

NOISE IMPACT ASSESSMENT

Proposed Residential Development

Land off Tan Yard Brow, Gorton

Issue Date: 11 June 2025

QUALITY ASSURANCE & REPORT INFORMATION

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EXECUTIVE SUMMARY

This Assessment has shown that the daytime noise level in the proposed outdoor amenity and seating area falls below the adopted 55dB $L_{Aeq,16hr}$ noise criteria level and as such, no noise mitigation measures are required.

This Assessment has determined the required sound insulation performance requirements for the glazing for living rooms and bedrooms. Additionally, this assessment has determined the appropriate alternative ventilation system for habitable rooms.

This Assessment has shown that the rated level of noise generated by operations at Hyde Rd Aggregates falls below the adopted background sound level and so there is no requirement to consider noise mitigation measures.

In summary, the future noise climate at the Development can be controlled through appropriate noise mitigation measures to meet acceptable noise levels in both internal and external amenity areas which will accord with the 'No Observed Adverse Effect Level' as detailed in the PPG and as such noise should not be deemed to be a determining factor in the granting of planning permission for this Site.

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1 INTRODUCTION

1.1 Appointment

- 1.1.1 Professional Consult Limited was instructed by John Stephens & Co to prepare a Noise Impact Assessment ('the Assessment') in support of a proposed residential development ('the Development') on land to the east of Tan Yard Borow in Gorton, Manchester M18 to be referred to hereafter as 'the Site'.

1.2 Purpose of Assessment

- 1.2.1 The Site is likely to be impacted by noise from vehicles using the A57 Hyde Road to the south and Tan Yard Brow to the west. Noise is also potentially audible from Hyde Road Aggregates to the west of the Site and as such, it is expected that Manchester City Council will require a Noise Impact Assessment to accompany the scheme planning application.
- 1.2.2 Accordingly, this Assessment has been completed with due regard to the National Planning Policy Framework and its associated National Planning Policy Guidance in addition to appropriate British Standards and guidance documents relevant to the assessment of noise impacts.
- 1.2.3 All acronyms used within this report are defined in the Glossary presented in Appendix 2.

1.3 The Development

- 1.3.1 Construction of 25 dwellings (Use Class C3), including a mix of apartments and cottages, creation of a new access point and provision of landscaping.

1.4 The Site, Locality & Soundscape

- 1.4.1 The Site comprises of open land and is bound by Tan Yard Brow to the west with Hyde Road Aggregates beyond, Gore Brook to the north, the Fallowfield Loop foot and cycle path to the east and the A57 Hyde Road to the south.
- 1.4.2 The soundscape across the Site is comprised predominantly of road traffic noise with intermittent noise from operations at Hyde Road Aggregates, which can operate from 07:00 – 17:00, Monday – Saturday.

1.5 Limitations

- 1.5.1 The limitations of this report are presented in Appendix 1.

1.6 Confidentiality

- 1.6.1 Professional Consult has prepared this report solely for the use of the Client. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from Professional Consult; a charge may be levied against such approval.

2 POLICY & GUIDANCE

2.1 National Planning Policy Framework & National Planning Practice Guidance

- 2.1.1 The Government updated the National Planning Policy Framework (NPPF) on 7th February 2025 and its associated National Planning Practice Guidance (NPPG) on 14th February 2024. Together, the NPPF and NPPG set out what the Government expects of local authorities. The overall aim is to ensure the planning system allows land to be used for new homes and jobs, while protecting valuable natural and historic environments.
- 2.1.2 The NPPG adds further context to the NPPF and it is intended that the two documents should be read together.
- 2.1.3 Noise needs to be considered when development may create additional noise, or would be sensitive to the prevailing acoustic environment (including any anticipated changes to that environment from activities that are permitted but not yet commenced). When preparing plans, or taking decisions about new development, there may also be opportunities to make improvements to the acoustic environment. Good acoustic design needs to be considered early in the planning process to ensure that the most appropriate and cost-effective solutions are identified from the outset.
- 2.1.4 Plan-making and decision making need to take account of the acoustic environment and in doing so consider:
- whether or not a significant adverse effect is occurring or likely to occur;
 - whether or not an adverse effect is occurring or likely to occur; and
 - whether or not a good standard of amenity can be achieved.
- 2.1.5 In line with the Explanatory note of the noise policy statement for England, this would include identifying whether the overall effect of the noise exposure (including the impact during the construction phase wherever 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. As noise is a complex technical issue, it may be appropriate to seek experienced specialist assistance when applying this policy.
- 2.1.6 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; and
 - 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.
- 2.1.7 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
No Observed Effect Level			
Not present	No Effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Present & 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			
Present & Intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. 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			
Present & disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. 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
Present & 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, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

2.1.8 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 particular situation.

2.1.9 These factors include:

- 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 – this is because people tend to be more sensitive to noise at night as they are trying to sleep. The adverse effect can also be greater simply because there is less background noise at night;
- for a new noise making source, how the noise from it relates to the existing sound environment;
- for non-continuous sources of noise, the number of noise events, and the frequency and pattern of occurrence of the noise;
- the spectral content of the noise (i.e. whether or not the noise contains particular high or low frequency content) and the general character of the noise (i.e. whether or not the noise contains particular tonal characteristics or other particular features), and

- the local arrangement of buildings, surfaces and green infrastructure, and the extent to which it reflects or absorbs noise.

2.1.10 More specific factors to consider when relevant include:

- the cumulative impacts of more than one source of noise;
- whether any 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 (and the effect this may have on living conditions). In both cases a suitable alternative means of ventilation is likely to be necessary. Further information on ventilation can be found in the Building Regulations;
- In cases where existing noise sensitive locations already experience high noise levels, a development that is expected to cause even a small increase in the overall noise level may result in a significant adverse effect occurring even though little to no change in behaviour would be likely to occur;
- Noise Action Plans (where these exist), and, in particular the Important Areas identified through the process associated with the Environmental Noise Directive and corresponding regulations should be taken into account. Defra's website has information on Noise Action Plans and Important Areas. Local authority environmental health departments will also be able to provide information about Important Areas;
- the effect of noise on wildlife. Noise can adversely affect wildlife and ecosystems. Particular consideration needs to be given to the potential effects of noisy development on international, national and locally designated sites of importance for biodiversity;
- where external amenity spaces are an intrinsic part of the overall design, the acoustic environment of those spaces should be considered so that they can be enjoyed as intended; and
- some commercial developments including restaurants, hot food takeaways, night clubs and public houses can have particular impacts, not least because activities are often at their peak in the evening and late at night. Local planning authorities will wish to bear in mind not only the noise that is generated within the premises but also the noise that may be made by customers in the vicinity.

2.2 BS8233:2014 'Guidance on sound insulation and noise reduction for buildings'

Noise Criteria Limits

2.2.1 The scope of this standard is the provision of recommendations for the control of noise in and around buildings. 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.

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

Table 2. BS8233:2014 Internal Target Noise Levels

Criterion	Typical Situation	Design $L_{Aeq,T}$ (dB)
Suitable resting / sleeping conditions	Living Room	35

	Bedroom*	30
*For a Reasonable standard in bedrooms at night, individual noise evens (measured with fast time weighting) should not exceed 45dB L _{max}		

2.2.3 BS8233 goes on to recommend noise levels for gardens as follows:

"It is desirable that the external noise level does not exceed 50dB L_{Aeq,T}, with an upper guideline value of 55dB 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".

2.2.4 BS8233 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".

2.2.5 With regards to external noise within balcony areas, BS8233: 2014 provides the following advice:

"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"

Ventilation Requirements

2.2.6 Where a partially open window cannot be relied upon to provide an adequate level of facade sound insulation performance, it is necessary to consider alternative ventilation for habitable rooms. Section 8.4.5.4 within BS8233 states:

"The Building Regulations' supporting documents on ventilation [48, 49, 50] recommend that habitable rooms in dwellings have background ventilation. Where openable windows cannot be relied upon for this ventilation, trickle ventilators can be used and sound attenuating types are available. However, windows may remain openable for rapid or purge ventilation, or at the occupant's choice.

