Noise Impact Assessment

Site: Former Apollo Pub, Miles Platting
Reference: 51-564-R1-2
Date: April 25



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EXECUTIVE SUMMARY

Site Address	Former Apollo Pub, Varley Street, Miles Platting M40 7NH
National Grid Reference	E 385814, N 399615.
Proposed Development	Proposed residential development across partial three and four storey block with car parking and landscaping.
Surveys Completed	E3P have undertaken an attended road traffic sound measurement for Varley Street during daytime and night-time rush hour periods. Furthermore, a full weekday and weekend background and ambient sound survey has been conducted on site to determine the impact of the nearby event premises and to establish baseline levels of noise at nearby receptors.
Assessments Completed	A 3D noise model has been constructed to assess road traffic sound across the site and incident upon facades. Road traffic is assessed in accordance with the criterion, for day and night, given in BS 8233:2014+A1:2019. Potential fixed plant items associated with the development are assessed in accordance with BS 4142:2014+A1:2019.
Mitigation Recommendations	The assessment has found that certain apartments overlooking Varley Street would require higher specification glazing. Proposed fixed plant noise emission limits have been set.
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 road traffic sound.

TABLE OF CONTENTS

EXECUTIVE SUMMARY 2

1. INTRODUCTION 4
   1.1. Background 4
   1.2. Report Objectives 4
   1.3. Proposed Development 4

2. ASSESSMENT METHODOLOGY 6
   2.1. National Planning Policy Framework (2024) 6
   2.2. National Planning Practice Guidance 6
   2.3. Building Regulations: Approved Document F – Volume 1: Dwellings (June 2022) 8
   2.4. Building Regulations: Approved Document O – Overheating (June 2022) 9
   2.5. Approved Document O Noise Guide (2024) 9
   2.6. British Standard BS 4142: 2014+A1:2019 - Methods for rating and assessing industrial and commercial sound 10
   2.7. British Standard BS 8233:2014+A1:2019 – Guidance on sound insulation and noise reduction for buildings 11

3. SURVEY RESULTS 13
   3.1. Road Traffic Sound Measurement 13
   3.2. Background Sound Survey and Wedding Venue on Varley Street 14

4. NOISE IMPACT ASSESSMENT 17
   4.1. External Amenity Area Noise Level Assessment 17
   4.2. Internal Noise Level Assessment 18
      4.2.1. Ventilation Condition 19
      4.2.2. Overheating Condition 19

5. PROPOSED COMMERCIAL NOISE IMPACT ASSESSMENT 20

6. MITIGATION 21
   6.1. Façade Insulation and Ventilation 21

7. CONCLUSIONS AND DISCUSSION 22

APPENDIX I LIMITATIONS 23

APPENDIX II GLOSSARY 25

APPENDIX III MEASURED SOUND PRESSURE LEVELS – NMP2 28

APPENDIX IV FIGURES 32

Figure List

Figure 1 – Proposed Site Plan
Figure 2 – Noise Measurement Positions Plan
Figure 3 – Daytime Grid Noise Map
Figure 4 – Night-time Grid Noise Map
Figure 5 – Night-time Part O Grid Noise Map

1. INTRODUCTION

1.1. BACKGROUND

E3P were commissioned by Jigsaw Homes Group Limited to undertake a Noise Impact Assessment for a proposed residential development at the site of the former Apollo Pub on Varley Street in Miles Platting, 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 associated with road traffic in accordance with criteria given in BS 8233.
- Assess the impact of potential commercial sound upon the existing and proposed receptors in accordance with BS 4142
- Provide advice on mitigation measures, where required.

1.3. PROPOSED DEVELOPMENT

The client intends to construct 31 residential units across a part 3 and 4 storey building with associated access roads, parking and landscaping.

