NHS

Hawthorne Consulting Block
Stanley Grove
Manchester
M12 4NH

Plant Noise Impact Assessment

On behalf of

Darwin Group

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For and on behalf of Noise Solutions Ltd				

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1	21st September 2026	Updated plant location	SPN	NAC

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1.0 Introduction

1.1. Noise Solutions Ltd (NSL) has been commissioned by Darwin Group to undertake a noise impact assessment for plant serving a proposed temporary NHS consulting block at Longsight, Manchester.

1.2. Cumulative plant noise emission levels for the proposed plant have been predicted at the most affected noise sensitive receptors and assessed against the local authority's usual requirements.

1.3. To assist with the understanding of this report a glossary of acoustic terms can be found in **Appendix A**. An in-depth glossary of acoustic terms can be viewed online at www.acoustic-glossary.co.uk.

2.0 Details of development proposals

2.1. The proposed consulting block will occupy part of the existing ASDA Superstore car park, near its northwestern boundary.

2.2. The facility is predominantly a diagnostic and treatment centre, with consulting rooms, treatment rooms, interview rooms and offices on a single floor.

2.3. The external plant area will be located at the northwest corner of the site. The external plant will comprise one air-conditioning (AC) condensing unit.

2.4. The plant will operate only during consulting hours. For robustness, the assessment is undertaken across the entire daytime period.

2.5. The site location and proposed plant layout are presented in **Appendix B**.

3.0 Nearest noise-sensitive receptors

3.1. The area around the site consists of predominantly commercial premises. The closest residential noise-sensitive receptor to the plant will be the houses north of the site (Receptor R1), approximately 75m away from the nearest plant item.

3.2. The next residential receptor to the plant will be the houses east of the site (Receptor R2), approximately 149m away from the nearest plant item.

3.3. The nearest noise-sensitive window of the consulting block (Receptor R3) is approximately 9m away from the nearest plant item.

3.4. All other properties in the area are further from the plant area, and many are screened by buildings.

3.5. An aerial photograph showing the site and receptor locations is presented in **Appendix B**.

4.0 Existing noise climate

4.1. Measurements of the existing background noise level were undertaken between 14.45 hours on Tuesday 21st July and 15.00 hours on Wednesday 22nd July 2026. Full details of the survey are provided in **Appendix C**.

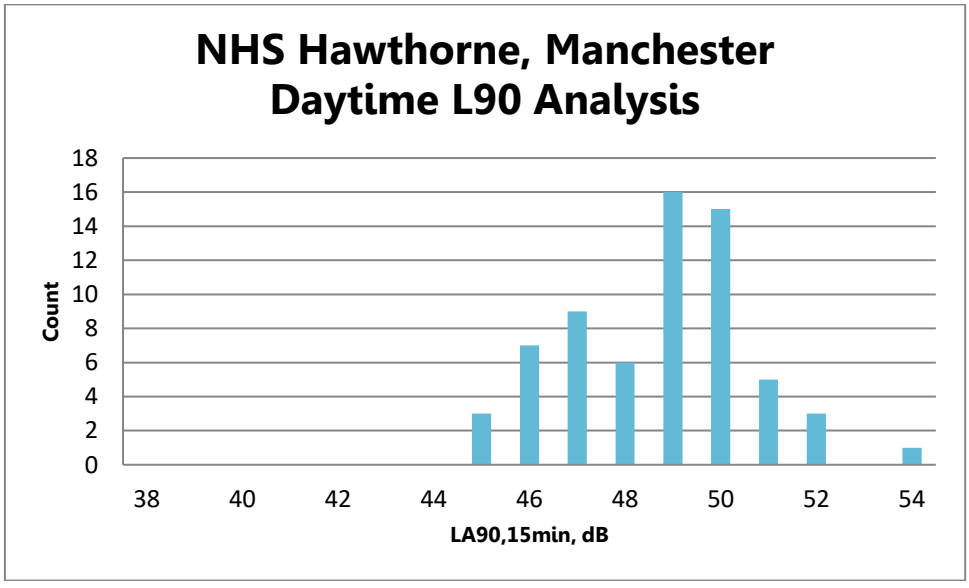
4.2. The results of the environmental sound survey from the report are summarised in Table 1 below.