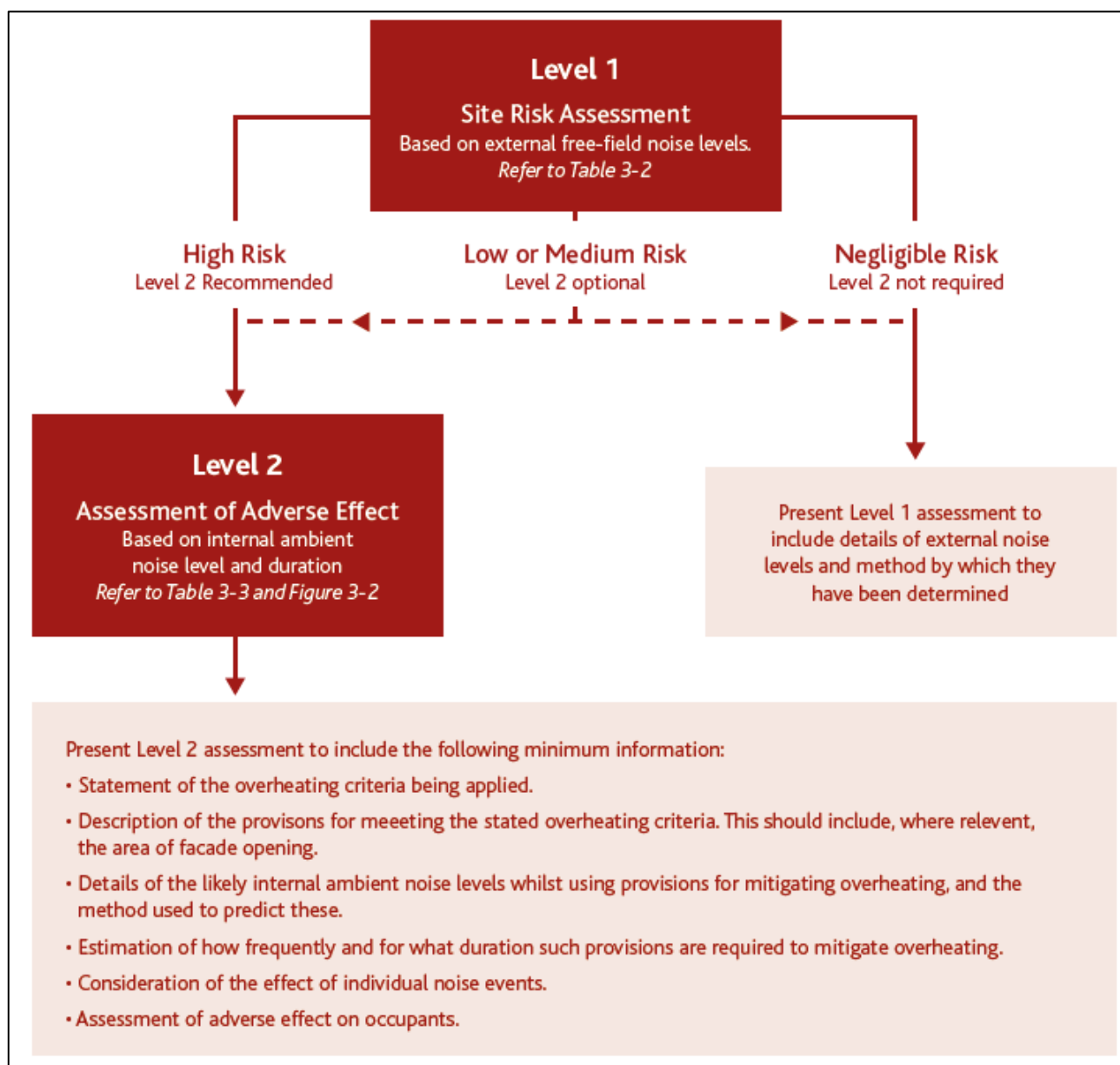
Alternatively, acoustic ventilation units (see 7.7.2 below) are available for insertion in external walls. These can provide sound reduction comparable with double glazed windows. However, ducted systems with intakes on the quiet side of the building might be required in very noisy situations, or where appearance rules out through-the-wall fans."

Section 7.7.2 states:

"NOTE 5 If relying on closed windows to meet the guide values, there needs to be an appropriate alternative ventilation that does not compromise the façade insulation or the resulting noise level."

2.3 INSTITUTE OF ACOUSTICS AND ASSOCIATION OF NOISE CONSULTANTS (2020) ACOUSTICS VENTILATION & OVERHEATING: RESIDENTIAL DESIGN GUIDE

2.3.1 The Acoustics Ventilation and Overheating (AVO) Residential Design Guide provides an approach as to how the competing aspects of thermal and acoustic comfort can be managed. The AVO Guide aims to assist designers to adopt an integrated approach to the acoustic design within the context of the ventilation and thermal comfort requirements. The AVO Guide provides a method for assessing the impact of opening windows and providing whole house ventilation due to the impact of noise via a two-level noise assessment procedure, as below:



2.3.2 A level 1 risk assessment is based on external free-field noise levels with the assumption of a partially opened window in use for mitigation of overheating. A level 1 assessment is appropriate for scenarios where the risk to a development is deemed 'Negligible'. 'Low' and 'Medium' risk sites only require a level 2 assessment on an optional basis in order to give further confidence in the suitability of internal noise conditions.

2.3.3 The noise levels suggested in Tables 3 and 4 assume steady road traffic noise source but can be adapted for other transport sources.

Table 3. Guidance for Level 1 Site Risk Assessment for Transportation Noise Sources Relating to Overheating Condition

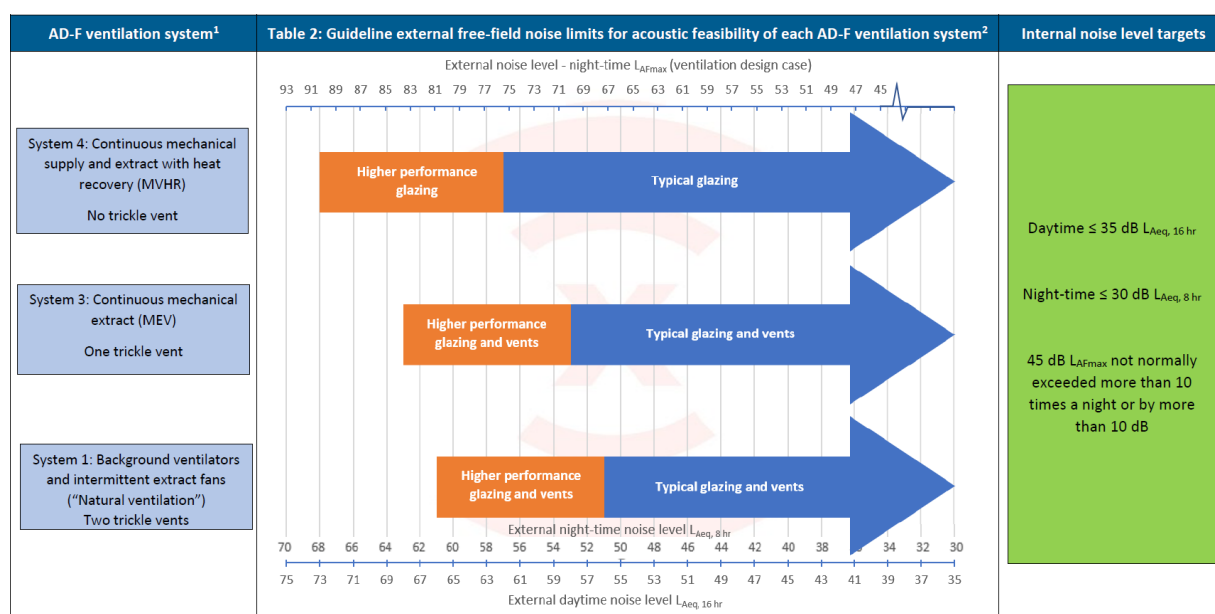
Risk Category for Level 1 Assessment - External		Risk Level	Potential Effect Without Mitigation	Recommendation for Level 2 Assessment
Daytime Noise Level, $L_{Aeq,t}$ (07:00 – 23:00)	Night-time Noise Level, $L_{Aeq,t}$ (23:00 – 07:00)			
≥ 65 dB	≥ 55 dB	High	Increasing risk of adverse effect	Recommended
> 55 dB & < 63 dB	> 45 & < 55 dB	Medium		Optional
> 50 dB & < 55 dB		Low		
≤ 50 dB	≤ 45 dB	Negligible	Use of opening windows as means of mitigating overheating is not likely to result in in adverse effect	Not required

2.3.4 A level 2 assessment will be carried out when the risk of adverse effect is 'High' or it is deemed appropriate for a 'low' or 'medium' risk site. An increase in internal ambient noise level can cause a change in human behaviour. At high levels this creates situations where occupants can no longer open windows for ventilation due to high external noise levels. A level 2 assessment identifies these situations and allows for appropriate alternative ventilation systems to be recommended.

Table 4. Guidance for Level 2 Assessment of Noise from Transport Noise Sources Relating to Overheating Condition

Internal Ambient Noise Level			Example of Outcome
Daytime $L_{Aeq,t}$ (07:00 – 23:00)	Night-time $L_{Aeq,t}$ (23:00 – 07:00)	Individual Noise Events During 23:00 – 07:00	
> 50 dB	> 42 dB	Normally exceeds 65dB $L_{Af,max}$	Noise causes a material change in behaviour eg. having to keep windows closed most of the time
Increasing noise level			Increasing the likelihood of impact on reliable speech communication during the daytime or sleep disturbance at night

2.3.5 The Table below details guideline external free-field noise limits and determines the appropriate AD-F ventilation system (Systems 1 – 4).



Approved Document O of the Building Regulations 2022

2.3.6 This approved document supports Part O of Schedule 1 to the Building Regulations 2010 and took effect on 15th June 2022 for use in England.

2.3.7 Section 3 of the approved document details the requirements for noise ingress into a bedroom and states the following:

'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).

Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.

- a. 40dB $L_{Aeq,T}$, averaged over 8 hours (between 11pm and 7am); and
- b. 55dB L_{AFmax} , more than 10 times a night (between 11pm and 7am).'