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

Figure 1 Snapshot of Proposed Development



2. ASSESSMENT METHODOLOGY

2.1. NATIONAL PLANNING POLICY FRAMEWORK (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.

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

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

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

Table 2 BS 8233:2014 Recommended Internal Noise Levels

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

BS 8233 goes on to recommend noise levels for gardens:

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

BS 8233 goes on to say:

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

3. SURVEY RESULTS

E3P have attended site and undertaken attended and unattended measurements in order to consider all sound sources audible on site and that have the potential to impact future residents. Figure 2 below shows the measurement locations:

Figure 2 Noise Measurement Positions



3.1. ROAD TRAFFIC SOUND MEASUREMENT

E3P has conducted a Road Traffic Noise Survey to measure the level of noise along Varley Street. The survey was carried out over the following time periods in accordance with Calculation of Road Traffic Noise (CRTN):

- 10:00-13:00 Tuesday 25th February 2025; and
- 06:00-09:00 Friday 28th February 2025.

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

- Noise Measurement Position 1 (NMP1): Located adjacent to the development site on Varley Street, approximately 6 m from the roadside edge. 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 sound.

A summary of the measured sound pressure levels from the Road Traffic Noise Survey are presented in Table 3.

Table 3 Attended Road Traffic Noise Levels

Measurement start time	Measured sound pressure level (dB)			
	$L_{Aeq,T}$	10th Highest $L_{Amax,fast}$	$L_{A90,T}$	$L_{A10,T}$
10:00	62.8	76.1	50.8	67.2
11:00	62.7		51.8	67.0
12:00	62.2		51.0	65.5
06:00	60.4	75.5	44.5	64.9
07:00	63.0		49.1	67.7
08:00	63.9		50.6	68.5

The calculates 16 hour daytime noise levels from between 10:00 and 13:00 is noted to be 63.6 dB, with the derived night-time noise level of 55.2 dB.

However, the 06:00 measurement, considered worst-case night-time, is 60.4 dB. As such, this will be used in the assessment. Furthermore, the 10th highest measured noise level between 10:00 and 13:00 will be used.

3.2. BACKGROUND SOUND SURVEY AND WEDDING VENUE ON VARLEY STREET

Given the distance to the venue, more than 50 m, and that any noise break-out would be controlled to limit the impact of noise upon closer receptors facing the venue, this noise source is not considered. Indeed, to further support this the long-term background sound measurement position was placed to have line of sight to the venue to determine any noise break-out from the venue, i.e. music noise, and any increases in road traffic sound during the weekend, Friday night to Sunday which is noted to be the main operational periods, which would be attributable to the venue.

The survey was conducted during the following periods:

- 15:00-13:00 Thursday 6th March to 10:00 Tuesday 11th March 2025.

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

- Noise Measurement Position 2 (NMP2): Located in the northeastern corner of the site with line of sight to the venue and representative of the closest existing residential receptors. 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 sound.

A summary of the measured sound pressure levels from the Noise Survey are presented in Table 4.

