NOISE IMPACT ASSESSMENT

Site:	Land off Kirkmanshulme Lane, Manchester
References:	51-699
Date:	26 March 2026
Client:	Kellen Homes and Jigsaw Homes North



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QUALITY ASSURANCE

Report references	51-699-R1

REV REF	DESCRIPTION	DATE
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02		

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EXECUTIVE SUMMARY

Site Address	Former Buzz Bingo Site, Kirkmanshulme Lane, Manchester M18 7BA
Grid Reference	E 387787, N 396260.
Proposed Development	Erection of a residential development comprising 152 dwellings (Use Class C3a) together with landscaping, sustainable drainage features, pedestrian footways and highways, parking provision and other associated works
Surveys Completed	E3P has undertaken two long term unattended noise surveys to capture noise from Kirkmanshulme Lane, the National Speedway Stadium and the Crystal Suite. Additionally, attended measurements have been conducted for Hyde Road, including rush hour measurements.
Assessments Completed	A 3D noise model has been constructed to assess road traffic, speedway event, sports pitch usage and entertainment noise across the site and incident upon facades. All existing sound sources are assessed in accordance with the criterion, for day and night, given in BS 8233:2014+A1:2019. Entertainment noise is also considered in relation to Manchester City Council Guidance.
Mitigation Recommended	The assessment has found that higher specification is required for certain apartment facades and houses due to noise from Hyde Road and the speedway events. Consideration to overheating and ventilation is required across the site for the majority of plots. Barriers of 2.1 to 3.2 m height are required to mitigate road traffic and speedway event noise in external amenity spaces at some plots.
Conclusions and Discussions	With mitigation measures in place, this assessment has shown that no adverse impact is predicted day or night at the receptors due to existing sound sources.

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1. INTRODUCTION

1.1. BACKGROUND

E3P was commissioned by Kellen Homes and Jigsaw Homes North to undertake a Noise Impact Assessment for a proposed residential development at the site off Kirkmanshulme Lane in Manchester, 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:

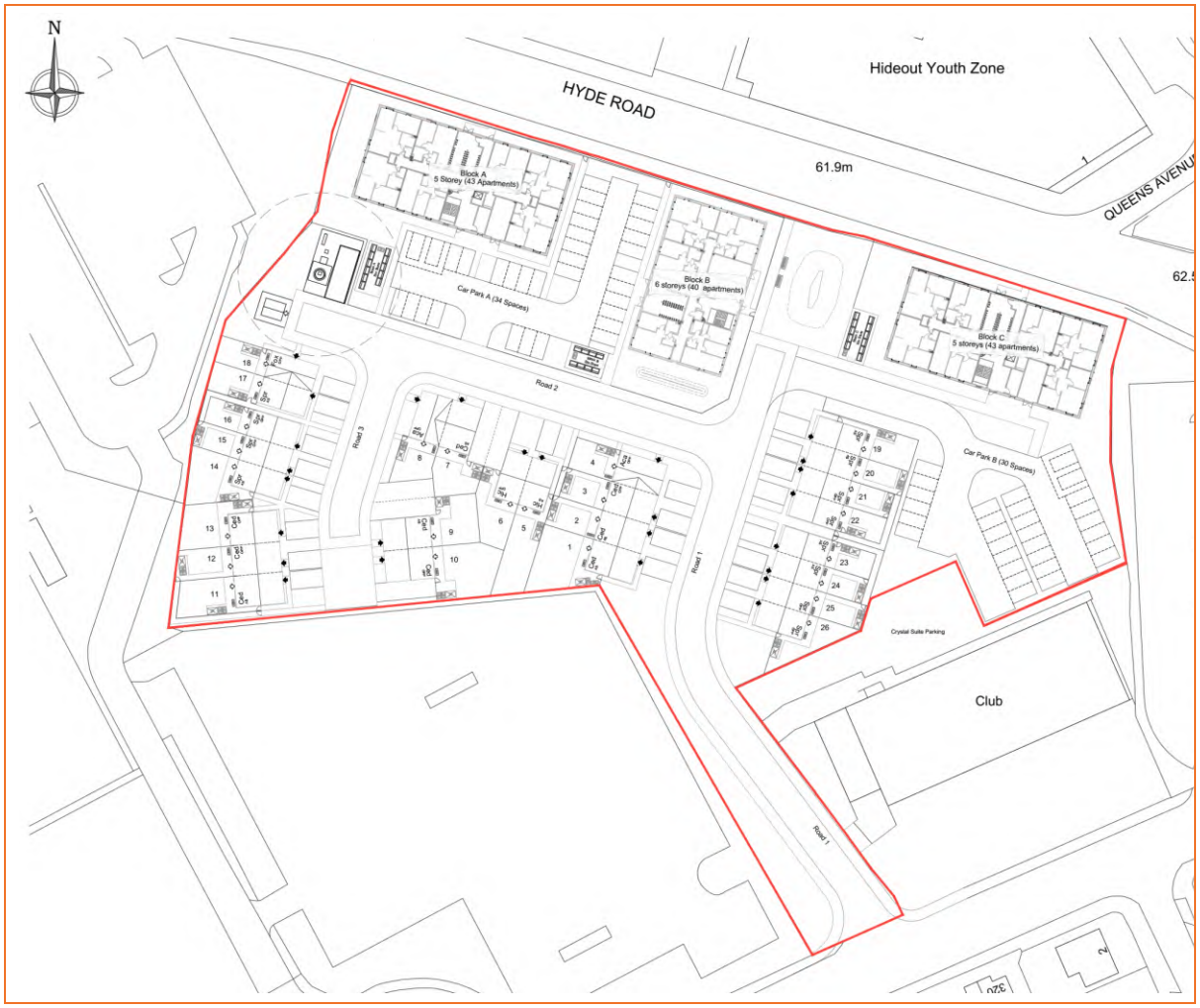
- Establish and measure the existing sound levels across the site, day and night.
- Consider the potential sources of sound impacting the site and to measure source sound levels of all applicable sources.
- Assess internal and external noise levels in accordance with criteria given in BS 8233.
- Provide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

1.3. PROPOSED DEVELOPMENT

The client proposed to construct a residential development comprising 152 dwellings (Use Class C3a) together with landscaping, sustainable drainage features, pedestrian footways and highways, parking provision and other associated works.

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

Figure 1 Snapshot of the 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 2.1 summarises the noise exposure hierarchy, based on the likely average response.

Table 2.1 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			
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 REGULATION: 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 LAmax,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.

