-case periods.
Assessments Completed	A 3D noise model has been constructed to assess commercial noise across the site and incident upon facades. Commercial noise associated with the surrounding premises is assessed in accordance with BS 4142:2014+A1:2019.
Mitigation Recommendations	Certain facades will require windows to be kept closed at night due to commercial noise internally. Barriers of 3 and 4m height are required to mitigate commercial noise in external amenity spaces at some plots.
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 Northern Group Ltd to undertake a Noise Impact Assessment for a proposed residential development on Land at Station Road, Stockport to be referred to hereafter as 'the site'.

This assessment looks to determine the key noise sources that have potential to impact upon the noise sensitive development and to assess their impact, if any, upon proposed 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 the impact of commercial sound upon the proposed development in accordance with BS 4142.
- ✚ Provide advice on mitigation measures, where required.

Northern Group Ltd propose to construct up to 200 residential dwellings with associated access roads, parking, landscaping and infrastructure.

Figure 1 **Snapshot of Proposed Development**





2. ASSESSMENT METHODOLOGY

2.1. NATIONAL PLANNING POLICY FRAMEWORK (2024)

Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

- ✿ Mitigate and reduce to a minimum potential adverse impact resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life.
- ✿ identify and protect tranquil areas 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. APPROVED DOCUMENT O NOISE GUIDE (2024)

This guide sets out a method to demonstrate compliance to the Building Control Body of the noise constraints in AD-O. This guide aims to provide clarity for practitioners and regulators so that assessments can be carried out consistently, and the outcome is repeatable and reliable.

Any assessment of overheating, in relation to noise, follows this guidance. Importantly, the guide, based on research and typical assumptions, provides the resulting outside-to-inside level difference for window openings necessary to satisfy the simplified method of AD-O which are expected to be:

-  5 dB for 'high risk' locations; and
-  10 dB for 'medium risk' locations.



With reference to paragraph 3.3 of AD-O, this implies the following limiting external free-field levels above which external noise precludes the use of the simplified method, and dynamic thermal modelling should be used to demonstrate compliance.

The guide also recommends that $L_{Amax,fast}$ measurement and assessment should be based on a sampling period of 2 minutes.

2.6. 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:

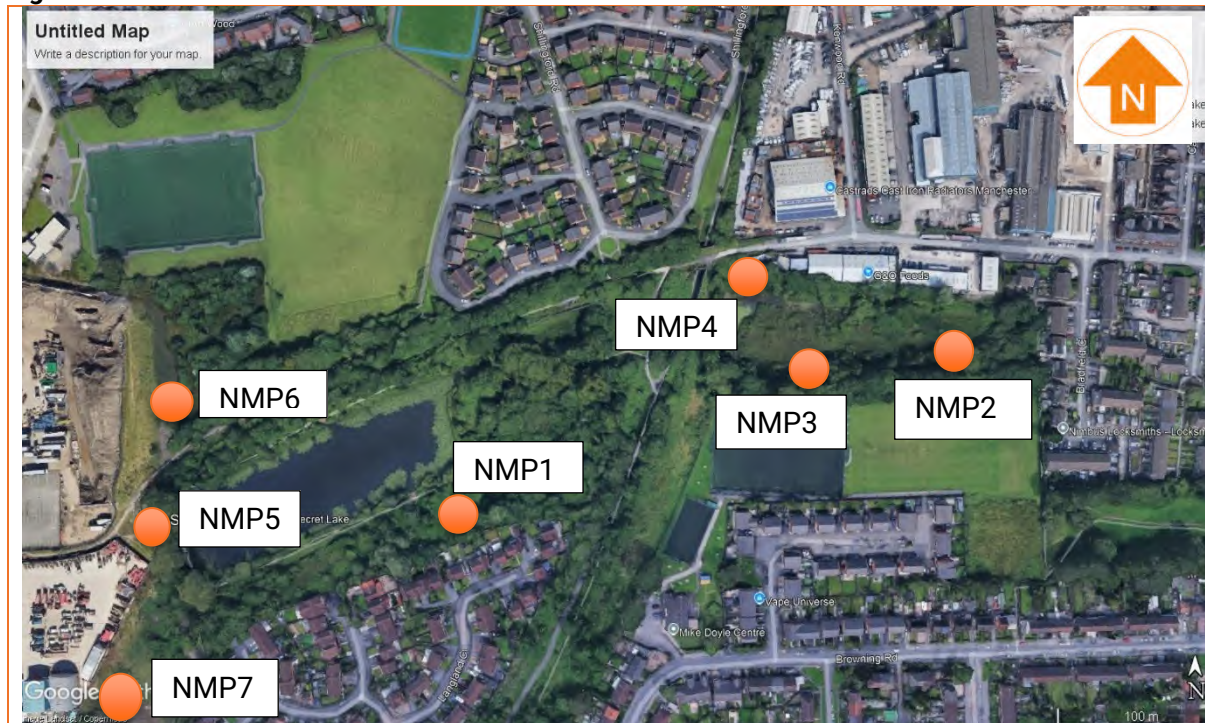
- ✿ Typically, the greater this difference (between the rating level and the background sound level), the greater the magnitude of impact.
- ✿ A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- ✿ A difference of around +5 dB 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.