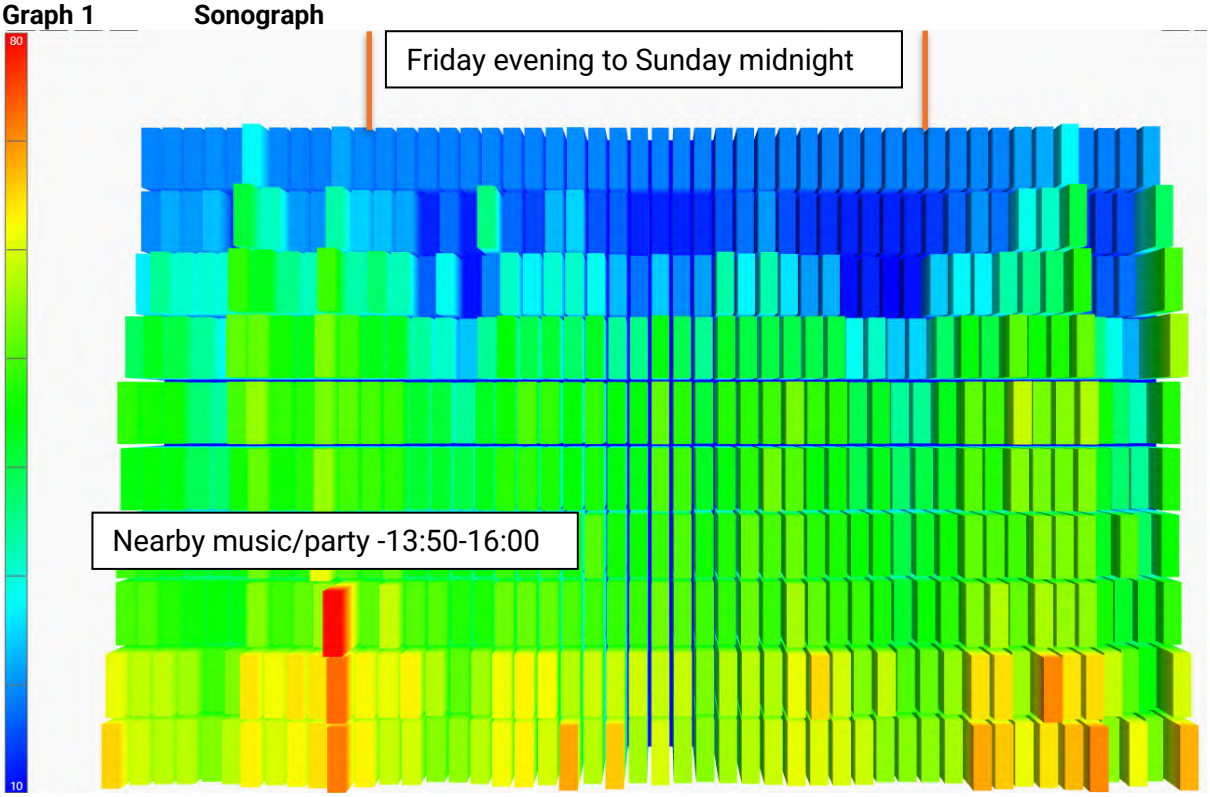
Table 4 Background and Ambient Sound Levels

Date	Assessment Period	Ambient Sound Level, $L_{Aeq,T}$ (dB)	Range of background sound levels, $L_{A90,T}$ (dB)	Median background sound level, $L_{A90,T}$ (dB)
Thursday 6th March	Daytime	51.7	45.2-49.1	48
	Night-time	49.7	37.9-49.1	43
Friday 7th March	Daytime	63.7*	43.1-50.1	48
	Night-time	46.4	39.7-44.8	42
Saturday 8th March	Daytime	50.8	43.9-47.6	47
	Night-time	46.5	40.8-44.3	42
Sunday 8th March	Daytime	49.5	42.1-46.9	44
	Night-time	46.2	38.8-46.3	40
Monday 9th March	Daytime	53.7	44.9-51.2	49
	Night-time	48.0	34.9-44.3	38

*this sound source is noted to be music break-out/party from the adjacent residential building. Sound sources at the venue would need to be in excess of 100 dB externally to be attributable to this source. Maximum noise levels were 86 dB, requiring levels in excess of 120 dB at the venue.

As can be seen, weekend noise levels do not exceed the weekday levels, suggesting road traffic sound is dominant. Furthermore, the sonograph below shows no low frequency sound, attributable to music break-out from Friday night to Sunday night. Blocks are 31.5 Hz along the bottom and up to 16 kHz along the top in octave bands

Graph 1 Sonograph



To allow a worst-case assessment, the car parking area will be input into the model and a noise break-out of 60 dB is assumed which relates to at least 90 dB internally given the façade composition to allow for worst-case assessments.

Weather conditions during the survey were conducive to the measurement of environmental noise. The equipment outlined in Table 5 was used for the noise survey.

Table 5 Noise Measurement Equipment and Calibration Dates

Measurement position	Equipment description	Manufacturer/ Type	Serial Nr	Calibration due date
NMP1	Sound Level Meter	Fusion	14226	7th December 2025
	Pre-amplifier	Pre22	2135072	
	Microphone	40CD	470570	
	Calibrator	CR 515	99204	8th August 2025
NMP2	Sound Level Meter	CR:171A	G303884	19th September 2025
	Pre-amplifier	MV:200F	12731F	
	Microphone	MK:224	215899D	
	Calibrator	CR:515	99403	

The sound level meters were 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 2024 MR1, to determine the impact of noise from road traffic sound.