2.7. BRITISH STANDARD BS 8233:2014+A1:2019 – GUIDANCE OF 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 2.2.

Table 2.2 BS 8233:2014 Recommended Internal Noise Level

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 $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ 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.*

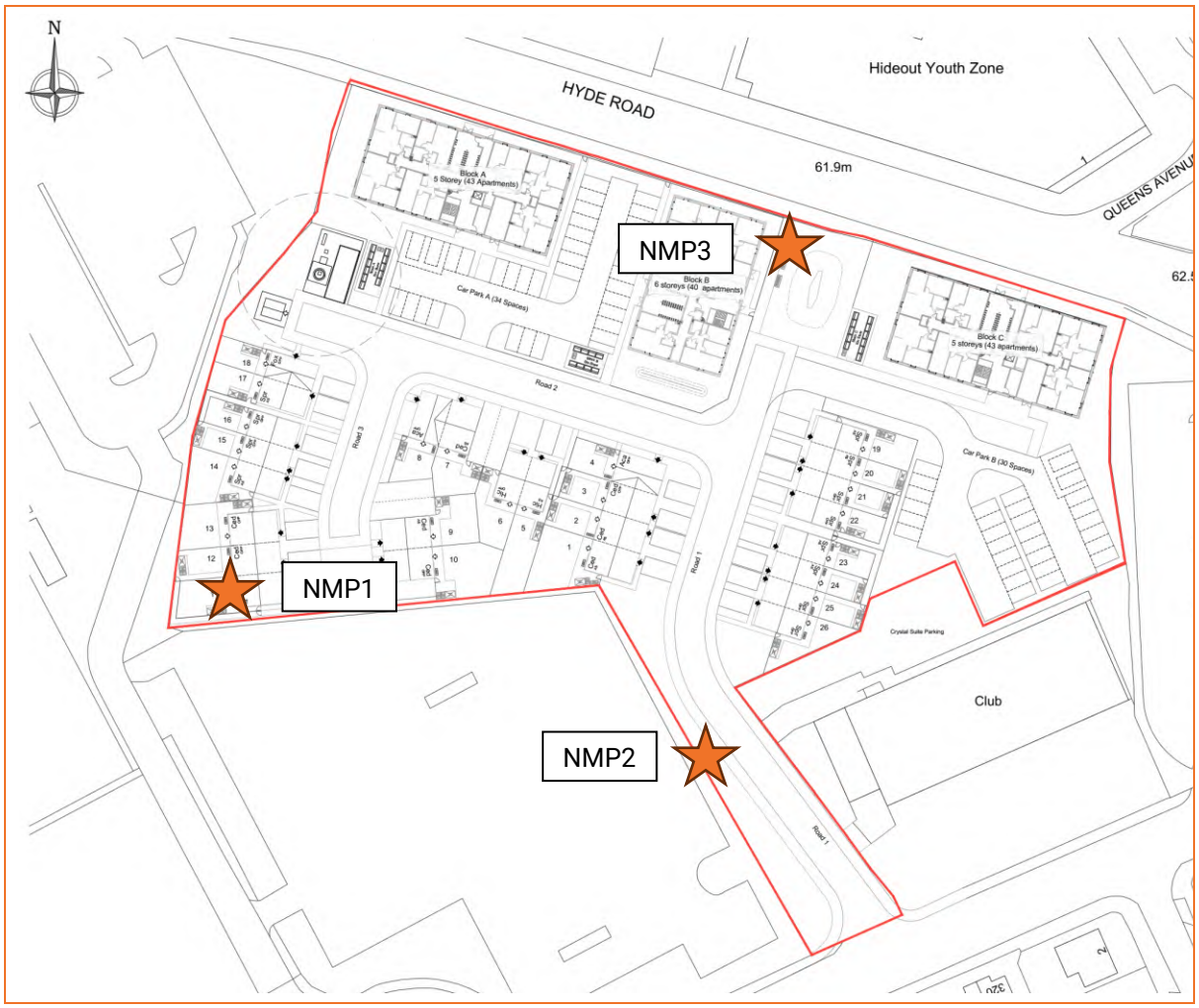
BS 8233 goes on to say:

> *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 undertaken attended and unattended measurements across the site to capture the various sound sources. Figure 2 details the Noise Measurement Positions.

Figure 2 Noise Measurement Position



3.1. AMBIENT SOUND SURVEY - WEST

E3P has conducted a full weekday and weekend ambient sound survey in order to capture sports pitch usage from the west and also a speedway event at the National Speedway Stadium on Monday 16th March 2026. The survey was carried out over the following time periods:

- 15:00 Friday 13th March to 14:00 Tuesday 17th March 2026.

The following noise measurement position was chosen for the Noise Survey:

- Noise Measurement Position 1 (NMP1): Located on the southwestern boundary, representative of proposed plots 9 to 13. The microphone was located at a height of 1.5 m above

ground level and in façade conditions due to nearby containers. The sound climate was dominated by road traffic and a speedway event on Monday evening.

A summary of the measured sound pressure levels from the Ambient Sound Survey are presented in Table 3.1. A free-field correction of -3 dB is applied.

Table 3.1 Ambient Sound Survey Results - West

DATE	ASSESSMENT PERIOD	MEASURED SOUND PRESSURE LEVEL (dB) – FREE-FIELD		
		$L_{Aeq,T}$	10th Highest $L_{Amax, fast}$	$L_{A90, T}$
Friday 13th March	Daytime	54.4	-	50.8
	Night-time	48.1	67.1	45.3
Saturday 14th March	Daytime	51.4	-	49.0
	Night-time	46.0	71.9	42.7
Sunday 15th March	Daytime	53.0	-	51.3
	Night-time	48.1	70.7	44.4
Monday 16th March	Daytime	57.6	-	51.6
	Night-time	45.9	72.3	42.2

From the above, the measured values on Monday 16th March will be used to inform the assessment, especially for the Speedway event.

Full hourly data is given in Appendix III.

3.2. AMBIENT SOUND SURVEY - SOUTH

E3P has conducted a full weekday and weekend ambient sound survey in order to capture noise from Kirkmanshulme Lane and usage of the Crystal Suite, where possible. The survey was carried out over the following time periods:

- 14:00 Friday 20th March to 15:00 Monday 23rd March 2026.

The following noise measurement position was chosen for the Noise Survey:

- Noise Measurement Position 2 (NMP2): Located on the access road to the site, immediately adjacent to the western façade of the Crystal Suite. The microphone was located at a height of 1.5 m above ground level and in free-field conditions. The sound climate was dominated by road traffic.

A summary of the measured sound pressure levels from the Ambient Sound Survey are presented in Table 3.2.

Table 3.2 Ambient Sound Survey Results - South

DATE	ASSESSMENT PERIOD	MEASURED SOUND PRESSURE LEVEL (dB)		
		$L_{Aeq,T}$	10th Highest $L_{Amax, fast}$	$L_{A90, T}$
Friday 20th March	Daytime	54.7*	-	47.2
	Night-time	50.3	70.1	42.5
Saturday 21st March	Daytime	53.1	-	46.2
	Night-time	50.7	74.9	43.2
Sunday 22nd March	Daytime	52.8	-	46.3
	Night-time	48.9	73.7	37.9

*Combined with Monday data from 07:00-15:00

From the above, the measured values on Friday 20th March during the day and Saturday 21st March during the night are used for the assessment. No notable entertainment noise or increases to noise levels on Friday and Saturday night are noted in the data.

As such, E3P will revert to the Noise Assessment conducted for the Crystal Suite to inform the assessment.

Full hourly data is given in Appendix III.

3.3. ROAD TRAFFIC SOUND MEASUREMENT - HYDE ROAD

Due to the open nature of the site, an unattended position for Hyde Road was not possible. As such, an attended measurement has been conducted in accordance with the shortened measurement procedure given in CRTN as well as guidance given in the Manchester City Council Planning Guidance which requires rush hour measurements. The survey was carried out over the following time periods:

- 10:00-13:00 Tuesday 24th March 2026.
- 06:00-09:00 Thursday 25th March 2026.

The following noise measurement position was chosen for the Noise Survey:

- Noise Measurement Position 3 (NMP3): Located on the northern boundary of the site, approximately 12.5 m from the nearside edge of Hyde Road. The microphone was located at a height of 1.5 m above ground level and in free-field conditions. The sound climate was dominated by road traffic.

A summary of the measured sound pressure levels from the Road Traffic Sound Survey are presented in Table 3.3.