Table 1 Summary of noise survey results

Measurement period	Range of recorded sound pressure levels (dB)			
	$L_{AFmax(15mins)}$	$L_{Aeq(15mins)}$	$L_{A10(15mins)}$	$L_{A90(15mins)}$
Daytime (07.00 – 23.00 hours)	70 - 91	55 - 64	57 - 68	45 - 54
Night-time (23.00 – 07.00 hours)	58 - 78	42 - 58	43 - 64	39 - 51

4.3. Background noise levels at the site have been analysed as follows:

Figure 1 Histogram of daytime L_{A90} background sound pressure levels

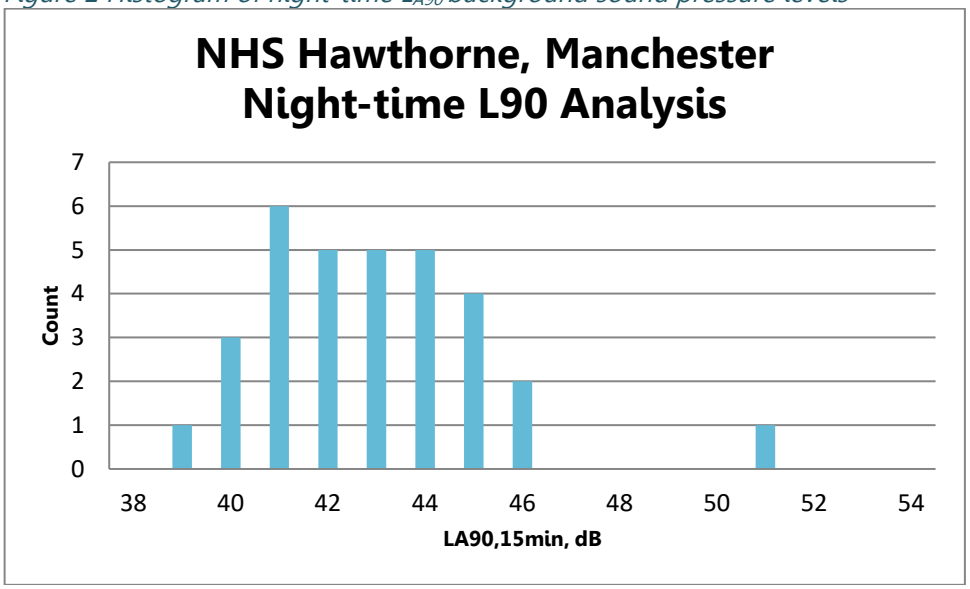


4.4. Further statistical analysis has been undertaken on the data, and the mean, mode and median values are shown in Table 2 below.

Table 2 Statistical analysis of $L_{A90,15min}$ levels during the daytime period

dB, L_{A90} daytime period	
mean	49
modal	49
median	49

Figure 2 Histogram of night-time L_{A90} background sound pressure levels



4.5. Further statistical analysis has been undertaken on the data and the mean, mode and median values are shown in Table 3 below.

Table 3 Statistical analysis of $L_{A90,15min}$ levels during the night-time period

dB, L_{A90} night-time period	
mean	43
modal	41
median	43

4.6. The following values are considered robustly representative of the existing background sound pressure levels at nearby noise sensitive premises:

- 46dB L_{A90} during the daytime period (07.00-23.00)
- 40dB L_{A90} during the night-time period (23.00 – 07.00)

5.0 Noise criteria

National Planning Policy Framework

5.1. A new edition of the National Planning Policy Framework was published in August 2026 and came into effect immediately. The original NPPF was published in March 2012, with subsequent

revisions made periodically, and replaced the previous Planning Policy Guidance Note 24 (PPG24) "Planning and Noise". The references quoted below relate to the August 2026 edition of the NPPF.