The following inputs have been included in the model:

- Proposed Site Plan.
- Varley Street is calibrated using NMP1.
- Oldham Road is input using 24-hour road traffic flow data from the Department for Transport.
- Car park usage at the venue has been input into the noise model using the LfU Study option within CadnaA. The car park has been assumed to be at 100% capacity to inform a worst-case assessment.
- 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.
- Noise levels generated using ISO 9613-1 and ISO 9613-2 "*Acoustics – Attenuation of sound during propagation outdoors*" as incorporated into CadnaA software.

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

4.1. EXTERNAL AMENITY AREA NOISE LEVEL ASSESSMENT

It is noted on the plan that an outdoor seating/relaxation area is proposed in the northern area of the site. As such, the noise model has been used to predict noise levels in this area. The predicted levels range between 52 dB and up to 62 dB.

As such, it is predicted that noise levels are expected to exceed the 50-55 dB design range. However, it is noted that BS 8233 states:

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

BS 8233 goes on to say:

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

E3P note the potential for security issues along this boundary and a solid barrier may not be compatible with a railing/hedge combination likely. As such, the above predicted levels are considered the lowest practicable in this instance and in accordance with BS 8233.

It is also noted that ground and first floor apartments along Varley Street have terraces/balconies. Here, noise levels are expected to be up to 63 dB. E3P would apply the above rationale to these areas also.

Furthermore, advice is provided for balconies:

> *Other locations, such as balconies, roof gardens and terraces, are also important in residential buildings where normal external amenity space might be limited or not available, i.e. in flats, apartment blocks, etc. In these locations, specification of noise limits is not necessarily appropriate. Small balconies may be included for uses such as drying washing or growing pot plants, and noise limits should not be necessary for these uses. However, the general guidance on noise in amenity space is still appropriate for larger balconies, roof gardens and terraces, which might be intended to be used for relaxation. In high-noise areas, consideration should be given to protecting these areas by screening or building design to achieve the lowest practicable levels. Achieving levels of 55 dB LAeq,T or less might not be possible at the outer edge of these areas, but should be achievable in some areas of the space.*

Given that residents have access to the northern area and are within walking distance to Village Park and Sand Hills, the provision of noise limits for these areas is not considered necessary.

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 29 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 25 dB and so this value has been used to calculate internal noise levels.

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 for trains) to the relevant criterion for day (35 dB) and for night (30 dB). As such, any facades subject to noise levels higher than 60 dB during the day and/or 55 dB during the night will require higher specification glazing.

As can be seen from the figures, eastern facades on the four-storey building will exceed both the daytime and night-time noise limits and, therefore, higher specification glazing will be required for these apartments.

Standard double glazing is sufficient for the rest of the site.

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 (29 dB) has been added to the 45 dB maximum internal noise level limit. As, such facades subject to maximum noise levels above 74 dB will require higher specification glazing.

The maximum noise level at the worst affected facades is calculated to be 76 dB. This exceeds the criterion by 2 dB. As such, consideration to the R_w rating of the glazing is required for the same apartments as above.

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.

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 the Figure 5, north, east and south facing facades of the four storey building and southern facing facades of the three storey building exceed the limits above. As such, an overheating assessment in accordance with ADO is required which assesses overheating with the red highlighted windows closed at night.

5. PROPOSED COMMERCIAL NOISE IMPACT ASSESSMENT

It is considered that there is potential for proposed fixed plant items associated with the development site and be externally mounted.

As such, the following limits have been set, based on the measured background sound levels at NMP2. The limits are based on achieving rating levels of more than 5 dB below the background sound level:

- The rating level from all proposed fixed plant items should not exceed 39 dB during the day and 33 dB during the night at the closest residential receptors. The rating level should allow for acoustic features such as intermittency, tonality, etc.

6. MITIGATION

6.1. 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 across certain facades. Standard thermal double glazing being sufficient across the rest of the site.