2.3.8 The above internal noise criteria levels are higher than those presented in BS8233:2014 and so the trigger point for alternative ventilation for bedrooms, where required, will be dictated primarily by the assessment which considers compliance with the BS8233:2014 internal noise criteria levels. Nevertheless, compliance with the above noise criteria levels will be observed where the internal average and maximum noise levels with a partially open window, or where recommended appropriate alternative ventilation for the bedroom, results in noise levels not exceeding the above noise criteria levels.

Information for the SAP Assessor

2.3.9 With regards to windows being opened, BS8233:2014 refers to a partially open window and so for the purposes of AD-O and Standard Assessment Procedure (SAP) calculations a 'partially open' window should be taken as being 'fully open' for SAP calculations. Furthermore, windows of habitable rooms are never recommended to be 'sealed closed', ie a resident has the option to open a habitable room window at their discretion and not use any recommended alternative ventilation. Accordingly, for the purposes of SAP calculations, windows should be modelled as open to inform a worst-case SAP Assessment.

2.4 BS4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'

2.4.1 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.

2.4.2 The procedure detailed in the standard compares the measured or predicted noise level 'the specific noise level' from any of the above detailed noise sources 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.'

2.4.3 The specific noise level also acknowledges the following reference time intervals depending upon whether the noise source operates during daytime or night-time periods:

- Daytime (07:00 - 23:00): 1 hour; and
- Night-time (23:00 - 07:00): 15 minutes.

2.4.4 There are a number of 'penalties' which can be attributed to the specific sound level, either subjectively or objectively, depending upon the 'acoustic features' of the sound level under investigation as follows. These penalties vary in their weighting depending upon the severity of the acoustic feature, as follows (with regards to the subject method):

Tonality

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

Impulsivity

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

Intermittency

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

2.4.5 Where the assessment is carried out using the objective method, the tonality penalty is either 0dB or 6dB and the impulsivity penalty can range from 0dB up to 9dB in increments of 1dB, depending on the level of impulsivity identified.

2.4.6 In addition to the above acoustic features, there is a penalty for 'other sound characteristics' of +3dB where a sound exhibits characteristics that are neither tonal nor impulsive, though is readily distinctive against the acoustic environment.

2.4.7 BS4142 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.

2.4.8 Assessment of the rating level relative to the background noise 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 +10dB or more is likely to be an indication of a significant adverse impact, depending on the context;
- A difference of around +5dB 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.

2.4.9 Whilst the amended 2019 Standard does make various references to it not being intended to assess noise impacts at indoor locations, section 1.1 does state 'The methods described in this British Standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident'. Example 6 in the Standard states 'In addition to the rating/background sound level comparison shown in Table A.6, the primary concern is the potential for disturbance of residents who could be sleeping with open bedroom windows. Other guidance, such as BS 8233, might also be applicable in this instance'.

2.4.10 With the above in mind, and for a clear need to ensure that any potential commercial or industrial noise impacts at the building façade do not give rise to internal noise level which causes sleep disturbance in bedrooms, this Assessment will ensure that the predicted rating level (specific sound level including any character corrections) does not exceed 30dB in bedrooms.

2.5 Local Authority Guidance and Criteria – Manchester City Council's Environmental Health Department

2.5.1 Consultation was provided to Manchester City Council on 9th September 2024, which stated:

'We have been appointed by a client to undertake a noise impact assessment in support of a residential development on a parcel of land located off Tan Yard Brow in Gorton.

A review of aerial photography indicates that the main sources of noise in the vicinity of the Site are the A57 to the south and Hyde Rd Aggregates to the west.

Professional Consult will complete the following noise surveys:

1.Noise Measurement Position 1: *A 3hr road traffic noise measurement will be undertaken for road traffic movements on the A57 in line with the guidance provided in Calculation of Road Traffic Noise (CRTN);*

2.Noise Measurement Position 2: *A noise measurement will be undertaken for any activity associated with Hyde Rd Aggregates to the west of the Site; and*

3.Noise Measurement Position 3: *A background sound survey will be undertaken on the Site in the absence of any commercial sound.*

Professional Consult will complete the following assessment:

4.Road Traffic Noise: *An assessment of road traffic noise will be completed in line with the guidance and noise criteria levels presented in BS8233:2014; and*

5.Commercial Noise: *An assessment of all audible commercial noise will be assessed in line with the criteria presented in BS4142:2014+A1:2019.*

Where exceedances of any noise criteria are identified, Professional Consult will recommend appropriate and reasonable noise mitigation measures to ensure that the noise level criteria will not be exceeded at the proposed residential dwellings.

If you have any comments, then please do advise at your earliest convenience.

2.5.2 At the time of issuing this Assessment, no response had been received.

3 NOISE SURVEYS

3.1 Commercial Noise Survey – Hyde Road Aggregates

3.1.1 Professional Consult has completed noise measurements as follows:

- **Noise Measurement Position 1:** Located at 4m from the nearside kerbstone of Tan Yard Brow between 12:15 – 15:15 on 23rd October and 07:00 – 11:00 on 24th October 2024 in free-field conditions. Noise sources at the measurement position comprised of road traffic movements along Tan Yard Brow and intermittent noise from Hyde Road Aggregates. The coding feature was used on the sound level meter in order to separate-out commercial noise from road traffic noise. Noise from Hyde Road Aggregates comprised of HGV movement and use of an angle grinder in the yard area which was located approximately 36m from the microphone location.

3.1.2 It was not possible to undertake a dedicated long-term unattended background sound survey on the Site due to security concerns.

3.1.3 Table 5 presents the measured commercial noise levels and the measured background sound level during the periods when commercial noise was not audible.

Table 5. Measured Noise Levels

Period Start Time	Measured Commercial Noise Level, $L_{Aeq,T}$ (dB)	Commercial Noise 'On-time' Duration During 1hr Period (hh:mm:ss)	Measured Background Noise Level When Commercial Noise not Measured, $L_{A90,T}$ (dB)
23/10/2024 12:14	56.2	00:00:05	50.3
23/10/2024 13:14	-	00:00:00	
23/10/2024 14:14	61.1	00:03:49	
23/10/2024 15:14	-	00:00:00	
24/10/2024 07:02	47.7	00:04:45	41.3
24/10/2024 08:02	50.1	00:08:19	
24/10/2024 09:02	46.4	00:00:10	
24/10/2024 10:02	47.8	00:09:02	

3.2 Road Traffic Noise Survey – Tan Yard Brow

3.2.1 Professional Consult has completed noise measurements as follows:

- **Noise Measurement Position 1:** Located at 4m from the nearside kerbstone of Tan Yard Brow between 12:15 – 15:15 on 23rd October 2024 in free-field conditions. Noise sources at the measurement position comprised of road traffic movements along Tan Yard Brow. The coding feature was used on the sound level meter in order to separate-out commercial noise from road traffic noise

3.2.2 Table 6 summarises the measured road traffic noise levels at the microphone location.

Table 6. Summary of Measured Road Traffic Noise Levels

Table 3: Summary of Measured Road Frame Noise Levels				
Noise Measurement Position	Period	Measured Sound Pressure Level (dB)		
		L _{Aeq,1hr}	L _{A10,1hr}	L _{Amax,fast}
1	23/10/2024 12:15	61.1	65.1	77.2*
	23/10/2024 13:15	61.4	65.6	
	23/10/2024 14:15	61.2	66.0	
*10 th highest L _{Amax,fast}				

3.3 Road Traffic Noise Survey – A57 Hyde Rd

3.3.1 Professional Consult has completed noise measurements as follows:

- **Noise Measurement Position 2:** Located at 15m from the nearside kerbstone of the A57 between 11:00 – 14:00 on 23rd October 2024 in free-field conditions. Noise sources at the measurement position comprised of road traffic movements on the A57 only.

3.3.2 Table 7 summarises the measured road traffic noise levels at the microphone location.

Table 7. Summary of Measured Road Traffic Noise Levels

Noise Measurement Position	Period	Measured Sound Pressure Level (dB)		
		L _{Aeq,1hr}	L _{A10,1hr}	L _{Amax,fast}
2	23/10/2024 11:00	67.8	66.7	78.5*
	23/10/2024 12:00	65.4	67.2	
	23/10/2024 13:00	64.5	66.7	
*10 th highest L _{Amax,fast}				

3.4 Noise Survey Equipment

3.4.1 The following equipment was used for the noise surveys.

Table 8. Noise Measurement Equipment

Measurement Position	Equipment Description	Manufacturer & Type No	Serial No.	Calibration Due Date
NMP1	Sound Level Meter	01dB Fusion	11755	28 June 2026
	Pre-amplifier	01dB PRE22	1707173	

	Microphone	GRAS 40CE	291693	
	Calibrator	01dB CAL-31	84086	27 June 2025
NMP2	Sound Level Meter	01dB Fusion	12038	14 March 2025
	Pre-amplifier	01dB PRE22	2113007	
	Microphone	GRAS 40CE	330801	
	Calibrator	01dB CAL-31	87280	27 June 2025

3.4.2 The sound level meters were field calibrated prior to and following the noise surveys and there was no drift beyond the allowable limit of 1dB.