1. *Development proposals should be appropriate for their location, taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, whether these effects are on or off-site; and whether this is as a result of the development itself or the product of preexisting conditions in its vicinity. In assessing the potential effects of pollution, consideration should be given to the potential sensitivity of the site, and its intended occupiers and users, as well as that of the environment and population in the surrounding area (including where certain groups could be particularly vulnerable to its effects, such as children and older people)..*

2. *Within this context development proposals should:*

    a. *Provide healthy living conditions for occupiers and users in terms of adequate access to light and avoiding exposure to levels of air, noise, artificial light or other sources of pollution which could have an unacceptable adverse effect on health and the quality of life. Where necessary suitable mitigation measures should be incorporated to secure acceptable living conditions;*

    b. *Not give rise to, or contribute to, an unacceptable level of access to daylight and sunlight for neighbouring residents and occupiers, or unacceptable levels of air, noise, artificial light, water, soil or other forms of pollution on or beyond the site. Adverse impacts of this nature should be avoided where possible, or else mitigated to an acceptable degree. Where possible, opportunities should be taken to reduce pollution affecting the wider area (such as through traffic and travel management or improved external lighting)*

    …

    d. *Mitigate and reduce to a minimum potential adverse impacts resulting from noise, not result in levels of noise exposure which would have a significant observed adverse effect, and maintain the character of tranquil areas (those areas that have remained relatively undisturbed by noise from human sources and are prized for their recreational and amenity value for this reason).*

5.2. Policy P4: Impact of development on existing activities states that *"Where the operation of an existing activity could have a significant adverse effect on a proposed new development in its vicinity, development proposals should a) Identify the nature of the potential impacts, informed where necessary by early discussions between the applicant (i.e. the 'agent of change') and those existing uses which could be affected by the proposal to inform the scope for mitigation; and b) Be able to demonstrate that suitable mitigation can be provided before first occupation of the development, if it is to be acceptable. Planning conditions or obligations should be used to secure agreed mitigation measures".*

5.3. Policy *L1 Planning for an effective use of land* notes that "*Mayors and local planning authorities should take a proactive role in identifying and helping to bring forward land that may be suitable for meeting development needs, including suitable sites on brownfield registers or held in public ownership, using the full range of powers available to them".*

5.4. The NPPF document does not refer to any other documents or British Standards regarding noise, other than to note that national planning policy is supported by a suite of planning practice guidance.

Manchester City Council

5.5. The Planning and Noise Technical Guidance document for Manchester City Council[1] provides the following guidance with regards to noise and vibration from fixed plant/equipment.

> *The noise assessment should be based on BS 4142, and any application for fixed plant, equipment or machinery must demonstrate that:*
>
> *'Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (LAeq) below the typical background (LA90) level at the nearest noise sensitive location'.*

BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound.

5.6. BS 4142:2014+A1:2019 is intended to be used to assess the likely effects of sound on people residing in nearby dwellings. The scope of BS 4142:2014+A1:2019 includes *"sound from fixed plant installations which comprise mechanical and electrical plant and equipment"*.

5.7. The procedure contained in BS 4142:2014+A1:2019 is to quantify the *"specific sound level"*, which is the measured or predicted level of sound from the source in question over a one hour period

[1] Planning and Noise, Technical Guidance, Manchester City Council, October 2022

for the daytime and a 15 minute period for the night-time. Daytime is defined in the standard as 07:00 to 23:00 hours, and night-time as 23:00 to 07:00 hours.

5.8. The specific sound level is converted to a rating level by adding penalties on a sliding scale to account for either potentially tonal or impulsive elements. The standard sets out objective methods for determining the presence of tones or impulsive elements, but notes that it is acceptable to subjectively determine these effects.

5.9. The penalty for tonal elements is between 0dB and 6dB, and the standard notes: *"Subjectively, this can be converted to a penalty of 2 dB for a tone which is just perceptible at the noise receptor, 4 dB where it is clearly perceptible, and 6 dB where it is highly perceptible."*

5.10. The penalty for impulsive elements is between 0dB and 9dB, and the standard notes: *"Subjectively, this can be converted to a penalty of 3 dB for impulsivity which is just perceptible at the noise receptor, 6 dB where it is clearly perceptible, and 9 dB where it is highly perceptible."*

5.11. The assessment outcome results from a comparison of the rating level with the background sound level. The standard states:

- *Typically, the greater this difference, the greater the magnitude of the 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;*
- *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 or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.*

5.12. The standard does state that "*adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact."*

5.13. The standard goes on to note that: *"Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night."*

5.14. In addition to the margin by which the Rating Level of the specific sound source exceeds the Background Sound Level, the 2014 edition places emphasis upon an appreciation of the context, as follows:

"An effective assessment cannot be conducted without an understanding of the reason(s) for the assessment and the context in which the sound occurs/will occur. When making assessments and arriving at decisions, therefore, it is essential to place the sound in context."