Tables 9 the required glazing per façade. 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 9 Glazing Requirements - Dwellings

Facade	Required glazing reduction (dB)	Example glazing (glass/air space/glass) (mm)
Eastern Facades along Varley Street	30 dB $R_w + C_{t,r}$	10 / 16 / 4*

*Note that these glazing units need to achieve the denoted Rw values to control maximum noise level events during the night-time period (31 dB R_w).

7. CONCLUSIONS AND DISCUSSION

E3P have undertaken an attended road traffic sound measurement for Varley Street during daytime and night-time rush hour periods. Furthermore, a full weekday and weekend background and ambient sound survey has been conducted on site to determine the impact of the nearby event premises and to establish baseline levels of noise at nearby receptors.

A 3D noise model has been constructed to assess road traffic sound across the site and incident upon facades.

Road traffic is assessed in accordance with the criterion, for day and night, given in BS 8233:2014+A1:2019. Potential fixed plant items associated with the development are assessed in accordance with BS 4142:2014+A1:2019.

The assessment has found that certain apartments overlooking Varley Street would require higher specification glazing.

Proposed fixed plant noise emission limits have been set.

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

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 6 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 7 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 – NMP2



Measurement start time	Measured ambient sound level, $L_{Aeq,1hr}$ (dB)	Measured background sound level, $L_{A90,1hr}$ (dB)
06/03/2025 15:02	53.0	49.0
06/03/2025 16:00	51.4	48.1
06/03/2025 17:00	53.2	49.1
06/03/2025 18:00	52.3	48.6
06/03/2025 19:00	51.4	47.4
06/03/2025 20:00	50.0	46.5
06/03/2025 21:00	49.7	45.2
06/03/2025 22:00	51.0	46.0
06/03/2025 23:00	48.8	43.8
07/03/2025 00:00	46.0	41.4
07/03/2025 01:00	44.2	40.1
07/03/2025 02:00	46.9	38.4
07/03/2025 03:00	45.2	37.9
07/03/2025 04:00	51.6	45.1
07/03/2025 05:00	52.8	48.0
07/03/2025 06:00	52.7	49.1
07/03/2025 07:00	53.5	49.8
07/03/2025 08:00	55.4	50.1
07/03/2025 09:00	52.8	48.4
07/03/2025 10:00	57.9	48.2
07/03/2025 11:00	68.4	49.3
07/03/2025 12:00	69.5	47.6
07/03/2025 13:00	67.8	48.5
07/03/2025 14:00	67.8	49.7
07/03/2025 15:00	68.8	49.3
07/03/2025 16:00	53.1	47.5
07/03/2025 17:00	52.8	47.0
07/03/2025 18:00	52.6	47.3
07/03/2025 19:00	51.7	46.2
07/03/2025 20:00	50.7	45.7
07/03/2025 21:00	48.4	44.0
07/03/2025 22:00	47.3	43.1
07/03/2025 23:00	47.1	43.6
08/03/2025 00:00	47.4	42.9
08/03/2025 01:00	45.9	41.6
08/03/2025 02:00	43.5	40.1
08/03/2025 03:00	42.7	39.7
08/03/2025 04:00	44.6	40.2
08/03/2025 05:00	46.3	42.6
08/03/2025 06:00	49.5	44.8
08/03/2025 07:00	50.6	46.3
08/03/2025 08:00	50.4	46.5
08/03/2025 09:00	51.3	47.5
08/03/2025 10:00	51.7	46.5
08/03/2025 11:00	52.5	47.5
08/03/2025 12:00	50.8	46.9
08/03/2025 13:00	52.7	47.4
08/03/2025 14:00	52.2	47.6
08/03/2025 15:00	51.5	47.3
08/03/2025 16:00	50.9	46.8