3.4.3 Table 9 indicates a summary of the measured weather conditions.

Table 9. Range of Measured Wind Speeds

Period	Range of Measured Wind Speeds (m/s)	Rainfall Recorded?
All periods	0 – 0.6	No

4 NOISE IMPACT ASSESSMENT

4.1 Road Traffic – A57 & Tan Yard Brow

4.1.1 For the purposes of this assessment, the daytime and night-time average ($L_{Aeq,T}$) noise levels have been calculated based on the shortened measurement procedure detailed in CRTN. The respective daytime and night-time noise levels have been calculated using the following formulas:

- Calculation of the $L_{A10,18hr}$ noise level by using the following formula:

$$L_{10,18hr} = L_{10,3hr} - 1dB$$

- Calculation of the $L_{Aeq,16hr}$ noise level by using the following formula:

$$L_{eq,16hr} = L_{10,18hr} - 2dB$$

- Calculation of the night-time $L_{Aeq,8hr}$ noise level by using the following formula:

$$L_{night} (L_{eq,8hr}) = (0.90 \times L_{10,18hr}) - 3.77dB$$

4.1.2 Table 10 calculates the daytime and night-time noise levels.

Table 10. Calculation of Road Traffic Noise Levels

Measurement Position	Period	Calculated $L_{Aeq,t}$ (dB)	10 th Highest Measured $L_{Amax,fast}$ (dB)	Distance from Centre of Road (m)
NMP1	Daytime (07:00 – 23:00)	62.6	-	6
	Night-time (23:00 – 07:00)	54.3	77.2	
NMP2	Daytime (07:00 – 23:00)	63.9	-	18.5
	Night-time (23:00 – 07:00)	55.5	78.5	

4.1.3 For the purposes of this Assessment, Professional Consult has used noise modelling software CadnaA to determine the impact of road traffic noise at the proposed residential dwellings. A noise model has been constructed in order to calculate façade noise levels and external noise levels in amenity areas.

4.1.4 The following inputs have been included in the model:

- Proposed Scheme Layout;
- Site elevations have been taken as existing using 1m contours;
- Existing buildings or features that provide shielding from the road have been included in the model;
- Noise Measurement Positions 1 and 2 have been used in order to calibrate the noise model;
- A floor height of 2.5m has been taken for all proposed dwellings;

- A reflection order of 2 has been used in all calculations; and
- Noise levels generated using ISO 9613-1 and ISO 9613-2 “Acoustics – Attenuation of sound during propagation outdoors” as incorporated into CadnaA software.

External Noise Impact in Garden Areas of Proposed Dwellings

- 4.1.5 In order to assess noise levels in external amenity areas across the Site, a grid noise map was calculated in the noise model and this can be seen in Figure 1 of Appendix 4.
- 4.1.6 The grid noise map shows that the outdoor seating area and amenity space has noise levels between 48dB – 51dB $L_{Aeq,16hr}$ which falls below the adopted 55dB $L_{Aeq,16hr}$ noise criteria level applicable for urban areas and as such there is no requirement to consider noise mitigation measures.

Internal Noise Impact for Proposed Dwellings

- 4.1.7 With regards internal noise levels, BS8233:2014 suggests that standard thermal double glazing will afford 33dB R_w of sound reduction, however this is for the pink noise spectrum and the same configuration will afford 30dB R_w+C_{tr} for average noise levels from road traffic noise and so this value has been used to calculate internal noise levels. With regard to the maximum noise level ($L_{Amax,fast}$), the value of 33dB R_w has been used. The AVO Residential Design Guide states that a partially open window provides approximately 13dB of attenuation.
- 4.1.8 Professional Consult uses a library database of glazing configurations issued by Saint Gobain and the glazing configuration 6mm glass / 12mm air space / 6mm glass affords 30dB $R_w + C_{tr}$ and 33dB R_w respectively.
- 4.1.9 Appendix 5 calculates the average daytime noise levels, for living rooms, at the various facades of the plots and determines the requirement for upgraded glazing or alternative ventilation.
- 4.1.10 Appendix 6 calculates the average and maximum night-time noise levels, for bedrooms, at the various facades of the plots and determines the requirement for upgraded glazing or alternative ventilation.
- 4.1.11 Appendices 8 and 9 provide example alternative ventilation systems and glazing sound reduction performance specifications.

4.2 Commercial Noise – Hyde Road Aggregates

- 4.2.1 It is understood that Hyde Road Aggregates can operate from 07:00 – 17:00, Monday to Saturday with no night-time operations.
- 4.2.2 The measured noise sources at Hyde Road Aggregates comprised of HGV movements and use of an angle grinder in the yard area.
- 4.2.3 The measured commercial noise levels need to be time-averaged to 1hr noise levels as per the requirement of BS4142:2014+A1:2019 which is the reference period for daytime.

Table 11. Correction of Measured Noise Levels to $L_{Aeq,1hr}$ Noise Levels

Period Start Time	Measured Commercial Noise Level, $L_{Aeq,T}$ (dB)	Commercial Noise ‘On-time’ Duration During 1hr Period (hh:mm:ss)	Calculated Noise Level, $L_{Aeq,1hr}$ (dB)
23/10/2024 12:14	56.2	00:00:05	27.6

23/10/2024 13:14	-	00:00:00	-
23/10/2024 14:14	61.1	00:03:49	49.1
23/10/2024 15:14	-	00:00:00	-
24/10/2024 07:02	47.7	00:04:45	36.7
24/10/2024 08:02	50.1	00:08:19	41.5
24/10/2024 09:02	46.4	00:00:10	20.8
24/10/2024 10:02	47.8	00:09:02	39.6

4.2.4 The calculated $L_{Aeq,1hr}$ noise levels need to be distance corrected from the microphone location, which was approximately 36m from the centre of the yard area, to the outdoor amenity and seating area which is 80m from the centre of the yard. The distance corrected noise levels are presented in Table 12.

Table 12. Distance Corrected Noise Levels to Outdoor Amenity Area

Period Start Time	Measured Commercial Noise Level, $L_{Aeq,T}$ (dB)	Commercial Noise 'On-time' Duration During 1hr Period (hh:mm:ss)	Calculated Noise Level, $L_{Aeq,1hr}$ (dB)	Measurement Distance (m)	Distance from Yard Area to Outdoor Amenity Area (m)	Calculated Noise Level at Outdoor Amenity Area, $L_{Aeq,1hr}$ (dB)
23/10/2024 12:14	56.2	00:00:05	27.6	36	80	20.7
23/10/2024 13:14	-	00:00:00	-	36	80	-
23/10/2024 14:14	61.1	00:03:49	49.1	36	80	42.2
23/10/2024 15:14	-	00:00:00	-	36	80	-
24/10/2024 07:02	47.7	00:04:45	36.7	36	80	29.8
24/10/2024 08:02	50.1	00:08:19	41.5	36	80	34.6
24/10/2024 09:02	46.4	00:00:10	20.8	36	80	13.9
24/10/2024 10:02	47.8	00:09:02	39.6	36	80	32.7

4.2.5 The following has been considered in determining if any acoustic features exist in the predicted noise level at the closest residential receptors:

- Tonality - In determining if any tones exist in the measured noise levels, the methodology set out in BS4142:2014 has been followed using the objective method – either a 0dB penalty is allocated where no tones are present or 6dB penalty is allocated where tonality is present;

- Impulsivity – in determining if any impulsiveness is evident in the measured noise levels, the methodology set out in BS4142:2014 has been followed using the objective method which can result in a penalty from 0dB to 9dB being allocated depending upon the extent of impulsiveness;
- Intermittency – whether or not the measured operations turn on or off during the (1hr) assessment period; and
- Other sound characteristics – where no penalties are allocated for the above features, but there will be an audible noise at the closest receptor.

4.2.6 Table 13 applies appropriate character corrections.

Table 13. Applicable Character Corrections

Measured Noise Source	Tonality	Impulsivity	Intermittency	Other Sound Characteristics	Comments
HGVs in Yard Area	0	0	3	0	Noise sources were noted as being intermittent.
Angle Grinder	0	0	3	0	
Highest Correction for Assessment Period	0	0	3	0	
Overall Correction to be added to Specific Noise	3dB				

4.1.1 Table 14 calculates the rated level of noise at the outdoor amenity and seating area.

Table 14. Calculation of Rated Noise Level & BS4142 Assessment

Period Start Time	Calculated Noise Level at Outdoor Amenity Area, $L_{Aeq,1hr}$ (dB)	Character Correction (dB)	Calculated Rated Level (dB)	Measured Background Sound Level for Period, $L_{A90,T}$ (dB)	Difference +/- (dB)
23/10/2024 12:14	20.7	3	23.7	50.3	-26.6
23/10/2024 13:14	-	-	-	-	-
23/10/2024 14:14	42.2	3	45.2	50.3	-5.1
23/10/2024 15:14	-	-	-	-	-
24/10/2024 07:02	29.8	3	32.8	41.3	-8.5
24/10/2024 08:02	34.6	3	37.6	41.3	-3.7
24/10/2024 09:02	13.9	3	16.9	41.3	-24.4
24/10/2024 10:02	32.7	3	35.7	41.3	-5.6

4.1.2 Table 14 indicates that the rated level of noise does not exceed the measured background sound level for any of the measured periods and BS4142:2014+2019 provides the following advice for this outcome:

'Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.'