Table 3.3 Road Traffic Sound Survey Results – Hyde Road

START TIME	MEASURED SOUND PRESSURE LEVEL (dB)			
	$L_{Aeq,T}$	10th Highest $L_{Amax, fast}$	$L_{A90, T}$	$L_{A10, T}$
10:00	68.2	77.8	59.9	70.9
11:00	67.3		58.3	70.4
12:00	67.6		59.3	70.5
06:00	69.9	77.5	58.5	73.1
07:00	70.0		62.9	72.5
08:00	68.6		61.3	71.4

From the above, E3P have derived a daytime value of 68.5 dB, from all measured daytime values and 61.1 dB for the night-time period. The 10th highest maximum is noted to be 77.8 dB.

Weather conditions were monitored throughout using online forecasts and it was noted that conditions were conducive to the measurement or environmental noise throughout.

The equipment outlined in Table 3.4 was used for the noise survey.

Table 3.4 Noise Measurement Equipment and Calibration Dates

MEASUREMENT POSITION	EQUIPMENT DESCRIPTION	MANUFACTURER AND TYPE NUMBER	SERIAL NUMBER	CALIBRATION DUE DATE
NMP1 to NMP3	Sound Level Meter	Fusion	12039	5th August 2027
	Pre-amplifier	Pre22	1805124	
	Microphone	40CE	330832	
	Calibrator	Cal31	87281	6th February 2027

The sound level meter was field calibrated before and after measurements with no significant drift witnessed.

4. NOISE IMPACT ASSESSMENT

For the purposes of this assessment, E3P has used noise modelling software, CadnaA 2025 MR1, to determine the impact of noise from road traffic, sports pitch usage and Speedway Event sound. Noise from the Crystal Suite is addressed separately.

The following inputs have been included in the model:

- Planning Layout Rev B.
- Kirkmanshulme Lane is calibrated to NMP2.
- Hyde Road is calibrated to NMP3.
- Sports pitch usage is input using Sports England Guidance (58 dB at 10 m) as it is unclear whether worst-case usage has been captured at NMP1.
- Site 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 are included.
- A reflection order of 2 has been used in all calculations.
- No soft ground attenuation is applied.
- Noise levels generated using ISO 9613-2:2024 “Acoustics – Attenuation of sound during propagation outdoors” and CRTN as incorporated into CadnaA software.

For the Speedway, we note a noise level of 67.3 dB, corrected to 59.3 dB for free-field, between 19:07 and 21:42 when races were clearly noted. This is typical of a speedway event lasting 2.5 hrs. In order to assess noise from the event, E3P have drawn upon the methodology and assessment of that for the neighbouring residential development to the south (122160/FO/2018 Proposed residential development comprising erection of 80 no. apartments within 1 no. part 3 part 4 storey block and 1 no. 3 storey block and the erection of 167 no. 2 and 2 1/2 storey dwellings with associated car parking, boundary treatments and landscaping, the creation of new roads and access points off Kirkmanshulme Lane, site remediation and other associated engineering works following the demolition of the existing buildings). Specifically, E3P have reviewed the Noise Assessment submitted by Red Acoustics and utilised the modelled values for the Speedway Stadium to calibrate the noise model.

Using these sources, the modelled values are within +/- 2 dB of these measured when allowing for the 16hour period on Monday. As such, the noise model is considered robust and accurate in assessing noise from the Speedway Event. The stadium is input using a line source to replicate the route the bikes take with noise from the bikes considered the main noise source. A sound power level of

Figures 3 and 4 determine the noise levels across the Site during the daytime and night-time periods, respectively, due to existing sound sources.

4.1. EXTERNAL AMENITY AREA NOISE LEVEL ASSESSMENT

The noise model has been used to predict noise levels in rear garden areas to be used for relaxation. The predicted levels range between 49 dB and up to 61 dB.

As such, it is predicted that the No Observed Adverse Effect Level (NOAEL) is achieved in some rear garden areas, Plots 7 and 9, with the following commentary:

> *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.*

Accordingly, no action is required for these areas.

However, most gardens are subject to noise levels in excess of 55 dB. As such, barriers are required in order to control external noise. Section 6.0 details the locations and required heights.

4.2. INTERNAL NOISE LEVEL ASSESSMENT

With regards internal noise levels, E3P has assumed a standard glazing specification of 4 mm glass/20 mm air space/4 mm glass affords sound insulation performance in the order of 32 dB however this is for a pink noise spectrum. The same unit, weighted for road traffic noise, has a sound insulation performance value of approximately 28 dB and so this value has been used to calculate internal noise levels for noise break in.

The model has been used to predict façade noise levels at ground, first and second floors. In order to determine any requirements for mitigation, E3P has added the reduction provided by the glazing (28 dB) to the relevant criterion for day (35 dB) and for night (30 dB). As such, any facades subject to noise levels higher than 63 dB during the day and/or 58 dB during the night will require higher specification glazing.

As can be seen from the figures, facades associated with the apartments exceed these values during daytime and night-time periods. Therefore, certain apartments will require higher specification glazing.

Consideration must also be given to maximum noise levels generated by road traffic. The 10th highest maximum noise level has been used and distance corrected to the closest plot. Internal maximum noise levels of 45 dB LAmax should also not be exceeded. The sound insulation performance achieved by standard glazing (32 dB) has been added to the 45 dB maximum internal noise level limit. As, such facades subject to maximum noise levels above 77 dB will require higher specification glazing.

The maximum noise level at the worst affected facades along Hyde Road are noted to be 78 dB. Those along the southern western boundary are subject to levels of approximately 73 dB Therefore, standard specification glazing is not sufficient to mitigate against maximum noise levels generated by road traffic along Hyde Road for apartments. Accordingly, certain facades will require glazing that outperforms standard.

4.2.1. VENTILATION CONDITION

When considering a partially open window for ventilation purposes, E3P has assumed that a Building Regulations ADF compliant system would be installed as part of the development, in all plots, as it is unlikely the plots are suitable for natural ventilation.

Therefore, the only consideration in relation to noise will be the performance of any window mounted or through walls vents in relation to the passage of external to internal noise.

This is discussed in the mitigation section.

4.2.2. OVERHEATING CONDITION

E3P has considered the requirements of ADO in relation to opening windows at night to mitigate the potential for overheating, which at this stage is assumed to be required. Therefore, external noise levels at affected facades apply. Any plots that experience noise levels below these limits will be able to have openable windows to mitigate any overheating. Those that exceed these limits will be subject to an Overheating Assessment by a suitably qualified professional.

It is noted that the site is within a medium risk area and, as such, an outside-to-inside level difference for window openings for the simplified method is noted to be 10 dB (medium).

As such, the allowable façade noise levels are 50 dB averaged over the 8 hour night time period and 65 dB $L_{Amax,fast,2min}$ during the night.

As can be seen from Figure 5, certain facades of properties along the boundaries are subject to higher night-time noise levels than the limits above. As such, an overheating assessment in accordance with ADO is required. The exact facades and plots are highlighted in Section 5.0.