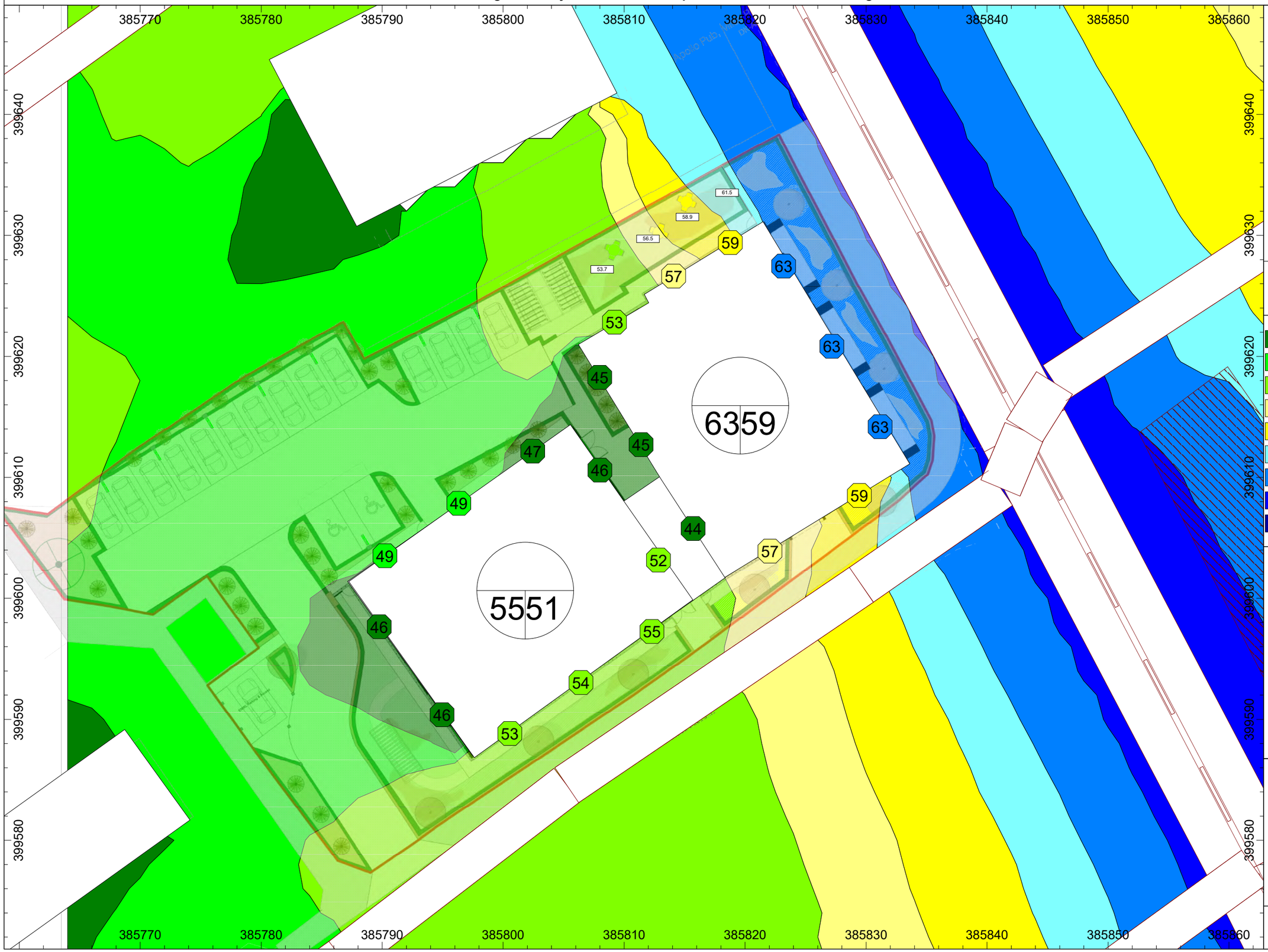
Measurement start time	Measured ambient sound level, $L_{Aeq,1hr}$ (dB)	Measured background sound level, $L_{A90,1hr}$ (dB)
08/03/2025 17:00	50.8	47.0
08/03/2025 18:00	49.5	45.9
08/03/2025 19:00	50.1	46.4
08/03/2025 20:00	48.9	45.6
08/03/2025 21:00	48.5	44.4
08/03/2025 22:00	47.7	43.9
08/03/2025 23:00	47.9	44.3
09/03/2025 00:00	47.4	44.2
09/03/2025 01:00	46.9	43.0
09/03/2025 02:00	45.7	42.2
09/03/2025 03:00	46.5	41.9
09/03/2025 04:00	44.4	40.8
09/03/2025 05:00	44.1	41.3
09/03/2025 06:00	47.8	42.4
09/03/2025 07:00	46.3	42.4
09/03/2025 08:00	46.6	42.1
09/03/2025 09:00	48.6	43.4
09/03/2025 10:00	48.6	44.2
09/03/2025 11:00	51.5	45.9
09/03/2025 12:00	51.2	46.0
09/03/2025 13:00	50.9	45.8
09/03/2025 14:00	50.9	46.9
09/03/2025 15:00	51.4	46.6
09/03/2025 16:00	49.4	45.5
09/03/2025 17:00	49.8	44.8
09/03/2025 18:00	49.9	44.1
09/03/2025 19:00	49.0	44.5
09/03/2025 20:00	49.0	44.3
09/03/2025 21:00	47.3	43.1
09/03/2025 22:00	46.8	42.8
09/03/2025 23:00	45.3	41.4
10/03/2025 00:00	44.2	40.4
10/03/2025 01:00	43.4	40.2
10/03/2025 02:00	42.0	38.8
10/03/2025 03:00	42.7	39.5
10/03/2025 04:00	43.9	39.1
10/03/2025 05:00	47.8	42.4
10/03/2025 06:00	51.2	46.3
10/03/2025 07:00	52.7	49.6
10/03/2025 08:00	52.6	48.9
10/03/2025 09:00	51.8	48.0
10/03/2025 10:00	53.7	48.8
10/03/2025 11:00	53.5	47.5
10/03/2025 12:00	54.9	48.1
10/03/2025 13:00	53.7	48.4
10/03/2025 14:00	54.2	50.7
10/03/2025 15:00	54.8	50.8
10/03/2025 16:00	56.8	51.2
10/03/2025 17:00	55.4	50.5
10/03/2025 18:00	54.3	49.4