3. SURVEY RESULTS

Figure 2 below shows the noise measurement positions.

Figure 2 Noise Measurement Position



3.1. UNATTENDED BACKGROUND AND AMBIENT SOUND SURVEY

E3P has conducted a full 24-hour Background Sound Survey in order to quantify the existing levels of background sound at a position considered representative of the closest associated and non-associated receptors to the development. Due to the open nature of site, longer term unattended monitoring was not possible.

The survey was carried out over the following period:

- 📅 12:00 Monday 28th April to 12:00 Tuesday 29th April 2025.

The following noise measurement position was chosen for the Background and Ambient Sound Survey:

- 📍 Noise Measurement Position 1 (NMP1): Located on the southern boundary of the central parcel of site. The microphone of the sound level meter was attached to a tripod and located in free-field conditions at a height of 1.5 m above ground level. Sound sources here consisted of birdsong.

Table 2 details the range and median measured background sound levels. The daytime levels correspond to the $L_{A90,1hr}$ and the night-time levels to the $L_{A90,15mins}$.



Table 2 Range and Median Measured Background and Ambient Sound Pressure Levels

Date	Assessment period	Range of measured background sound levels, $L_{A90,T}$ (dB)	Median measured background sound level, $L_{A90,T}$ (dB)
Monday 28th April	Daytime	35.2 – 40.1	37.7
	Night-time	29.4 – 47.2	32.3
Tuesday 29th April	Daytime	36.0 – 41.8	39.3

The median background sound levels during daytime and night-time periods were noted to be 38 dB and 32 dB respectively.

3.2. COMMERCIAL SOUND MEASUREMENTS

E3P has undertaken attended measurements of all observed commercial movements during the time on site. The surveys were carried out over the following time periods:

- 📍 12:00-16:00 Monday 28th April 2025.
- 📍 08:00-12:00 Tuesday 29th April 2025.
- 📍 06:00-08:00 Friday 9th May 2025.

The following noise measurement positions were attended during the commercial noise survey:

- 📍 Noise Measurement Position 2 (NMP2): Located within the eastern parcel, representative of proposed dwellings. The microphone was in free-field conditions at a height of 1.5 m above ground level.
- 📍 Noise Measurement Position 3 (NMP3): Located within the eastern parcel, representative of proposed dwellings. The microphone was in free-field conditions at a height of 1.5 m above ground level.
- 📍 Noise Measurement Position 4 (NMP4): Located within the eastern parcel, directly adjacent to service yards for commercial properties on Station Road. The microphone was in free-field conditions at a height of 1.5 m above ground level.
- 📍 Noise Measurement Position 5 (NMP5): Located within the western parcel, next to the service yard for Cheadle Grab Hire Ltd. The microphone was in free-field conditions at a height of 1.5 m above ground level.
- 📍 Noise Measurement Position 6 (NMP6): Located within the western parcel, next to the service yard for D&G McKenna Haulage. The microphone was in free-field conditions at a height of 1.5 m above ground level.
- 📍 Noise Measurement Position 7 (NMP7): Located within the western parcel, south of the service yard for Cheadle Grab Hire Ltd. The microphone was in free-field conditions at a height of 1.5 m above ground level.