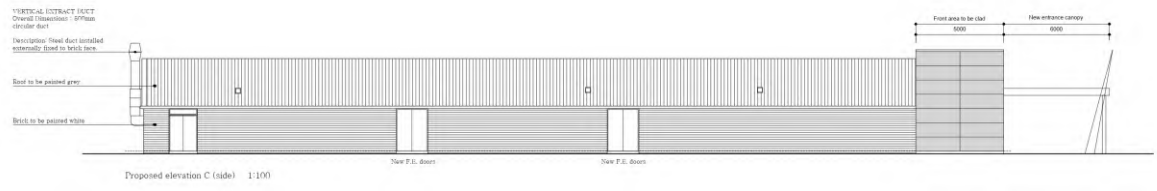
5. CRYSTAL SUITE – ENTERTAINMENT NOISE IMPACT ASSESSMENT

Due to the absence of a notable event during the survey, E3P have reverted to the Noise Assessment conducted for the planning application 121780/FO/2018 Part retrospective application for the proposed change of use of former Class D2 Snooker Hall to a wedding venue (sui generis use) with associated internal and external alterations including the installation of a mezzanine floor for storage and installation of external canopy and flue, erection of new bin store and bicycle store, creation of new car park within the front garden and reconfiguration of existing car park to create new spaces.

E3P have reviewed available plans and the noise assessment to ascertain the likely noise break out from the north facing façade.

The rear elevations are shown below:

Picture 1 Rear Elevations



As noted, three rear doors back onto the development site with the potential for noise break-out. No management controls are noted for these doors and so it is assumed that they could and can be opened. These would be the main and dominant source of noise.

The assessment determined that internal noise sources would consist of raised voices and the sound system and external car park usage.

5.1. ENTERTAINMENT NOISE ASSESSMENT

For the purposes of this assessment, E3P has used noise modelling software, CadnaA 2023 MR1, to determine the impact of noise from existing commercial fixed plant sound. The following is noted from the report:

Frequency, Hz	63	125	250	500	1k	2k	4k	Sum, dB L_{Aeq}
Normalised Voice Level, L_{eq}	66.4	77.4	83.4	87.4	83.4	78.4	72.4	88.0

Sound System Internal Noise Level

Frequency, Hz	63	125	250	500	1k	2k	4k	Sum, dB L_{Aeq}
Sound system, L_{eq}	82	78	76	79	87	82	88	88.0

The octave band data for the sound system are input into the noise model and this is noted to be a noise limit set for the venue. A correction of -6 dB is applied for the diffuse field correction through the doors. This results in approximately 82 dB outside the door. The doors are input as vertical area sources.

For the assessment, E3P have considered the criteria given by MCC in the Planning Guidance:

Music noise levels in the 63Hz and 125Hz octave centre frequency bands (Leq) should be controlled so as not to exceed (in habitable rooms) 47dB and 41dB (Leq,5min), respectively.

From the noise model, the following levels are calculated. A conservative reduction of 5 dB is applied due to the low frequency nature of the noise:

Table 5.1 Entertainment Noise Assessment

FREQUENCY	63 Hz	125 Hz
Predicted Noise Level at First Floor Window (dB)	56.7	52.7
Internal Noise Level with Windows Open (-5 dB) (dB)	51.7	47.7
MCC Criterion (dB)	47.0	41.0
Difference +/- (dB)	**+4.7**	**+6.7**

Given the above, mitigation measures are recommended as open windows cannot be relied upon to effectively reduce noise levels. With windows closed, glazing is likely to mitigate by at least 21 dB in these octave bands which is more than sufficient.

5.2. ABSOLUTE NOISE LEVEL ASSESSMENT

This assessment considers the break-out of noise and assesses absolute noise levels in accordance with BS 8233.

Figure 6 should be used to view the specific noise level at the receptors. The grid is calculated at 1.5 m height to show garden noise levels. Façade levels are shown as building evaluations.

As noted, garden noise levels are predicted to be in excess of 55 dB, up to 64 dB, and facades levels are noted to be 60 dB at the worst-affected. These façade levels are considered acceptable; however, external noise levels are considered adverse.

Given this, and the above assessment, mitigation measures are required to control external and internal noise levels from the venue.

6. MITIGATION

6.1. EXTERNAL AMENITY AREA

As shown in Section 4.1 and 5.2, certain garden areas would experience an exceedance of the 55 dB criterion in rear garden areas. As such, an additional noise model has been run to determine the required barrier height needed to achieve levels of 55 dB and below due to all sound sources.

As shown in Figure 7, barriers for the following plots are required:

- Plots 1, 10 to 18 – 3.2 m high.
- Plots 7 to 9 – 2.1 m high.
- Plots 3 and 4 – 2.4 m high.
- Plots 19 to 26 – 3 m high. This barrier can be graduated down from plot 21 to 19 to approximately 2.4 m high.

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.

6.2. FAÇADE INSULATION AND VENTILATION

The previous section determined that a whole dwelling ventilation system in accordance with Part F would be installed across the site as it is assumed natural ventilation is not appropriate for these dwellings. Higher specification glazing will be required for across certain facades. Standard thermal double glazing being sufficient across the rest of the site.

Table 6.1 details the required glazing per façade along with provision for overheating risk and/or mechanical ventilation. The worst-case required glazing is chosen per facade. For example, where a glazing needed due to night-time noise is higher than for daytime periods, the night-time requirements are recommended. Where maximum noise levels need mitigation the Rw value is provided.

It is recommended that a glazier is consulted to ensure any system installed achieves the above reduction as a minimum. These specifications should be reviewed by an acoustician.

Table 6.1 Glazing Requirements – Dwellings

PLOT	REQUIRED GLAZING REDUCTION (dB)	EXAMPLE GLAZING (GLASS/AIR SPACE/GLASS) (mm)	VENTILATION CONSIDERATION
Plots 1 to 13	28 dB $R_w + C_{t,r}$	4 / 20 / 4	Part F compliant
Plots 14 to 18	28 dB $R_w + C_{t,r}$	4 / 20 / 4	**ADO Exceedances**
Plots 19 to 26	28 dB $R_w + C_{t,r}$	4 / 20 / 4	**ADO Exceedances**
Block A	**36 dB $R_w + C_{t,r}$**	**8.4 / 14 / 10.4**	**ADO Exceedances**
Block B	**36 dB $R_w + C_{t,r}$**	**8.4 / 14 / 10.4**	**ADO Exceedances**
Block C	**36 dB $R_w + C_{t,r}$**	**8.4 / 14 / 10.4**	**ADO Exceedances**

Figure 8 in the appendix highlights the facades that need the above glazing specification.

When considering ventilation requirements, consideration to the sound reduction properties of any openings, i.e. window and/or wall mounted vents and purge vents, will need to be considered. Their reduction should achieve that provided by the glazing, as a minimum. Any additional vents/openings per habitable room will increase the reduction required by each opening by 3 dB.

When specifying mechanical fans/purge fans/ventilation systems, the following internal noise levels, in accordance with Building Regulations, the following should be noted:

Mechanical ventilation systems, including both continuous and intermittent mechanical ventilation, should be designed and installed to minimise noise. This includes doing all of the following.

a. Correctly sizing and jointing ducts.

b. Ensuring that equipment is appropriately and securely fixed, such as using resilient mountings where noise carried by the structure of the building could be a problem.

c. Selecting appropriate equipment, including following paragraph 1.6.

For mechanical ventilation systems, fan units should be appropriately sized so that fans operating in normal background ventilation mode are not overly noisy. This might require fans to be sized so that they do not operate near maximum capacity when in normal background ventilation mode.

Account should be taken of outside noise when considering whether openable windows are appropriate for purge ventilation.

***NOTE:** Although there is no requirement to undertake noise testing, achieving the levels in the following guidance would ensure good acoustic conditions. The average A-weighted sound pressure level for a ventilator operating under normal conditions and not at boost rates should not exceed both of the following.*

a. 30dB LAeq,T for noise-sensitive rooms (e.g. bedrooms and living rooms) when a continuous mechanical ventilation system is running on its minimum low rate.

b. 45dB LAeq,T in less noise-sensitive rooms (e.g. kitchens and bathrooms) when a continuous operation system is running at the minimum high rate or an intermittent operation system is running.