Measurement start time	Measured ambient sound level, $L_{Aeq,1hr}$ (dB)	Measured background sound level, $L_{A90,1hr}$ (dB)
10/03/2025 19:00	53.5	49.5
10/03/2025 20:00	52.3	47.7
10/03/2025 21:00	50.2	45.2
10/03/2025 22:00	48.9	44.9
10/03/2025 23:00	48.2	44.3
11/03/2025 00:00	45.7	40.4
11/03/2025 01:00	52.8	38.9
11/03/2025 02:00	45.8	37.4
11/03/2025 03:00	43.0	35.2
11/03/2025 04:00	41.0	34.9
11/03/2025 05:00	46.3	37.9
11/03/2025 06:00	49.9	44.0
11/03/2025 07:00	51.9	47.4
11/03/2025 08:00	52.0	47.5
11/03/2025 09:00	70.8	47.1

APPENDIX IV
FIGURES



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



Project:
Apollo Pub,
Miles Platting

Project-No:
51-564

Client:
Jigsaw Homes

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

- vert. Area Source
- Road
- Parking Lot
- Building
- Barrier
- Building Evaluation
- Calculation Area

e3p

Project Engineer: L Faulkner
Date: 28/04/2025

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



Project:
Apollo Pub,
Miles Platting

Project-No:
51-564

Client:
Jigsaw Homes

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

- vert. Area Source
- Road
- Parking Lot
- Building
- Barrier
- Building Evaluation
- Calculation Area

e3p

Project Engineer: L Faulkner
Date: 28/04/2025

Figure 5 - Night-time Part O Requirements - Red facades require windows closed at night



Project:
Apollo Pub,
Miles Platting

Project-No:
51-564

Client:
Jigsaw Homes

Predicted Noise Level, LAeq,T (dB)

... <= 50.0
50.0 < ...

Noise Map Objects

- vert. Area Source
- Road
- Parking Lot
- Building
- Barrier
- Building Evaluation
- Calculation Area

e3p

Project Engineer: L Faulkner
Date: 28/04/2025