5.15. BS 4142:2014+A1:2019 requires uncertainties in the assessment to be considered, and where the uncertainty is likely to affect the outcome of the assessment, steps should be taken to reduce the uncertainty.

HTM08-01: Acoustics

5.16. Guidance is sought from HTM08-01: Acoustics for the consulting room nearest to the plant area.

5.17. For small office-type spaces (e.g. treatment rooms, consulting rooms, interview rooms), noise from mechanical and electrical services is recommended to be limited to NR35. This includes "noise from plant areas in other parts of the building or site".

Summary of criteria

5.18. For residential receptors, noise emissions from the plant when assessed in accordance with BS 4142:2014+A1:2019, should be controlled to a level 5dB below the representative L_{A90} background sound level.

5.19. The proposed limits are therefore as shown in Table 4 below.

Table 4 Proposed plant noise limits

Receptor	Period	Cumulative plant rating level, dB(A)
Residential	Daytime (07.00 – 23.00 hours)	41
	Night-time (23.00 – 07.00 hours)	35

5.20. Plant noise levels in the consulting room should not exceed NR35.

5.21. The above limits have not been approved by the local authority at this stage.

6.0 Plant noise impact assessment

6.1. Manufacturer's noise data is given in **Appendix C.** For the proposed plant installation, the cumulative sound level at the most affected noise sensitive receptors has been predicted. The assessment has taken into consideration distance attenuation, screening and directivity corrections.

6.2. The proposed plant is not anticipated to exhibit any tonal or impulsive characteristics provided it is well maintained. All proposed plant will be inverter driven and, therefore, will gently ramp up and down depending on the demands on the various systems. To provide a robust assessment, a 3dB acoustic feature correction as described in BS 4142:2014+A1:2019 has been included for the residential receptors for the possible presence of "...characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment...".

6.3. Table 5 summarises the results of the assessment outside the nearest residential noise-sensitive premises. All other nearby receptors benefit from increased distance/screening to the plant such that resulting noise levels will be lower than at the receptors considered. The full calculations are presented in **Appendix C.**

Table 5 Assessment of plant rating levels

Receptor	Period	Plant noise level at receptor, dB	Plant noise limit at receptor, dB L_{Aeq}	Excess, dB
R1	Daytime (07.00 – 23.00 hours)	41	41	0
R2	Daytime (07.00 – 23.00 hours)	33	41	-8

6.4. The above assessment demonstrates that the proposed plant will comply with the proposed residential criteria.

6.5. Spectrum octave band noise data for proposed plant is not readily available. BS8233:2014 states:

> *"The noise rating (NR) system..., is in common use for rating noise from ventilation systems. Although there is no direct relationship between dBA and NR, the following approximate relation applies in the absence of strong low frequency noise. NR ≈ dBA – 6."*

6.6. Table 6 summarises the results of the assessment within the nearest clinical rooms. All other nearby rooms benefit from increased distance/screening to the plant such that resulting noise levels will be lower than at the receptors considered. The assessment is inclusive of 15dB sound reduction from opened windows, as recommended by BS8233:2014.

Table 6 Assessment of plant NR levels

Receptor	Period	Predicted NR level within receptor	Criterion NR level	Difference (dB)
R3	Daytime (07.00 – 23.00 hours)	33	35	-2

6.7. The above assessment is based on a worst-case scenario of opened windows. As the building is understood to be mechanically ventilated with heat recovery units, windows are not expected to be opened for ventilation. As a result, cumulative plant noise levels will be lower than the above NR levels.