7. CONCLUSIONS AND DISCUSSION

E3P has undertaken two long term unattended noise surveys to capture noise from Kirkmanshulme Lane, the National Speedway Stadium and the Crystal Suite. Additionally, attended measurements have been conducted for Hyde Road, including rush hour measurements.

A 3D noise model has been constructed to assess road traffic, speedway event, sports pitch usage and entertainment noise across the site and incident upon facades.

All existing sound sources are assessed in accordance with the criterion, for day and night, given in BS 8233:2014+A1:2019.

Entertainment noise is also considered in relation to Manchester City Council Guidance.

The assessment has found that higher specification is required for certain apartment facades and houses due to noise from Hyde Road and the speedway events. Consideration to overheating and ventilation is required across the site for the majority of plots.

Barriers of 2.1 to 3.2 m height are required to mitigate road traffic and speedway event noise in external amenity spaces at some plots.

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

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 A Typical Sound Pressure Levels

SOUND PRESSURE LEVEL	LOCATIONS/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 B 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.

Appendix III: Measured Sound Pressure Levels



Table A.1 Hourly data for NMP1

MEASUREMENT START TIME	MEASURED AMBIENT SOUND LEVEL, $L_{Aeq,T}$ (dB)	MEASURED BACKGROUND SOUND LEVEL, $L_{A90,T}$ (dB)
13/03/2026 15:00	62.6	52.1
13/03/2026 16:00	56.3	51.5
13/03/2026 17:00	56.9	52.8
13/03/2026 18:00	55.3	51.2
13/03/2026 19:00	53.4	50.4
13/03/2026 20:00	52.5	49.7
13/03/2026 21:00	64.2	48.8
13/03/2026 22:00	58.1	47.1
13/03/2026 23:00	49.9	45.1
14/03/2026 00:00	49.6	44.9
14/03/2026 01:00	49.7	45.5
14/03/2026 02:00	48.7	43.8
14/03/2026 03:00	48.5	44.0
14/03/2026 04:00	51.1	46.4
14/03/2026 05:00	55.2	47.2
14/03/2026 06:00	55.8	48.8
14/03/2026 07:00	54.2	49.1
14/03/2026 08:00	55.9	48.2
14/03/2026 09:00	57.1	48.5
14/03/2026 10:00	54.6	49.2
14/03/2026 11:00	54.8	49.2
14/03/2026 12:00	54.9	49.0
14/03/2026 13:00	57.3	49.4
14/03/2026 14:00	55.0	49.0
14/03/2026 15:00	52.8	48.0
14/03/2026 16:00	57.4	49.5
14/03/2026 17:00	57.2	49.7
14/03/2026 18:00	53.0	49.3
14/03/2026 19:00	52.1	47.2
14/03/2026 20:00	51.3	48.0
14/03/2026 21:00	51.0	48.2
14/03/2026 22:00	51.6	48.3
14/03/2026 23:00	49.5	46.6
15/03/2026 00:00	48.0	44.5

MEASUREMENT START TIME	MEASURED AMBIENT SOUND LEVEL, $L_{Aeq,T}$ (dB)	MEASURED BACKGROUND SOUND LEVEL, $L_{A90,T}$ (dB)
15/03/2026 01:00	46.6	43.0
15/03/2026 02:00	46.8	42.3
15/03/2026 03:00	47.1	41.4
15/03/2026 04:00	46.8	40.9
15/03/2026 05:00	53.3	41.4
15/03/2026 06:00	53.9	43.8
15/03/2026 07:00	55.6	44.9
15/03/2026 08:00	54.1	45.9
15/03/2026 09:00	53.3	48.5
15/03/2026 10:00	54.4	49.9
15/03/2026 11:00	54.4	51.5
15/03/2026 12:00	54.9	51.7
15/03/2026 13:00	66.6	54.5
15/03/2026 14:00	56.5	52.7
15/03/2026 15:00	56.4	52.0
15/03/2026 16:00	56.8	53.0
15/03/2026 17:00	57.5	52.6
15/03/2026 18:00	55.4	49.5
15/03/2026 19:00	57.6	51.8
15/03/2026 20:00	54.2	51.0
15/03/2026 21:00	55.8	50.8
15/03/2026 22:00	51.7	48.6
15/03/2026 23:00	52.4	47.6
16/03/2026 00:00	49.9	45.1
16/03/2026 01:00	47.7	42.2
16/03/2026 02:00	49.2	41.8
16/03/2026 03:00	48.5	41.8
16/03/2026 04:00	48.7	43.7
16/03/2026 05:00	55.5	45.3
16/03/2026 06:00	56.8	49.3
16/03/2026 07:00	56.5	51.5
16/03/2026 08:00	59.4	52.0
16/03/2026 09:00	59.7	51.4
16/03/2026 10:00	58.1	49.1
16/03/2026 11:00	61.5	50.4

MEASUREMENT START TIME	MEASURED AMBIENT SOUND LEVEL, $L_{Aeq,T}$ (dB)	MEASURED BACKGROUND SOUND LEVEL, $L_{A90,T}$ (dB)
16/03/2026 12:00	59.3	50.2
16/03/2026 13:00	61.5	52.1
16/03/2026 14:00	62.4	52.3
16/03/2026 15:00	57.4	52.0
16/03/2026 16:00	58.8	51.7
16/03/2026 17:00	57.6	51.5
16/03/2026 18:00	56.4	51.5
16/03/2026 19:00	70.1	52.3
16/03/2026 20:00	69.7	52.4
16/03/2026 21:00	69.4	52.0
16/03/2026 22:00	52.0	48.6
16/03/2026 23:00	49.8	46.5
17/03/2026 00:00	47.2	43.1
17/03/2026 01:00	46.0	41.3
17/03/2026 02:00	44.4	39.7
17/03/2026 03:00	44.1	39.3
17/03/2026 04:00	49.3	40.5
17/03/2026 05:00	58.1	44.4
17/03/2026 06:00	52.5	48.4
17/03/2026 07:00	56.9	51.0
17/03/2026 08:00	59.5	51.5
17/03/2026 09:00	55.1	50.7
17/03/2026 10:00	58.7	50.3
17/03/2026 11:00	57.6	50.1
17/03/2026 12:00	56.9	49.0
17/03/2026 13:00	59.4	49.5

Table A.2 Hourly data for NMP2

MEASUREMENT START TIME	MEASURED AMBIENT SOUND LEVEL, $L_{Aeq,T}$ (dB)	MEASURED BACKGROUND SOUND LEVEL, $L_{A90,T}$ (dB)
20/03/2026 14:00	55.7	45.7
20/03/2026 15:00	52.7	46.5
20/03/2026 16:00	53.0	46.6
20/03/2026 17:00	53.4	47.3