Attended commercial noise measurements can be seen below.



Table 3 Attended Commercial Noise Measurements

Assessment period	Measurement Position	Measured specific sound levels, $L_{Aeq,t}$ (dB)	Commentary
28/04/2025 12:00-13:00	NMP2	49.0	Occasional HGV and Forklift movement from commercial premises off Station Rd.
28/04/2025 13:00-14:00	NMP3	47.9	
28/04/2025 14:00-15:00	NMP3	49.6	
28/04/2025 15:00-16:00	NMP4	59.7	
29/04/2025 08:00-09:00	NMP5	53.8	Occasional HGV and Forklift movement from commercial premises to the east.
29/04/2025 09:00-10:00	NMP5	54.8	
29/04/2025 10:00-11:00	NMP6	56.9	
29/04/2025 11:00-12:00	NMP7	54.2	
09/05/2025 06:00-06:15	NMP4	52.3	Early morning activity at premises off Station Road.
09/05/2025 06:15-06:30	NMP4	58.3	
09/05/2025 06:30-06:45	NMP5	56.6	No noted activity at premises to east.
09/05/2025 06:45-07:00	NMP5	54.7	
09/05/2025 07:00-08:00	NMP5	49.4	

E3P noted that occasional HGV deliveries and use of a forklift occurred. The worst case measured levels are highlighted in bold above and will be used to inform a worst case assessment. Residual measurements without commercial noise present are used to correct the specific levels.

During the survey, conditions remained dry and wind speeds rarely exceeded 5 m/s. The equipment outlined in Table 4 was used for the noise survey.

Table 4 Noise Measurement Equipment and Calibration Dates

Measurement position	Equipment description	Manufacturer/ Type	Serial Nr	Calibration due date at time of survey
NMP1	Sound Level Meter	Nor 145	14529152	13th June 2025
	Pre-amplifier	Nor 1209	22293	
	Microphone	Nor 1227	332220	
	Calibrator	Nor 1255	125525208	20th June 2025
NMP2 – NMP7	Sound Level Meter	Fusion	12039	28th July 2025
	Pre-amplifier	Pre22	1805124	
	Microphone	40CE	330832	
	Calibrator	Cal31	87281	29th January 2026

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



4. COMMERCIAL NOISE IMPACT ASSESSMENT

For the purposes of this assessment, E3P has used noise modelling software, CadnaA 2024 MR1, to determine the impact of noise from existing commercial activity from surrounding premises.

The following inputs have been included in the model:

- ✿ PR1889_1 – Dated July 2025.
- ✿ Sources relating to observed commercial activity are input as moving point sources calibrated to the sound levels noted in Table 3 and time corrected according to observed on-times.
- ✿ Activity is assessed during both daytime and night-time periods as certain areas of commercial site were noted to be active during both.
- ✿ Ground elevations have been taken as existing by way of a 2 m grid Digital Terrain Model (DTM) which contains public sector information licensed under the Open Government License v3.0.
- ✿ Existing buildings have been included in the model and assumed to have a structured façade.
- ✿ A reflection order of 1 has been used in all calculations.
- ✿ Noise levels generated using ISO 9613-1 and ISO 9613-2 “Acoustics – Attenuation of sound during propagation outdoors” as incorporated into CadnaA software.

For the BS 4142:2014 assessments, penalties are applied to the specific sound level to provide the rating level. These penalties relate to the acoustic features of the sound source. Accordingly, the following objective and subjective features have been accounted for in the assessment, in accordance with the subjective method detailed in BS 4142:2014, for the sources.