Context and uncertainties

6.8. As BS 4142:2014+A1:2019 advises, the impact must be considered within the context of the site and the surrounding acoustic environment. The following must, therefore, also be taken into consideration when determining the potential impact that may be experienced:

- The assessment is undertaken at the nearest residential windows. The impact on all other nearby windows will be lower due to screening and distance attenuation.
- The noise level predictions are based on the proposed equipment running simultaneously at maximum duty. The plant will not run in this manner at all times (for example, when demands for cooling are lower) and, therefore, this is a robust assessment.

6.9. Where possible uncertainty in this assessment has been minimised by taking the following steps:

- The measurement of the background sound levels was undertaken over a period including the quietest times of the day and night.
- The sound level meter and calibrator used have a traceable laboratory calibration and the meter was field calibrated before and after the measurements.
- Uncertainty in the calculated impact has been reduced by the use of a well-established calculation method.
- Care was taken to ensure that the measurement position was representative of the noise climate outside the nearby residential dwellings and not at a position where higher noise levels are present.

7.0 Summary

7.1. Noise Solutions Ltd (NSL) has been commissioned by Darwin Group to undertake a noise impact assessment for plant serving a proposed temporary NHS consulting block at Longsight, Manchester.

7.2. An environmental sound survey has been undertaken to establish the prevailing background sound pressure levels at a location representative of the sound levels outside the nearest noise sensitive receptors to the site.

7.3. Cumulative plant noise emission levels for the proposed plant have been predicted at the most affected noise sensitive receptors and assessed against the local authority's usual requirements.

7.4. The assessment has demonstrated that the predicted plant noise levels will comply with typical local authority requirements.

Appendix A Acoustic terminology

Parameter	Description
Ambient Noise Level	The totally encompassing sound in a given situation at a given time, usually composed of a sound from many sources both distant and near ($L_{Aeq,T}$).
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s1 and s2 is given by 20 $\log_{10}$ (s1/s2). The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20μPa. The threshold of normal hearing is in the region of 0 dB and 140 dB is the threshold of pain. A change of 1 dB is only perceptible under controlled conditions.
dB(A), L_{Ax}	Decibels measured on a sound level meter incorporating a frequency weighting (A weighting) which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Measurements in dB(A) broadly agree with people's assessment of loudness. A change of 3 dB(A) is the minimum perceptible under normal conditions, and a change of 10 dB(A) corresponds roughly to halving or doubling the loudness of a sound. The background noise in a living room may be about 30 dB(A); normal conversation about 60 dB(A) at 1 metre; heavy road traffic about 80 dB(A) at 10 metres; the level near a pneumatic drill about 100 dB(A).
Fast Time Weighting	Setting on sound level meter, denoted by a subscript F, that determines the speed at which the instrument responds to changes in the amplitude of any measured signal. The fast time weighting can lead to higher values than the slow time weighting when rapidly changing signals are measured. The average time constant for the fast response setting is 0.125 (1/8) seconds.
Free-field	Sound pressure level measured outside, far away from reflecting surfaces (except the ground), usually taken to mean at least 3.5 metres
Façade	Sound pressure level measured at a distance of 1 metre in front of a large sound reflecting object such as a building façade.
$L_{Aeq,T}$	A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
$L_{max,T}$	A noise level index defined as the maximum noise level recorded during a noise event with a period T. L_{max} is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
$L_{10,T}$	A noise level index. The noise level exceeded for 10% of the time over the period T. L_{10} can be considered to be the "average maximum" noise level. Generally used to describe road traffic noise. $L_{A10,18h}$ is the A –weighted arithmetic average of the 18 hourly $L_{A10,1h}$ values from 06:00-24:00.
$L_{90,T}$	A noise level index. The noise level exceeded for 90% of the time over the period T. Generally used to describe background noise level.