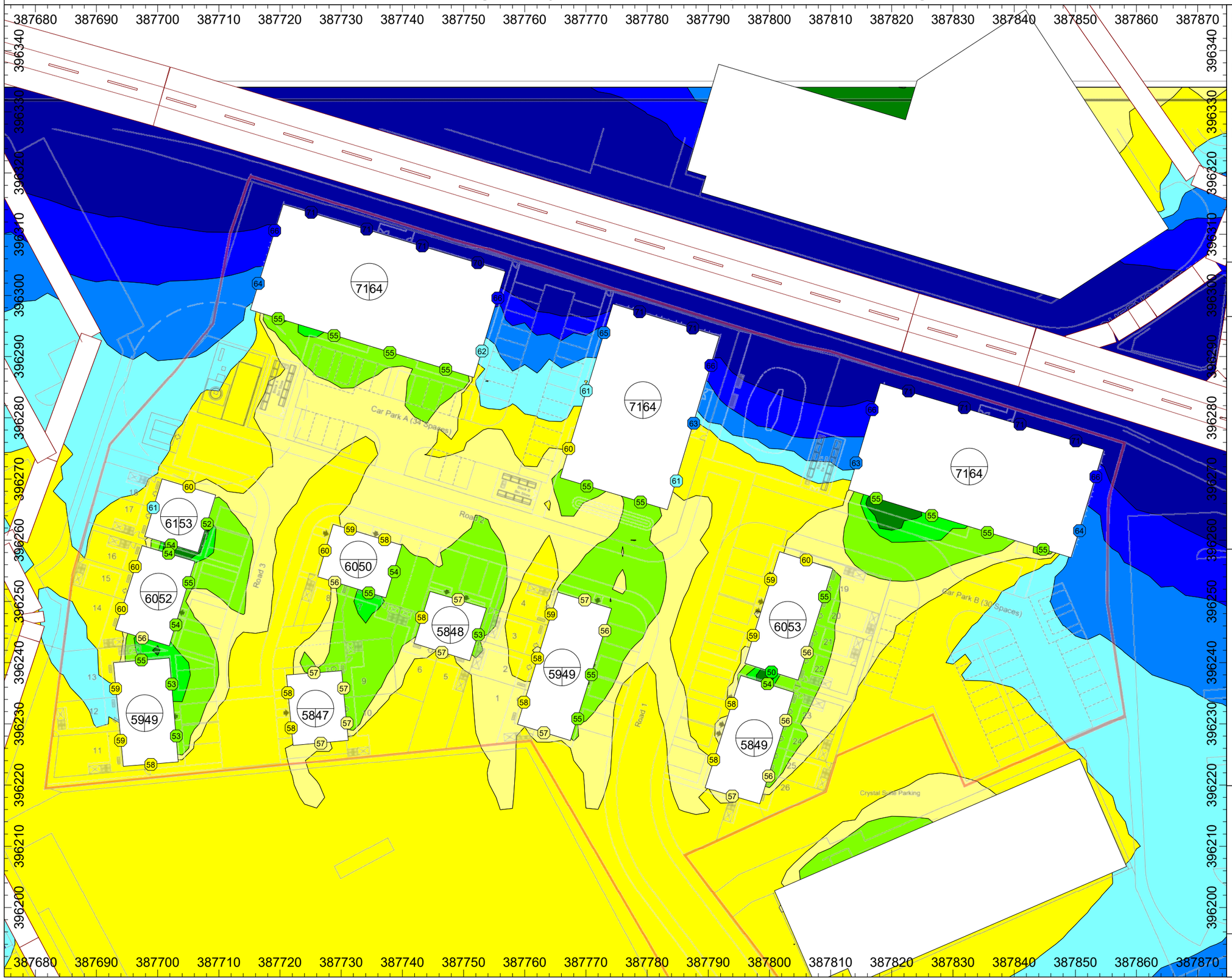
MEASUREMENT START TIME	MEASURED AMBIENT SOUND LEVEL, $L_{Aeq,T}$ (dB)	MEASURED BACKGROUND SOUND LEVEL, $L_{A90,T}$ (dB)
20/03/2026 18:00	54.7	48.1
20/03/2026 19:00	56.7	49.2
20/03/2026 20:00	53.7	47.0
20/03/2026 21:00	52.9	46.9
20/03/2026 22:00	52.8	47.1
20/03/2026 23:00	52.1	45.8
21/03/2026 00:00	51.2	43.9
21/03/2026 01:00	50.4	42.1
21/03/2026 02:00	49.0	41.7
21/03/2026 03:00	47.5	40.1
21/03/2026 04:00	49.1	40.3
21/03/2026 05:00	49.6	41.6
21/03/2026 06:00	51.8	44.3
21/03/2026 07:00	53.2	45.6
21/03/2026 08:00	53.9	45.4
21/03/2026 09:00	52.7	45.1
21/03/2026 10:00	51.7	45.7
21/03/2026 11:00	51.7	45.9
21/03/2026 12:00	56.0	45.7
21/03/2026 13:00	51.3	45.8
21/03/2026 14:00	51.2	45.8
21/03/2026 15:00	53.3	45.9
21/03/2026 16:00	52.8	46.8
21/03/2026 17:00	52.7	46.6
21/03/2026 18:00	52.4	46.4
21/03/2026 19:00	53.7	48.3
21/03/2026 20:00	54.5	46.9
21/03/2026 21:00	51.9	46.1
21/03/2026 22:00	53.8	46.7
21/03/2026 23:00	52.6	46.2
22/03/2026 00:00	51.8	44.9
22/03/2026 01:00	50.1	43.4
22/03/2026 02:00	49.5	42.5
22/03/2026 03:00	48.2	42.2
22/03/2026 04:00	48.7	41.1

MEASUREMENT START TIME	MEASURED AMBIENT SOUND LEVEL, $L_{Aeq,T}$ (dB)	MEASURED BACKGROUND SOUND LEVEL, $L_{A90,T}$ (dB)
22/03/2026 05:00	49.8	41.2
22/03/2026 06:00	52.5	44.0
22/03/2026 07:00	51.8	43.1
22/03/2026 08:00	51.6	42.1
22/03/2026 09:00	51.8	43.1
22/03/2026 10:00	51.7	45.3
22/03/2026 11:00	52.6	46.5
22/03/2026 12:00	52.4	45.7
22/03/2026 13:00	52.7	46.8
22/03/2026 14:00	52.6	47.7
22/03/2026 15:00	55.7	48.8
22/03/2026 16:00	53.7	49.2
22/03/2026 17:00	53.4	48.2
22/03/2026 18:00	52.8	47.9
22/03/2026 19:00	52.8	47.6
22/03/2026 20:00	52.9	46.5
22/03/2026 21:00	53.1	46.4
22/03/2026 22:00	50.9	45.1
22/03/2026 23:00	49.1	40.5
23/03/2026 00:00	48.3	36.4
23/03/2026 01:00	45.3	34.5
23/03/2026 02:00	43.2	33.5
23/03/2026 03:00	41.7	31.5
23/03/2026 04:00	46.3	36.8
23/03/2026 05:00	50.7	40.4
23/03/2026 06:00	53.8	45.5
23/03/2026 07:00	55.2	47.3
23/03/2026 08:00	54.3	47.9
23/03/2026 09:00	52.7	44.8
23/03/2026 10:00	56.9	46.3
23/03/2026 11:00	53.5	46.9
23/03/2026 12:00	54.1	46.9
23/03/2026 13:00	54.5	48.3
23/03/2026 14:00	57.6	48.8

Appendix IV: Figures



Figure 3 - Daytime BS 8233 Grid Noise Map - Calculation at 1.5 m above ground level



Project:
Kirkmanshulme Lane, Manchester

Project-No:
51-699

Client:
Kellen Homes and
Jigsaw Homes North

Predicted Noise Level, LAeq,T (dB)

- ... <= 47
- 47 < ... <= 50
- 50 < ... <= 55
- 55 < ... <= 57
- 57 < ... <= 60
- 60 < ... <= 62
- 62 < ... <= 65
- 65 < ... <= 67
- 67 < ...