Table 5 Acoustic features

Acoustic feature	Applicable?	Attributable penalty	Comment
Tonality	No	-	No tonality detected.
Intermittency	No	+3 dB	Movements of HGVs and FLTs is noted to be intermittent
Impulsivity	No	-	No impulsive sounds
Other	No	-	Intermittency applied

Figures 3 - 6 determine the rating levels across the Site during the daytime and night-time periods due to commercial/industrial sound respectively.



4.1. DAYTIME ASSESSMENT – 07:00-23:00

Figures 3 and 4 should be used to view the specific noise level at the worst affected receptors for the Eastern and the Western and Central parcels. The grid is calculated at 1.5 m height to show garden noise levels.

Table 6 Calculation of Rating Level and Comparison with Background Sound Level - Daytime

Receptor	Calculated specific noise level, $L_{Aeq,T}$ (dB)	Calculated rating level, $L_{A,r}$ (dB)	Background sound level, $L_{A,90\ 1hr}$ (dB)	Difference +/- (dB)
Eastern Plot Apartments	51	54	38	+16
Plots directly bounding eastern commercial	45	48		+10
Plots directly bounding western commercial	50	53		+15

The assessment has determined that the predicted rating level from commercial activity would exceed the background sound level during the daytime period.

As such, mitigation measures in the form of acoustic barriers are required.

4.2. NIGHT-TIME ASSESSMENT – 23:00-07:00

Figures 5 and 6 should be used to view the night-time specific noise level at the receptors at first floor height.

For the night-time period, given that residents would be inside and sleeping it is more prudent to assess internal noise levels in bedrooms. The highest façade specific noise level in the night-time period due to commercial sound is 47 dB. When considering internal noise levels with windows open, assuming 13 dB of attenuation for a partially open window, internal noise levels are 34 dB. This is 4 dB above the night-time internal noise level criterion of 30 dB stipulated in BS 8233.

As such, mitigation measures are required at night-time due to commercial sound within the eastern parcel.



5. MITIGATION

5.1. EXTERNAL AMENITY AREA

The assessment determined that noise levels in most amenity areas fall below the background levels and do not require mitigation, however areas exposed to the commercial premises would exceed the background level of 38 dB. As such, the noise model has been used to predict noise levels in the affected areas but with barriers in place. Figures 7 and 8 detail the assessment with mitigation in place.

Barriers of +4.5 m would be required to achieve garden levels of 38 dB in these worst affected areas and therefore further figures have been run to achieve as close to this as possible. As can be seen in the below table, the recommended barriers are at a height of 3 and 4 m this brings levels in gardens down to 44 dB or below in all external amenity areas.

Table 7 Calculation of Rating Level with Mitigation and Comparison with Background Sound Level - Daytime

Receptor	Calculated specific noise level, $L_{Aeq,T}$ (dB)	Calculated rating level, $L_{A,r}$ (dB)	Background sound level, $L_{A,90\ 1hr}$ (dB)	Difference +/- (dB)
Eastern Plot Apartments with barriers	40	43	38	+5
Plots directly bounding eastern commercial, with barriers	36	39		+1
Plots directly bounding western commercial, with barriers	41	44		+6

Sources consist of forklift truck and HGV movements which are intermittent throughout the day. During these intermittent periods of activity, the above acoustic barriers would keep the rating level of external areas comfortably below 50 dB.

Below 50 dB in external amenity areas meets the criterion stipulated for external amenity areas in BS 8233.

The exact location of all barriers are shown in Figures 7 and 8. The barriers proposed can be of wooden fence or brick wall construction but must be sealed at the base, be free from holes and have a minimum mass of 10 kg/m². A suitable barrier would be close boarded fencing as long as the above parameters are satisfied by the proposed fence. Where gates are proposed in these locations, when closed the same properties must be available with no holes and any gaps sealed.

5.2. FAÇADE INSULATION AND VENTILATION

For the northern façade of the apartments on the eastern parcel, facing the commercial service yard, the previous section determined that with open windows internal noise levels at night are exceeded. Due to this, the plots along this façade will require windows to be considered closed at night due to commercial noise.



6. CONCLUSIONS AND DISCUSSION

E3P were commissioned to undertake a Noise Impact Assessment for the proposed residential development at Land at Station Road, Stockport.