Appendix B Layout of existing site showing areas of interest

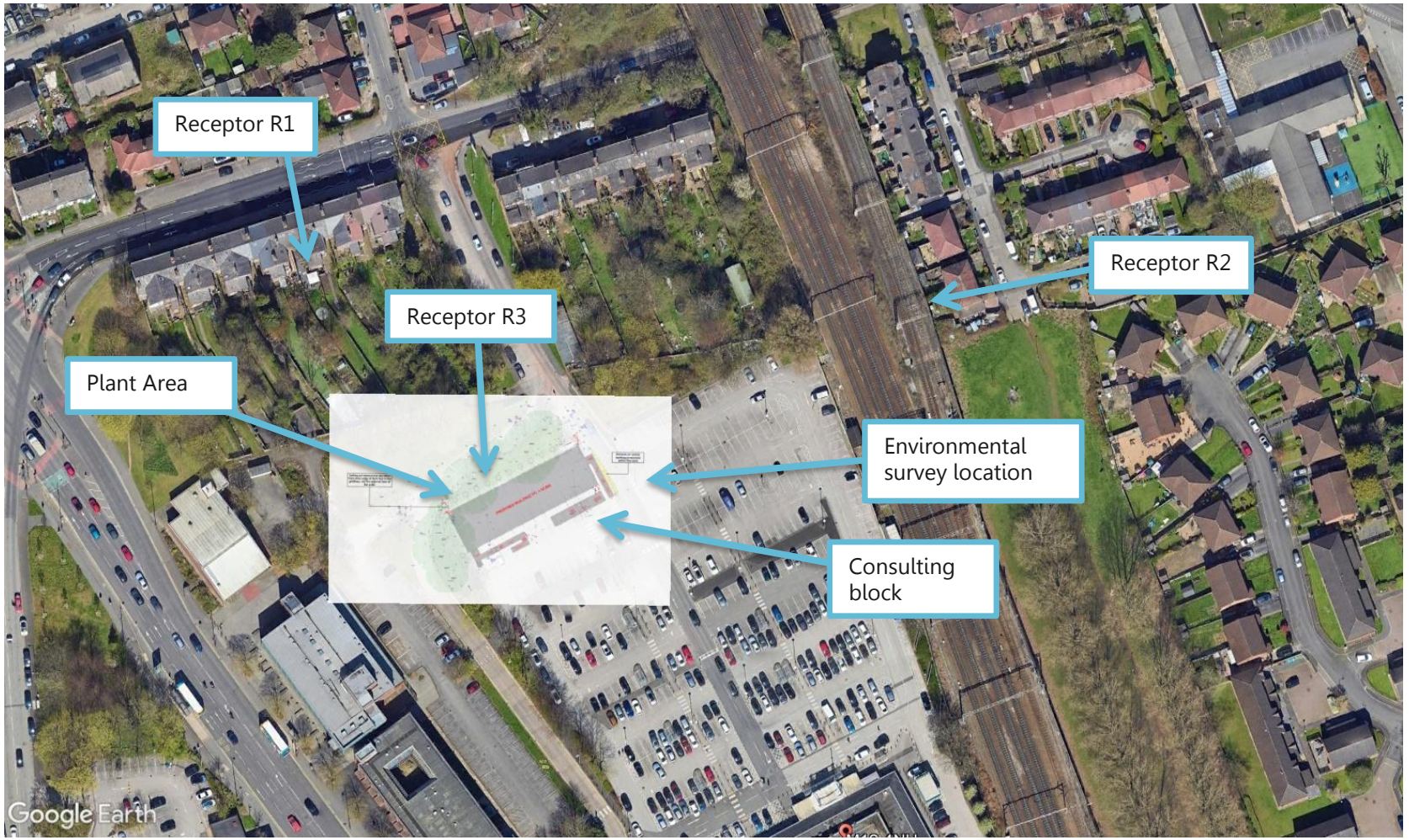


Image © Google 2026

Appendix C Environmental noise survey

C.1 Measurements of the existing environmental sound levels were undertaken between 14.45 hours on Tuesday 21st July and 15.00 hours on Wednesday 22nd July 2026.

C.2 The sound level meters were programmed to record the A-weighted L_{eq}, L_{90}, L_{10} and L_{max} noise indices for consecutive 15-minute sample periods for the duration of the survey.

Measurement positions

C.3 Unattended noise monitoring was undertaken at a lamppost in the ASDA Superstore car park. This position is representative of the traffic noise levels incident at the northern façade.

C.4 The approximate locations of the monitoring positions are shown in the aerial photograph in Appendix B.