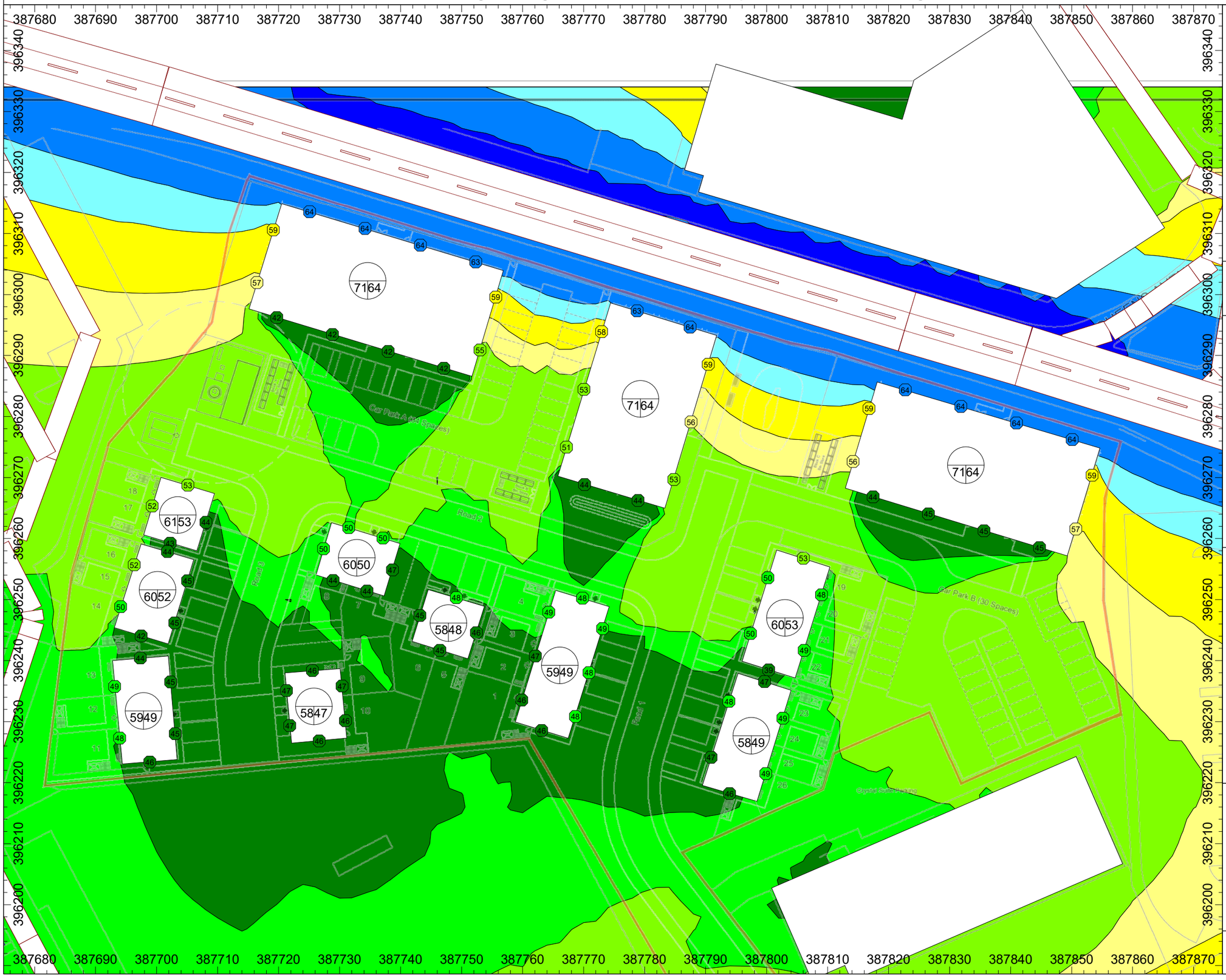
Noise Map Objects

- Line Source
- Area Source
- vert. Area Source
- Road
- Building
- Barrier
- Building Evaluation
- Calculation Area

e3p

Project Engineer: L Faulkner
Date: 26/03/2026

Figure 4 - Night-time BS 8233 Grid Noise Map - Calculation at 4 m above ground level



Project:
Kirkmanshulme Lane, Manchester

Project-No:
51-699

Client:
Kellen Homes and
Jigsaw Homes North

Predicted Noise Level, LAeq,T (dB)

- ... <= 47
- 47 < ... <= 50
- 50 < ... <= 55
- 55 < ... <= 57
- 57 < ... <= 60
- 60 < ... <= 62
- 62 < ... <= 65
- 65 < ... <= 67
- 67 < ...

Noise Map Objects

- Line Source
- Area Source
- vert. Area Source
- Road
- Building
- Barrier
- Building Evaluation
- Calculation Area

e3p

Project Engineer: L Faulkner
Date: 26/03/2026

Figure 5 - Night-time ADO Overheating Exceedances Grid Noise Map - Calculation at 4 m above ground level



Project:
Kirkmanshulme Lane, Manchester

Project-No:
51-699

Client:
Kellen Homes and Jigsaw Homes North

Predicted Noise Level, LAeq,T (dB)

... <= 50.0
50.0 < ...