4.1.3 In addition to the consideration of noise levels in the outdoor amenity area, it is also necessary to consider noise levels within living rooms of the closest proposed dwellings (Block B) to Hyde Road Aggregates, with living room windows closed and open. The façade of the closest proposed dwelling is in the same location as NMP1.

Table 15. Calculation of Internal Noise Level – Windows Closed

Period Start Time	Calculated Noise Level at Outdoor Amenity Area, $L_{Aeq,1hr}$ (dB)	Sound Reduction Performance of Closed Window (dB)	Calculated Internal Noise Level, $L_{Aeq,T}$ (dB)	Noise Criteria Level for Living Rooms (dB)	Difference +/- (dB)
23/10/2024 12:14	56.2	30	26.2	35	-8.8
23/10/2024 13:14	-	-	-	-	-
23/10/2024 14:14	61.1	30	31.1	35	-3.9
23/10/2024 15:14	-	-	-	-	-
24/10/2024 07:02	47.7	30	17.7	35	-17.3
24/10/2024 08:02	50.1	30	20.1	35	-14.9
24/10/2024 09:02	46.4	30	16.4	35	-18.6
24/10/2024 10:02	47.8	30	17.8	35	-17.2

4.1.1 Table 15 indicates that with windows closed, the internal noise levels do not exceed the noise criteria level.

4.1.2 Table 16 calculates the internal noise level within living rooms with an open window.

Table 16. Calculation of Internal Noise Level – Windows Open

Period Start Time	Calculated Noise Level at Outdoor Amenity Area, $L_{Aeq,1hr}$ (dB)	Sound Reduction Performance of Open Window (dB)	Calculated Internal Noise Level, $L_{Aeq,T}$ (dB)	Noise Criteria Level for Living Rooms (dB)	Difference +/- (dB)
23/10/2024 12:14	56.2	13	43.2	35	+8.2
23/10/2024 13:14	-	-	-	-	-
23/10/2024 14:14	61.1	13	48.1	35	+13.1
23/10/2024 15:14	-	-	-	-	-
24/10/2024 07:02	47.7	13	34.7	35	-0.3

24/10/2024 08:02	50.1	13	37.1	35	+2.1
24/10/2024 09:02	46.4	13	33.4	35	-1.6
24/10/2024 10:02	47.8	30	17.8	35	-17.2

4.1.1 Table 16 indicates that with windows open, the internal noise level exceeds the noise criteria level and so the following section considers noise mitigation.

5 MITIGATION

5.1 Road Traffic

- 5.1.1 Appendix 5 calculates the average daytime noise levels, for living rooms, at the various facades of the plots and determines the requirement for upgraded glazing or alternative ventilation.
- 5.1.2 Appendix 6 calculates the average and maximum night-time noise levels, for bedrooms, at the various facades of the plots and determines the requirement for upgraded glazing or alternative ventilation.

5.2 Compliance with Approved Document O

- 5.2.1 Appendix 7 indicates compliance with the Approved Document O noise criteria levels, based on the internal target noise criteria levels not being exceeded with regards to B8233:2014, the noise criteria levels for which are more stringent than those detailed in Approved Document O.
- 5.2.2 Appendix 7 provides a summary of the bedroom windows which are required to be closed in order to achieve the noise criteria levels presented in Approved Document O, irrespective of the noise criteria presented in BS8233:2014.
- 5.2.3 With regards to SAP calculations, which is beyond the remit of this Assessment, a partially open window should be taken as a fully open window.

5.3 Commercial Noise – Hyde Rd Aggregates

- 5.3.1 With regards to internal noise levels within living rooms from operations at Hyde Rd Aggregates, the previous section has shown exceedances with an open window. Accordingly, it is recommended that an acoustic-grade trickle ventilator (Greenwoods EAR42W (provides up to $D_{n,e,w}$ 42dB(A) sound reduction) is incorporated into the window frame of any living room window with either full or partial line of sight to Hyde Rd Aggregates.

6 CONCLUSION

- 6.1.1 Professional Consult Limited was instructed by John Stephens & Co to prepare a Noise Impact Assessment in support of a proposed residential development on land to the east of Tan Yard Borow in Gorton, Manchester M18.
- 6.1.2 The Site is impacted by noise from vehicles using the A57 Hyde Road to the south and Tan Yard Brow to the west. Noise is also potentially audible from Hyde Road Aggregates to the west of the Site and as such, it is expected that Manchester City Council will require a Noise Impact Assessment to accompany the scheme planning application.
- 6.1.3 Accordingly, this Assessment has been completed with due regard to the National Planning Policy Framework and its associated National Planning Policy Guidance in addition to appropriate British Standards and guidance documents relevant to the assessment of noise impacts.
- 6.1.4 The Development will comprise of 25 residential units, split between houses and apartments. It should be noted that there are no private outdoor amenity areas, such as gardens or balconies, associated with any of the proposed dwellings or apartments however there is a general outdoor amenity and seating area located to the northeast of Block A.
- 6.1.5 The Site comprises of open land and is bound by Tan Yard Brow to the west with Hyde Road Aggregates beyond, Gore Brook to the north, the Fallowfield Loop foot and cycle path to the east and the A57 Hyde Road to the south.
- 6.1.6 The soundscape across the Site is comprised predominantly of road traffic noise with intermittent noise from operations at Hyde Road Aggregates, which can operate from 07:00 – 17:00, Monday – Saturday.
- 6.1.7 This Assessment has shown that the daytime noise level in the proposed outdoor amenity and seating area falls below the adopted 55dB $L_{Aeq,16hr}$ noise criteria level and as such, no noise mitigation measures are required.
- 6.1.8 This Assessment has determined the required sound insulation performance requirements for the glazing for living rooms and bedrooms. Additionally, this assessment has determined the appropriate alternative ventilation system for habitable rooms.
- 6.1.9 This Assessment has shown that the rated level of noise generated by operations at Hyde Rd Aggregates falls below the adopted background sound level and so there is no requirement to consider noise mitigation measures for the outdoor areas. With regards to internal noise levels within living rooms, it is recommended that an acoustic-grade trickle ventilator is incorporated into the window frame of any living room window with either full or partial line of sight to Hyde Rd Aggregates.
- 6.1.10 In summary, the future noise climate at the Development can be controlled through appropriate noise mitigation measures to meet acceptable noise levels in both internal and external amenity areas which will accord with the 'No Observed Adverse Effect Level' as detailed in the PPG and as such noise should not be deemed to be a determining factor in the granting of planning permission for this Site.

APPENDIX 1: LIMITATIONS

This report and its findings should be considered in relation to the terms of reference and objectives agreed between Professional Consult Limited and the Client.

The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.

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APPENDIX 2: GLOSSARY OF ACOUSTIC TERMINOLOGY

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 1: Typical Sound Pressure Levels

Sound Pressure Level (dB)	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 factory
100 - 110	Burglar alarm at 1m away
110 - 130	Jet aircraft on take off
140	Threshold of pain

Table 2: 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 (2x10 ⁻⁵ 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.
L _{Aeq, T}	L _{Aeq} 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.
L _{Amax}	L _{Amax} is the maximum A - weighted sound pressure level recorded over the period stated. L _{Amax} 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.
L ₁₀ & L ₉₀	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 L ₁₀ is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L ₉₀ is the 'average minimum level' and is often used to describe the background noise. It is common practice to use the L ₁₀ index to describe traffic noise.
Free-field Level	2A 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 125millisecond time constant.
Slow	A time weighting used in the root mean square section of a sound level meter with a 1000millisecond time constant.