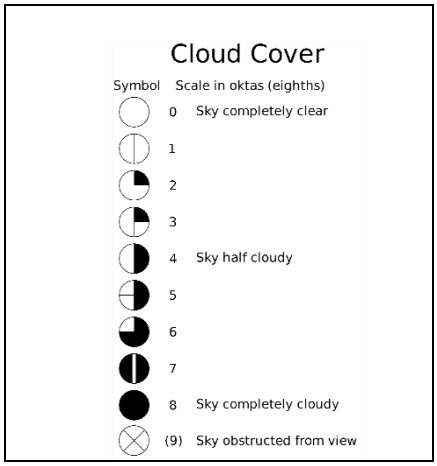
Equipment

C.5 Details of the equipment used during the survey are provided in the table below. The sound level meters were calibrated before and after the survey; no significant change (+/-0.2 dB) in the calibration level was noted.

Equipment description	Manufacturer/Model	Calibration date	Certificate no.
Class 1 Sound level meter	Svantek 977D / 99470	12/02/2026	1516610-1
Condenser microphone	Microtech MK255 / 26247		
Preamplifier	Svantek SV12L / 144643		
Calibrator	Svantek SV33B / 125706	08/09/2025	1513255-2

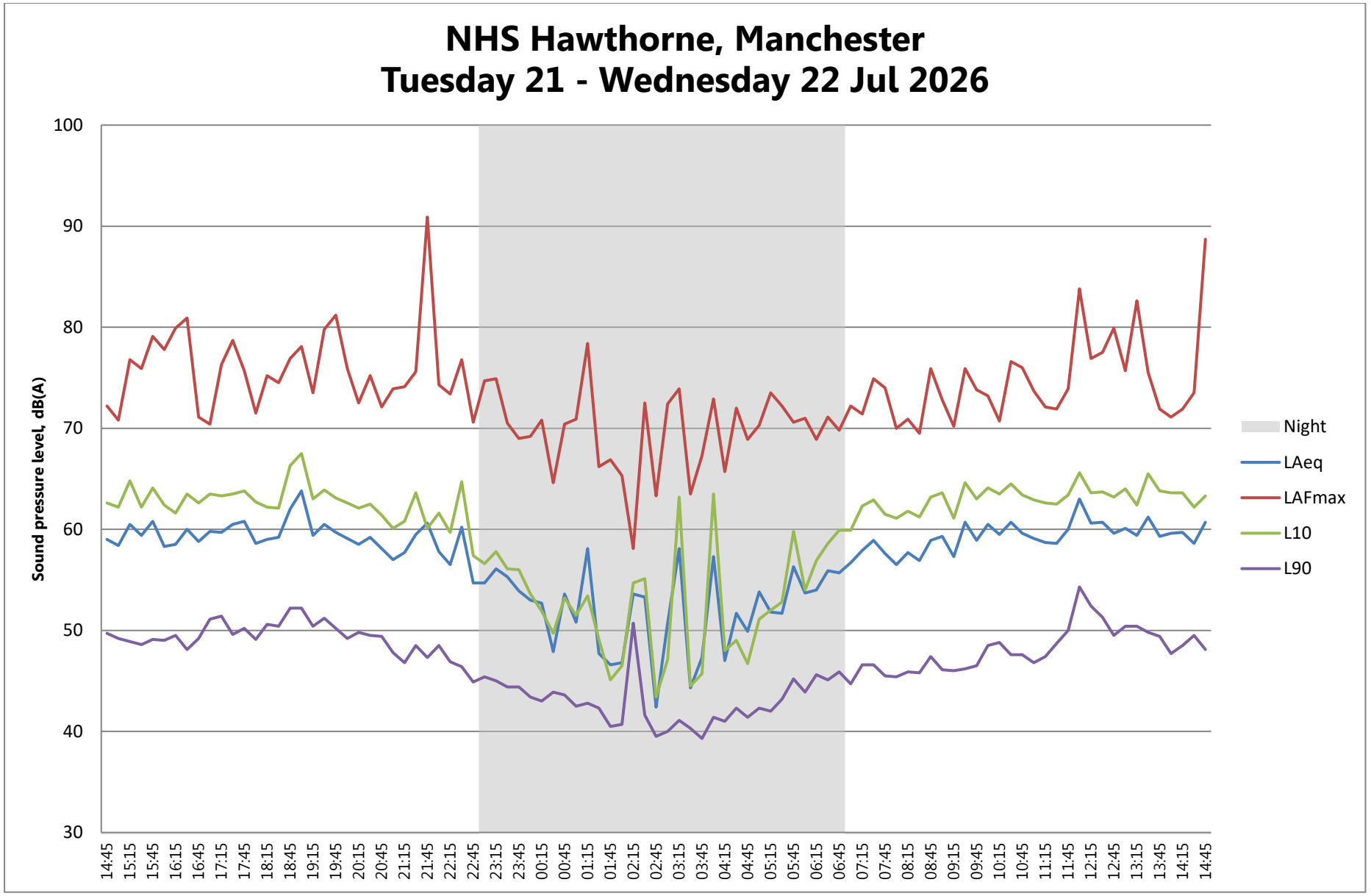
Weather conditions

C.6 Weather conditions were determined both at the start and on completion of the survey. It is considered that the meteorological conditions were appropriate for environmental noise measurements. The table overleaf presents the weather conditions recorded on site at the beginning and end of the survey.

Weather Conditions				
Measurement Location	**Date/Time**	**Description**	**Beginning of Survey**	**End of Survey**
As indicated on Appendix B	14.45 21/7/26 - 15.00 22/7/26	Temperature (°C)	23	23
		Precipitation:	-	-
		Cloud cover (oktas - see guide)	5	5
		Presence of fog/snow/ice	-	-
		Presence of damp roads/wet ground	-	-
		Wind Speed (m/s)	1.2	1.3
		Wind Direction	W	W
		Conditions that may cause temperature inversion (i.e. calm nights with no cloud)	-	-

Results

C.7 The noise climate at the beginning and end of the survey period consisted of local road traffic and nearby trains. The results of the survey are presented in time history graphs overleaf.


NHS Hawthorne, Manchester
Tuesday 21 - Wednesday 22 Jul 2026
Sound pressure level, dB(A)