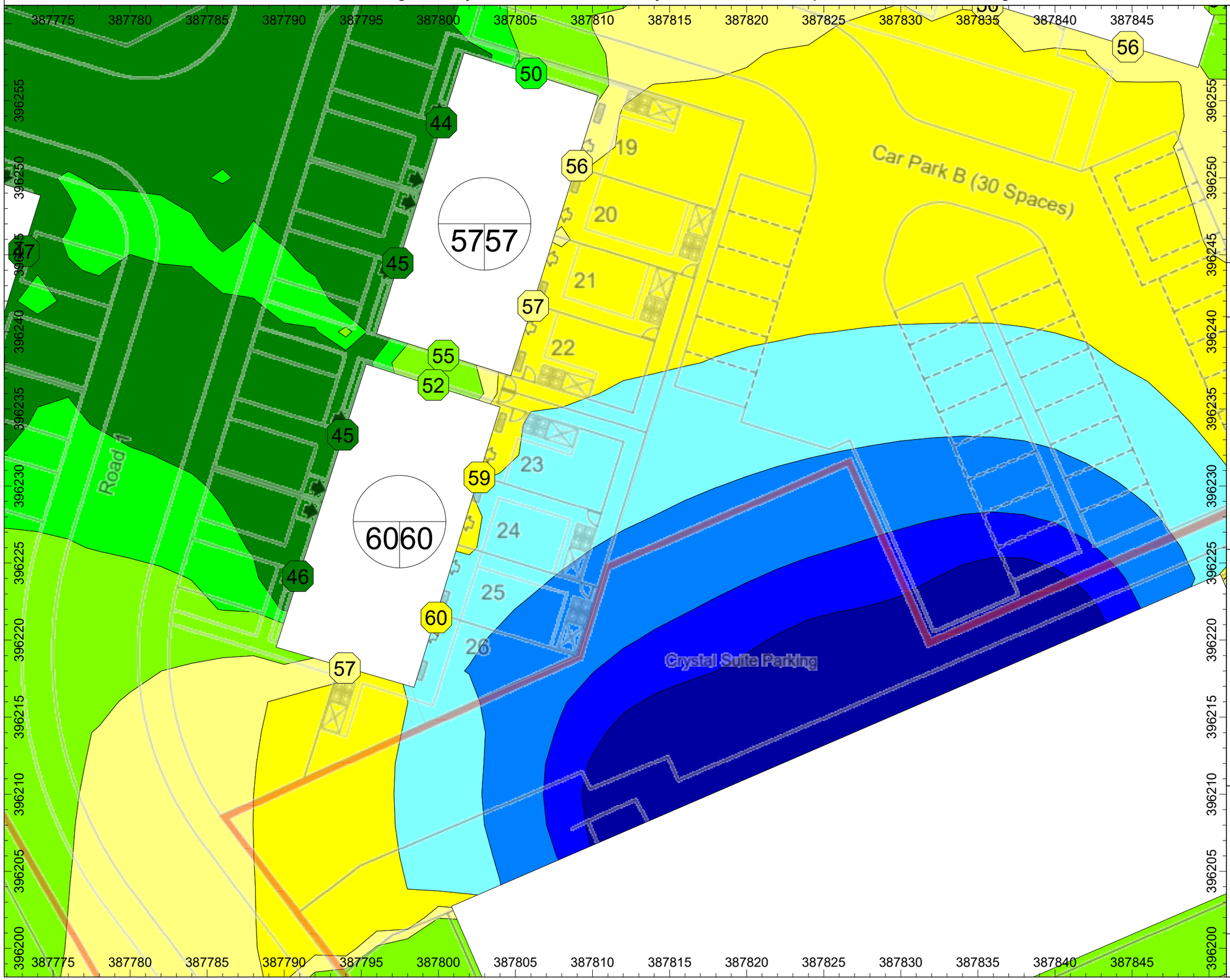
Noise Map Objects

- Line Source
- Area Source
- vert. Area Source
- Road
- Building
- Barrier
- Building Evaluation
- Calculation Area

e3p

Project Engineer: L Faulkner
Date: 26/03/2026

Figure 6 - Daytime Noise Break-out from Crystal Suite Grid Noise Map - Calculation at 1.5 m above ground level



Project:
Kirkmanshulme Lane, Manchester

Project-No:
51-699

Client:
Kellen Homes and Jigsaw Homes North

Predicted Noise Level, LAeq,T (dB)

- ... <= 47
- 47 < ... <= 50
- 50 < ... <= 55
- 55 < ... <= 57
- 57 < ... <= 60
- 60 < ... <= 62
- 62 < ... <= 65
- 65 < ... <= 67
- 67 < ...

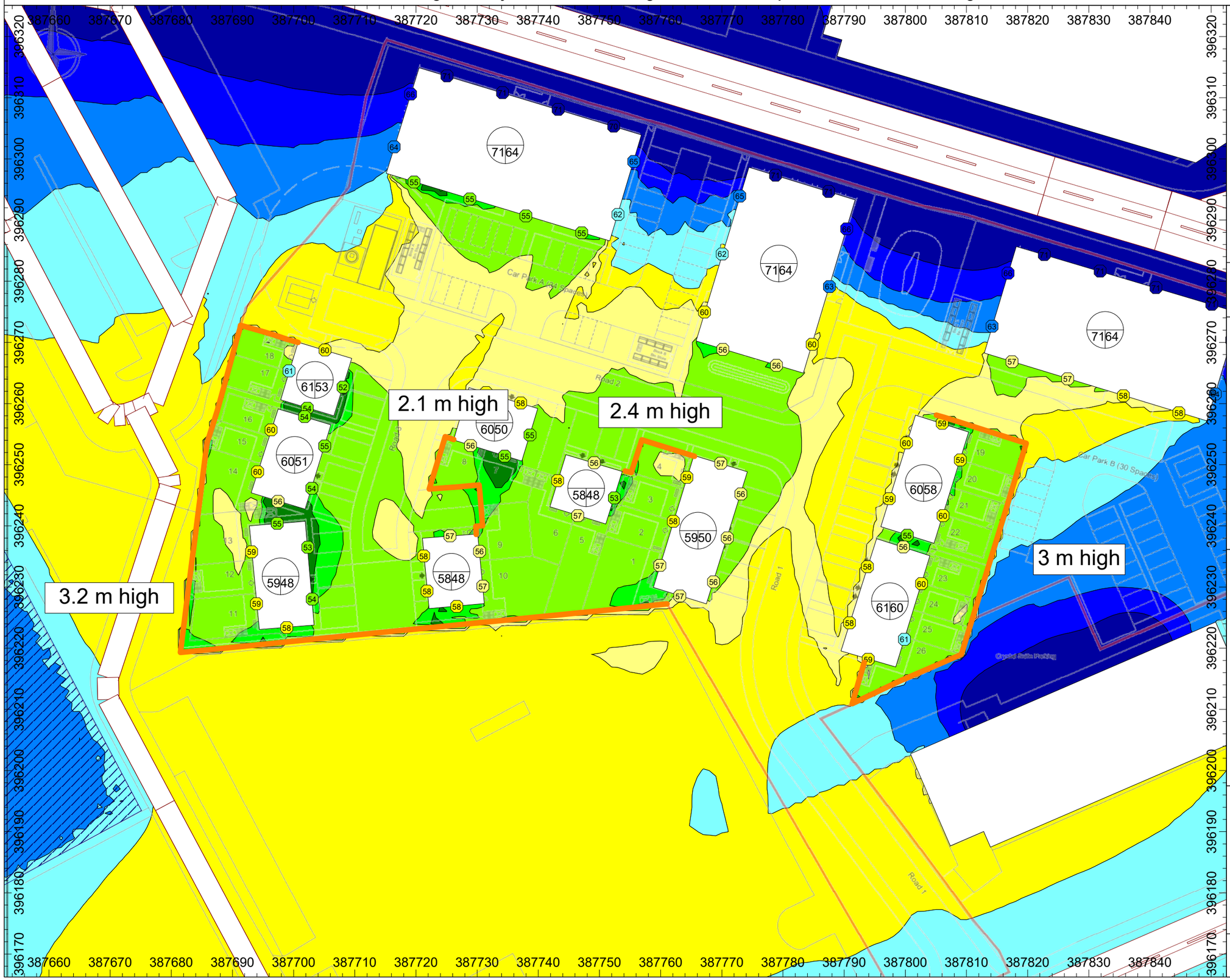
Noise Map Objects

- Line Source
- Area Source
- vert. Area Source
- Road
- Building
- Barrier
- Building Evaluation
- Calculation Area

e3p

Project Engineer: L Faulkner
Date: 26/03/2026

Figure 7 - Daytime BS 8233 with Mitigation Grid Noise Map - Calculation at 1.5 m above ground level



Project:
Kirkmanshulme Lane, Manchester

Project-No:
51-699

Client:
Kellen Homes and Jigsaw Homes North

Predicted Noise Level, LAeq,T (dB)

- ... <= 47
- 47 < ... <= 50
- 50 < ... <= 55
- 55 < ... <= 57
- 57 < ... <= 60
- 60 < ... <= 62
- 62 < ... <= 65
- 65 < ... <= 67
- 67 < ...

Noise Map Objects

- Line Source
- Area Source
- vert. Area Source
- Road
- Building
- Barrier
- Building Evaluation
- Calculation Area

e3p

Project Engineer: L Faulkner
Date: 26/03/2026

Figure 8 - Glazing Requirements



Project:
Kirkmanshulme Lane, Manchester

Project-No:
51-699

Client:
Kellen Homes and
Jigsaw Homes North

e3p

Project Engineer: L Faulkner
Date: 26/03/2026