Figure 1 Proposed Masterplan



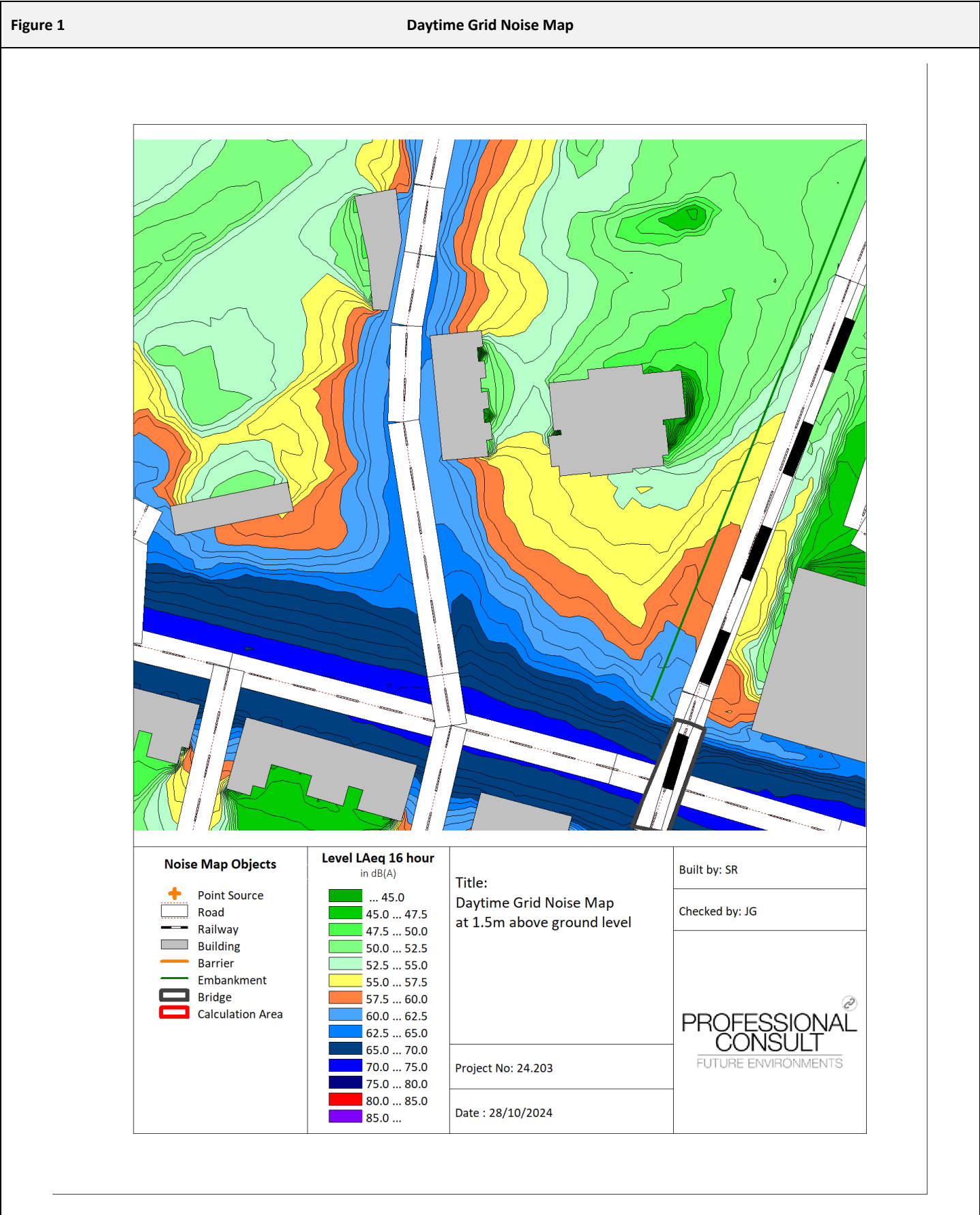


Figure 2

Night-time Grid Noise Map



Noise Map Objects + Point Source Road Railway Building Barrier Embankment Bridge Calculation Area	Level LAeq 8 hour in dB(A) ... 45.0 45.0 ... 47.5 47.5 ... 50.0 50.0 ... 52.5 52.5 ... 55.0 55.0 ... 57.5 57.5 ... 60.0 60.0 ... 62.5 62.5 ... 65.0 65.0 ... 70.0 70.0 ... 75.0 75.0 ... 80.0 80.0 ... 85.0 85.0 ...
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Reference: 24.203.1.R2
Date: 11 June 2025
Project: Proposed Residential Development

APPENDIX 5: DAYTIME AVERAGE FAÇADE NOISE LEVELS (LIVING ROOMS)

Calculated Living Room Façade Noise Levels, by Plot				Required Glazing Sound Insulation Performance - Average LAeq Noise Levels					Alternative Ventilation Requirement			Summary Requirement for Living Rooms - Overall Glazing & Alternative Ventilation Requirements		
Plot	Floor	Façade Direction	Calculated LAeq,16hr at Façade (dB)	Glazing Sound Reduction Index (Rw +Ctr) (Standard Thermal) (dB)	Calculated Noise Level Inside Room (dB)	Criteria (dB)	Difference +/- (dB)	Minimum Required Sound Insulation Performance for Glazing (Rw +Ctr) (dB)	Calculated Internal Noise Level with a Partially Open Window (dB)	Alternative Ventilation Required?	Minimum Required Sound Insulation Performance for Alternative Vent (if Required) (Rw +Ctr) (dB)	Minimum Required Sound Insulation Performance for Glazing (Rw +Ctr) (dB)	Overall Minimum Required Alternative Ventilation AD-F System	Appropriate Alternative Ventilation Scheme
B1 Plot 1 Livingroom			49.5	30	19.5	35	-15.5	15	36.5	Yes	15.0	15	ADF Systems 1 or 2	Acoustic-grade T.V.
B1 Plot 10 Livingroom			56.2	30	26.2	35	-8.8	21	43.2	Yes	21.0	21	ADF Systems 1 or 2	Acoustic-grade T.V.
B1 Plot 11 Livingroom			57.2	30	27.2	35	-7.8	22	44.2	Yes	22.0	22	ADF Systems 1 or 2	Acoustic-grade T.V.
B1 Plot 12 Livingroom			58	30	28	35	-7	23	45	Yes	23.0	23	ADF Systems 1 or 2	Acoustic-grade T.V.
B1 Plot 13 Livingroom			51.5	30	21.5	35	-13.5	17	38.5	Yes	17.0	17	ADF Systems 1 or 2	Acoustic-grade T.V.
B1 Plot 14 Livingroom			51	30	21	35	-14	16	38	Yes	16.0	16	ADF Systems 1 or 2	Acoustic-grade T.V.
B1 Plot 15 Livingroom			51.3	30	21.3	35	-13.7	16	38.3	Yes	16.0	16	ADF Systems 1 or 2	Acoustic-grade T.V.
B1 Plot 16 Livingroom			58.5	30	28.5	35	-6.5	24	45.5	Yes	24.0	24	ADF System 3	MEV System & Acoustic-grade T.V.¹
B1 Plot 17 Livingroom			51.7	30	21.7	35	-13.3	17	38.7	Yes	17.0	17	ADF Systems 1 or 2	Acoustic-grade T.V.
B1 Plot 2 Livingroom			48.2	30	18.2	35	-16.8	13	35.2	Yes	13.0	13	ADF Systems 1 or 2	Acoustic-grade T.V.
B1 Plot 3 Livingroom			54	30	24	35	-11	19	41	Yes	19.0	19	ADF Systems 1 or 2	Acoustic-grade T.V.
B1 Plot 4 Livingroom			54.5	30	24.5	35	-10.5	20	41.5	Yes	20.0	20	ADF Systems 1 or 2	Acoustic-grade T.V.
B1 Plot 5 Livingroom			55.8	30	25.8	35	-9.2	21	42.8	Yes	21.0	21	ADF Systems 1 or 2	Acoustic-grade T.V.
B1 Plot 6 Livingroom			50.8	30	20.8	35	-14.2	16	37.8	Yes	16.0	16	ADF Systems 1 or 2	Acoustic-grade T.V.
B1 Plot 7 Livingroom			49.7	30	19.7	35	-15.3	15	36.7	Yes	15.0	15	ADF Systems 1 or 2	Acoustic-grade T.V.
B1 Plot 8 Livingroom			50.7	30	20.7	35	-14.3	16	37.7	Yes	16.0	16	ADF Systems 1 or 2	Acoustic-grade T.V.
B1 Plot 9 Livingroom			49.6	30	19.6	35	-15.4	15	36.6	Yes	15.0	15	ADF Systems 1 or 2	Acoustic-grade T.V.
B2 Plot 18 Livingroom			62.5	30	32.5	35	-2.5	28	49.5	Yes	28.0	28	ADF System 3	MEV System & Acoustic-grade T.V.¹
B2 Plot 19 Livingroom			62.3	30	32.3	35	-2.7	27	49.3	Yes	27.0	27	ADF System 3	MEV System & Acoustic-grade T.V.¹
B2 Plot 20 Livingroom			62.3	30	32.3	35	-2.7	27	49.3	Yes	27.0	27	ADF System 3	MEV System & Acoustic-grade T.V.¹
B2 Plot 21 Livingroom			62.2	30	32.2	35	-2.8	27	49.2	Yes	27.0	27	ADF System 3	MEV System & Acoustic-grade T.V.¹
B2 Plot 22 Livingroom			62.3	30	32.3	35	-2.7	27	49.3	Yes	27.0	27	ADF System 3	MEV System & Acoustic-grade T.V.¹
B2 Plot 23 Livingroom			62.3	30	32.3	35	-2.7	27	49.3	Yes	27.0	27	ADF System 3	MEV System & Acoustic-grade T.V.¹
B2 Plot 24 Livingroom			62.5	30	32.5	35	-2.5	28	49.5	Yes	28.0	28	ADF System 3	MEV System & Acoustic-grade T.V.¹
B2 Plot 25 Livingroom			62.6	30	32.6	35	-2.4	28	49.6	Yes	28.0	28	ADF System 3	MEV System & Acoustic-grade T.V.¹

Reference: 24.203.1.R2
Date: 11 June 2025
Project: Proposed Residential Development

APPENDIX 6: NIGHT-TIME AVERAGE & MAXIMUM FAÇADE NOISE LEVELS (BEDROOMS)