This assessment looked to determine the key noise sources impacting upon the development site and to assess their impact, if any, upon the noise-sensitive use and to recommend mitigation measures, where necessary.

E3P have undertaken unattended background sound measurements capturing both the daytime and night-time periods. Commercial measurements have been undertaken of the surrounding premises.

E3P have undertaken 3D noise modelling to assess commercial activity associated with the surrounding premises in accordance with BS 4142:2014.

One façade on the apartments in the eastern parcel will require windows to be considered closed at night due to commercial noise internally.

Furthermore, acoustic barriers of height 3 and 4 m are required to control commercial noise levels in certain external amenity areas.

With mitigation measures in place, this assessment has shown that no adverse impact is predicted day or night at the receptors due to commercial activity.

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 8 **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 9 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.
LAmx	LAmx is the maximum A-weighted sound pressure level recorded over the period stated. LAmx 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.

APPENDIX III

FIGURES



Figure 3 - Daytime Grid Noise Map Western Parcel (BS 4142) - Calculation at 1.5 m above ground level



Figure 4 - Daytime Grid Noise Map Eastern Parcel (BS 4142) - Calculation at 1.5 m above ground level



Project:
Land at Station Road,
Stockport

Project-No:
51-615

Client:
Northern Group Ltd

**Daytime Specific Noise
Level,
LAeq,T (dB)**

- ... ≤ 38
- 38 < ... ≤ 40
- 40 < ... ≤ 42
- 42 < ... ≤ 45
- 45 < ... ≤ 48
- 48 < ... ≤ 50
- 50 < ... ≤ 52
- 52 < ... ≤ 55
- 55 < ...

Noise Map Objects

- Line Source
- Area Source
- Road
- Parking Lot
- Building
- Barrier
- Building Evaluation
- Calculation Area



Project Engineer: Melissa Bailey
Date: 24/06/2025

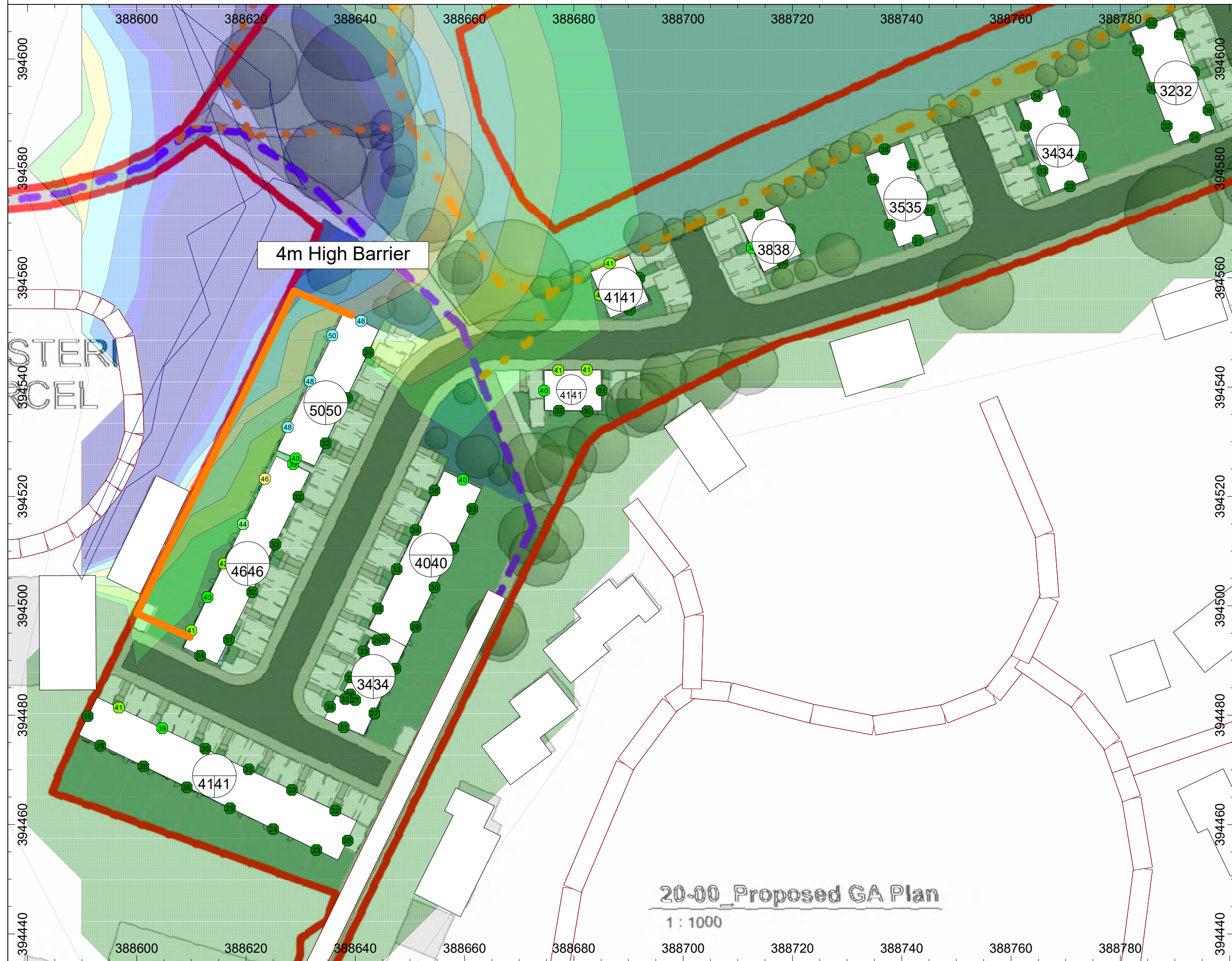
Figure 5 -Night-time Grid Noise Map Western Parcel (BS 4142) - Calculation at 4 m above ground level