100
90
80
70
60
50
40
30
14:45
15:15
15:45
16:15
16:45
17:15
17:45
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07:45
08:15
08:45
09:15
09:45
10:15
10:45
11:15
11:45
12:15
12:45
13:15
13:45
14:15
14:45
Night
LAeq
LAFmax
L10
L90

Appendix D Noise level calculations

Manufacturer's noise data

Plant	Model Specification	Sound power level, dB(A)
AC	Samsung AM160AXVGGR/EU	81

Receptor R1 – Daytime

Plant	Plant noise level at source		Distance to receptor		Directivity	Acoustic Screening	BS4142 Feature	Resultant at receptor dB(A)
	Noise level, dB(A)	Distance (m)	Distance (m)	Correction (dB)	Correction (dB)	Correction (dB)	Correction (dB)	
AC Condensing Unit	81	Lw	75	-46	3	0	3	41
							Total	41

*Line of sight blocked by new consulting block

Receptor R2 – Daytime

Plant	Plant noise level at source		Distance to receptor		Directivity	Acoustic Screening	BS4142 Feature	Resultant at receptor dB(A)
	Noise level, dB(A)	Distance (m)	Distance (m)	Correction (dB)	Correction (dB)	Correction (dB)	Correction (dB)	
AC Condensing Unit	81	Lw	149	-51	0	0	3	33
							Total	33

Receptor R3 – Daytime

Plant	Plant noise level at source		Distance to receptor		Directivity	Acoustic Screening	BS4142 Feature	Resultant at receptor dB(A)
	Noise level, dB(A)	Distance (m)	Distance (m)	Correction (dB)	Correction (dB)	Correction (dB)	Correction (dB)	
AC Condensing Unit	81	Lw	9	-27	0	0	0	54
							Total	54

Receptor R3 – Internal NR levels

Period	External Combined specific level at receptor L_{Aeq}	Internal combined specific level at receptor L_{Aeq}	Internal NR level (*NR ≈ dBA – 6)*	Criterion NR level	Difference (dB)
Daytime (07.00 – 23.00 hours)	54	39	33	35	-2