Calculated Bedroom Façade Noise Levels, by Plot					Required Glazing Sound Insulation Performance - Average LAeq Noise Levels					Alternative Ventilation Requirement & Appropriate System - Average LAeq Noise Levels					Required Glazing Sound Insulation Performance - Maximum Lmax Noise Levels					Alternative Ventilation Requirement & Appropriate System - Maximum Lmax Noise Levels					Summary Requirements for Bedrooms - Overall Glazing & Alternative Ventilation Requirements		
Plot	Floor	Façade Direction	Calculated LAeq,8h at Façade (dB)	Calculated Lmax,fast at Façade (dB)	Glazing Sound Reduction Index (Rw +Ctr) (Standard Thermal) (dB)	Calculated Noise Level Inside Room (dB)	Criteria (dB)	Difference +/- (dB)	Required Sound Insulation Performance for Glazing (Rw +Ctr) (dB)	Calculated Internal Noise Level with a Partially Open Window (dB)	Alternative Ventilation Required?	Required Sound Insulation Performance for Alternative Vent (if Required) (Rw +Ctr) (dB)	Do Average Night-time Internal Noise Levels Achieve Compliance with AD-O?	Acoustics Ventilation & Overheating Assessment - Appropriate AD-F System for Average Noise Levels	Glazing Sound Reduction Index (Rw) (Standard Thermal) (dB)	Calculated Noise Level Inside Room (dB)	Criteria (dB)	Difference +/- (dB)	Required Sound Insulation Performance for Glazing (Rw) (dB)	Calculated Internal Noise Level with a Partially Open Window (dB)	Alternative Ventilation Required?	Required Sound Insulation Performance for Alternative Vent (if Required) (Rw) (dB)	Do Average Night-time Internal Noise Levels Achieve Compliance with AD-O?	Acoustics Ventilation & Overheating Assessment - Appropriate AD-F System for Max Noise Levels	Overall Minimum Required Sound Insulation Performance for Glazing - Average & Maximum Noise Levels (Rw +Ctr) (dB)	Overall Minimum Required Alternative Ventilation AD-F System	Overall Appropriate Alternative Ventilation Scheme
B1 Plot 1 Bedroom 1			41	57.8	30	11	30	-19	11	28	No	11	Yes	N/A	33	24.8	45	-20.2	13	45	No	13	Yes	N/A	11	N/A	Alt. Vent. Not Required
B1 Plot 1 Bedroom 2			35.2	50.6	30	5.2	30	-24.8	5	22.2	No	5	Yes	N/A	33	17.6	45	-27.4	6	38	No	6	Yes	N/A	5	N/A	Alt. Vent. Not Required
B1 Plot 10 Bedroom 1			46.7	69.6	30	16.7	30	-13.3	17	33.7	Yes	17	Yes	ADF Systems 1 or 2	33	36.6	45	-8.4	25	57	Yes	25	Yes	ADF System 3	22	AD-F System 3	MEV System & Acoustic-grade T.V.
B1 Plot 10 Bedroom 2			31.2	55.8	30	1.2	30	-28.8	1	18.2	No	1	Yes	N/A	33	22.8	45	-22.2	11	43	No	11	Yes	N/A	8	N/A	Alt. Vent. Not Required
B1 Plot 11 Bedroom 1			48.5	70.4	30	18.5	30	-11.5	19	35.5	Yes	19	Yes	ADF Systems 1 or 2	33	37.4	45	-7.6	25	57	Yes	25	Yes	ADF System 3	22	AD-F System 3	MEV System & Acoustic-grade T.V.
B1 Plot 11 Bedroom 2			49.1	71.3	30	19.1	30	-10.9	19	36.1	Yes	19	Yes	ADF Systems 1 or 2	33	38.3	45	-6.7	26	58	Yes	26	Yes	ADF System 3	23	AD-F System 3	MEV System & Acoustic-grade T.V.
B1 Plot 12 Bedroom 1			49.2	71.5	30	19.2	30	-10.8	19	36.2	Yes	19	Yes	ADF Systems 1 or 2	33	38.5	45	-6.5	27	59	Yes	27	Yes	ADF System 3	24	AD-F System 3	MEV System & Acoustic-grade T.V.
B1 Plot 12 Bedroom 2			49.8	71.8	30	19.8	30	-10.2	20	36.8	Yes	20	Yes	ADF Systems 1 or 2	33	38.8	45	-6.2	27	59	Yes	27	Yes	ADF System 3	24	AD-F System 3	MEV System & Acoustic-grade T.V.
B1 Plot 13 Bedroom 1			48.4	70.6	30	18.4	30	-11.6	18	35.4	Yes	18	Yes	ADF Systems 1 or 2	33	37.6	45	-7.4	26	58	Yes	26	Yes	ADF System 3	23	AD-F System 3	MEV System & Acoustic-grade T.V.
B1 Plot 13 Bedroom 2			43	61.1	30	13	30	-17	13	30	No	13	Yes	N/A	33	28.1	45	-16.9	16	48	Yes	16	Yes	ADF Systems 1 or 2	13	AD-F System 1 or 2	Acoustic-grade T.V.
B1 Plot 14 Bedroom 1			42.8	61.5	30	12.8	30	-17.2	13	29.8	No	13	Yes	N/A	33	28.5	45	-16.5	17	49	Yes	17	Yes	ADF Systems 1 or 2	14	AD-F System 1 or 2	Acoustic-grade T.V.
B1 Plot 14 Bedroom 2			42.9	62.1	30	12.9	30	-17.1	13	29.9	No	13	Yes	N/A	33	29.1	45	-15.9	17	49	Yes	17	Yes	ADF Systems 1 or 2	14	AD-F System 1 or 2	Acoustic-grade T.V.
B1 Plot 2 Bedroom 1			39.5	55.9	30	9.5	30	-20.5	10	26.5	No	10	Yes	N/A	33	22.9	45	-22.1	11	43	No	11	Yes	N/A	10	N/A	Alt. Vent. Not Required
B1 Plot 2 Bedroom 2			31.1	55.9	30	1.1	30	-28.9	1	18.1	No	1	Yes	N/A	33	22.9	45	-22.1	11	43	No	11	Yes	N/A	8	N/A	Alt. Vent. Not Required
B1 Plot 3 Bedroom 1			44	66.7	30	14	30	-16	14	31	Yes	14	Yes	ADF Systems 1 or 2	33	33.7	45	-11.3	22	54	Yes	22	Yes	ADF Systems 1 or 2	19	AD-F System 1 or 2	Acoustic-grade T.V.
B1 Plot 3 Bedroom 2			29.5	54.8	30	-0.5	30	-30.5	-1	16.5	No	-1	Yes	N/A	33	21.8	45	-23.2	10	42	No	10	Yes	N/A	7	N/A	Alt. Vent. Not Required
B1 Plot 4 Bedroom 1			45.6	67.2	30	15.6	30	-14.4	16	32.6	Yes	16	Yes	ADF Systems 1 or 2	33	34.2	45	-10.8	22	54	Yes	22	Yes	ADF System 3	19	AD-F System 3	MEV System & Acoustic-grade T.V.
B1 Plot 4 Bedroom 2			46.3	67.8	30	16.3	30	-13.7	16	33.3	Yes	16	Yes	ADF Systems 1 or 2	33	34.8	45	-10.2	23	55	Yes	23	Yes	ADF System 3	20	AD-F System 3	MEV System & Acoustic-grade T.V.
B1 Plot 5 Bedroom 1			46.5	68	30	16.5	30	-13.5	17	33.5	Yes	17	Yes	ADF Systems 1 or 2	33	35.0	45	-10.0	23	55	Yes	23	Yes	ADF System 3	20	AD-F System 3	MEV System & Acoustic-grade T.V.
B1 Plot 5 Bedroom 2			47.2	68.1	30	17.2	30	-12.8	17	34.2	Yes	17	Yes	ADF Systems 1 or 2	33	35.1	45	-9.9	23	55	Yes	23	Yes	ADF System 3	20	AD-F System 3	MEV System & Acoustic-grade T.V.
B1 Plot 6 Bedroom 1			45.3	66.7	30	15.3	30	-14.7	15	32.3	Yes	15	Yes	ADF Systems 1 or 2	33	33.7	45	-11.3	22	54	Yes	22	Yes	ADF Systems 1 or 2	19	AD-F System 1 or 2	Acoustic-grade T.V.
B1 Plot 6 Bedroom 2			42	59.4	30	12	30	-18	12	29	No	12	Yes	N/A	33	26.4	45	-18.6	14	46	Yes	14	Yes	ADF Systems 1 or 2	12	AD-F System 1 or 2	Acoustic-grade T.V.
B1 Plot 7 Bedroom 1			41.8	58.3	30	11.8	30	-18.2	12	28.8	No	12	Yes	N/A	33	25.3	45	-19.7	13	45	Yes	13	Yes	ADF Systems 1 or 2	12	AD-F System 1 or 2	Acoustic-grade T.V.
B1 Plot 7 Bedroom 2			41.7	59	30	11.7	30	-18.3	12	28.7	No	12	Yes	N/A	33	26.0	45	-19.0	14	46	Yes	14	Yes	ADF Systems 1 or 2	12	AD-F System 1 or 2	Acoustic-grade T.V.
B1 Plot 8 Bedroom 1			42.1	60.9	30	12.1	30	-17.9	12	29.1	No	12	Yes	N/A	33	27.9	45	-17.1	16	48	Yes	16	Yes	ADF Systems 1 or 2	13	AD-F System 1 or 2	Acoustic-grade T.V.
B1 Plot 8 Bedroom 2			36.2	51.2	30	6.2	30	-23.8	6	23.2	No	6	Yes	N/A	33	18.2	45	-26.8	6	38	No	6	Yes	N/A	6	N/A	Alt. Vent. Not Required
B1 Plot 9 Bedroom 1			40.6	58.5	30	10.6	30	-19.4	11	27.6	No	11	Yes	N/A	33	25.5	45	-19.5	14	46	Yes	14	Yes	ADF Systems 1 or 2	11	AD-F System 1 or 2	Acoustic-grade T.V.
B1 Plot 9 Bedroom 2			32.8	57	30	2.8	30	-27.2	3	19.8	No	3	Yes	N/A	33	24.0	45	-21.0	12	44	No	12	Yes	N/A	9	N/A	Alt. Vent. Not Required
B2 Plot 18 Bedroom			54.3	78.2	30	24.3	30	-5.7	24	41.3	Yes	24	Yes	ADF System 3	33	45.2	45	0.2	33	65	Yes	33	Yes	ADF System 3	30	AD-F System 3	MEV System & Acoustic-grade T.V.