Figure 6 - Night-time Grid Noise Map Eastern Parcel (BS 4142) - Calculation at 4 m above ground level



Figure 7 - Daytime Grid Noise Map Western Parcel (BS 4142) with Mitigation - Calculation at 1.5 m above ground level

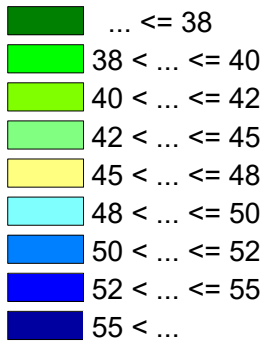


Project:
Land at Station Road,
Stockport

Project-No:
51-615

Client:
Northern Group Ltd

**Daytime Specific Noise
Level,
LAeq,T (dB)**



Noise Map Objects

- Line Source
- Area Source
- Road
- Parking Lot
- Building
- Barrier
- Building Evaluation
- Calculation Area



Project Engineer: Melissa Bailey
Date: 24/06/2025

Figure 8 - Daytime Grid Noise Map Eastern Parcel with Mitigation (BS 4142) - Calculation at 1.5 m above ground level

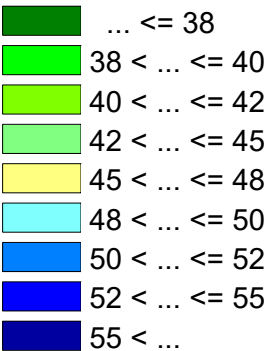


Project:
Land at Station Road,
Stockport

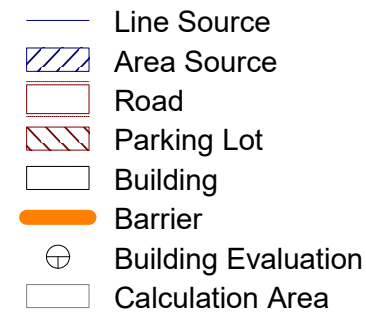
Project-No:
51-615

Client:
Northern Group Ltd

Daytime Specific Noise Level,
LAeq,T (dB)



Noise Map Objects



Project Engineer: Melissa Bailey
Date: 24/06/2025