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B2 Plot 19 Bedroom			54	77.5	30	24	30	-6	24	41	Yes	24	Yes	ADF System 3	33	44.5	45	-0.5	33	65	Yes	33	Yes	ADF System 3	30	AD-F System 3	MEV System & Acoustic-grade 'T.V.'
B2 Plot 20 Bedroom			54.1	77.3	30	24.1	30	-5.9	24	41.1	Yes	24	Yes	ADF System 3	33	44.3	45	-0.7	32	64	Yes	32	Yes	ADF System 3	29	AD-F System 3	MEV System & Acoustic-grade 'T.V.'
B2 Plot 21 Bedroom			53.9	76.8	30	23.9	30	-6.1	24	40.9	Yes	24	Yes	ADF System 3	33	43.8	45	-1.2	32	64	Yes	32	Yes	ADF System 3	29	AD-F System 3	MEV System & Acoustic-grade 'T.V.'
B2 Plot 22 Bedroom			54	76.5	30	24	30	-6	24	41	Yes	24	Yes	ADF System 3	33	43.5	45	-1.5	32	64	Yes	32	Yes	ADF System 3	29	AD-F System 3	MEV System & Acoustic-grade 'T.V.'
B2 Plot 23 Bedroom			54	76.3	30	24	30	-6	24	41	Yes	24	Yes	ADF System 3	33	43.3	45	-1.7	31	63	Yes	31	Yes	ADF System 3	28	AD-F System 3	MEV System & Acoustic-grade 'T.V.'
B2 Plot 24 Bedroom			54.1	76.5	30	24.1	30	-5.9	24	41.1	Yes	24	Yes	ADF System 3	33	43.5	45	-1.5	32	64	Yes	32	Yes	ADF System 3	29	AD-F System 3	MEV System & Acoustic-grade 'T.V.'
B2 Plot 25 Bedroom			54	76.4	30	24	30	-6	24	41	Yes	24	Yes	ADF System 3	33	43.4	45	-1.6	31	63	Yes	31	Yes	ADF System 3	28	AD-F System 3	MEV System & Acoustic-grade 'T.V.'

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APPENDIX 7: NIGHT-TIME AVERAGE & MAXIMUM NOISE LEVELS COMPLIANCE CHECK WITH AD-O

Calculated Bedroom Façade Noise Levels, by Plot, & Determination of Simplified or Dynamic Thermal Calculation Method						Open Window Sound Reduction Performance for 'Moderate' Sites (dB)	Calculation of Internal Average Noise Level with Open Window (dB)			Calculation of Internal Average Noise Level with Open Window (dB)		
Plot	Floor	Façade Direction	Calculated LAeq,8hr at Façade (dB)	Calculated LAmax,1hr at Façade (dB)	Based on the Calculated External Average & Maximum Noise Levels, can the Simplified Calculation Method be Used for AD-O?		Calculated Internal LAeq,8hr Noise Level (dB)	AD-O Noise Criteria Limit (dB)	Difference +/- (dB)	Calculated Internal LAmax,1hr Noise Level (dB)	AD-O Noise Criteria Limit (dB)	Difference +/- (dB)
B1 Plot 1 Bedroom 1			41	57.8	Yes	9	32	40	-8	48.8	55	-6.2
B1 Plot 1 Bedroom 2			35.2	50.6	Yes	9	26.2	40	-13.8	41.6	55	-13.4
B1 Plot 10 Bedroom 1			46.7	69.6	No, Dynamic Thermal Modelling Required	9	37.7	40	-2.3	60.6	55	5.6
B1 Plot 10 Bedroom 2			31.2	55.8	Yes	9	22.2	40	-17.8	46.8	55	-8.2
B1 Plot 11 Bedroom 1			48.5	70.4	No, Dynamic Thermal Modelling Required	9	39.5	40	-0.5	61.4	55	6.4
B1 Plot 11 Bedroom 2			49.1	71.3	No, Dynamic Thermal Modelling Required	9	40.1	40	0.1	62.3	55	7.3
B1 Plot 12 Bedroom 1			49.2	71.5	No, Dynamic Thermal Modelling Required	9	40.2	40	0.2	62.5	55	7.5
B1 Plot 12 Bedroom 2			49.8	71.8	No, Dynamic Thermal Modelling Required	9	40.8	40	0.8	62.8	55	7.8
B1 Plot 13 Bedroom 1			48.4	70.6	No, Dynamic Thermal Modelling Required	9	39.4	40	-0.6	61.6	55	6.6
B1 Plot 13 Bedroom 2			43	61.1	Yes	9	34	40	-6	52.1	55	-2.9
B1 Plot 14 Bedroom 1			42.8	61.5	Yes	9	33.8	40	-6.2	52.5	55	-2.5
B1 Plot 14 Bedroom 2			42.9	62.1	Yes	9	33.9	40	-6.1	53.1	55	-1.9
B1 Plot 2 Bedroom 1			39.5	55.9	Yes	9	30.5	40	-9.5	46.9	55	-8.1
B1 Plot 2 Bedroom 2			31.1	55.9	Yes	9	22.1	40	-17.9	46.9	55	-8.1
B1 Plot 3 Bedroom 1			44	66.7	No, Dynamic Thermal Modelling Required	9	35	40	-5	57.7	55	2.7
B1 Plot 3 Bedroom 2			29.5	54.8	Yes	9	20.5	40	-19.5	45.8	55	-9.2
B1 Plot 4 Bedroom 1			45.6	67.2	No, Dynamic Thermal Modelling Required	9	36.6	40	-3.4	58.2	55	3.2
B1 Plot 4 Bedroom 2			46.3	67.8	No, Dynamic Thermal Modelling Required	9	37.3	40	-2.7	58.8	55	3.8
B1 Plot 5 Bedroom 1			46.5	68	No, Dynamic Thermal Modelling Required	9	37.5	40	-2.5	59	55	4
B1 Plot 5 Bedroom 2			47.2	68.1	No, Dynamic Thermal Modelling Required	9	38.2	40	-1.8	59.1	55	4.1
B1 Plot 6 Bedroom 1			45.3	66.7	No, Dynamic Thermal Modelling Required	9	36.3	40	-3.7	57.7	55	2.7
B1 Plot 6 Bedroom 2			42	59.4	Yes	9	33	40	-7	50.4	55	-4.6
B1 Plot 7 Bedroom 1			41.8	58.3	Yes	9	32.8	40	-7.2	49.3	55	-5.7
B1 Plot 7 Bedroom 2			41.7	59	Yes	9	32.7	40	-7.3	50	55	-5
B1 Plot 8 Bedroom 1			42.1	60.9	Yes	9	33.1	40	-6.9	51.9	55	-3.1
B1 Plot 8 Bedroom 2			36.2	51.2	Yes	9	27.2	40	-12.8	42.2	55	-12.8
B1 Plot 9 Bedroom 1			40.6	58.5	Yes	9	31.6	40	-8.4	49.5	55	-5.5
B1 Plot 9 Bedroom 2			32.8	57	Yes	9	23.8	40	-16.2	48	55	-7
B2 Plot 18 Bedroom			54.3	78.2	No, Dynamic Thermal Modelling Required	9	45.3	40	5.3	69.2	55	14.2
B2 Plot 19 Bedroom			54	77.5	No, Dynamic Thermal Modelling Required	9	45	40	5	68.5	55	13.5
B2 Plot 20 Bedroom			54.1	77.3	No, Dynamic Thermal Modelling Required	9	45.1	40	5.1	68.3	55	13.3
B2 Plot 21 Bedroom			53.9	76.8	No, Dynamic Thermal Modelling Required	9	44.9	40	4.9	67.8	55	12.8

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B2 Plot 22 Bedroom			54	76.5	No, Dynamic Thermal Modelling Required	9	45	40	5	67.5	55	12.5
B2 Plot 23 Bedroom			54	76.3	No, Dynamic Thermal Modelling Required	9	45	40	5	67.3	55	12.3
B2 Plot 24 Bedroom			54.1	76.5	No, Dynamic Thermal Modelling Required	9	45.1	40	5.1	67.5	55	12.5
B2 Plot 25 Bedroom			54	76.4	No, Dynamic Thermal Modelling Required	9	45	40	5	67.4	55	12.4

APPENDIX 8: EXAMPLE ALTERNATIVE VENTILATION SYSTEMS

System	Description	Example Product*
1 / 2	Window-frame mounted trickle ventilator.	Greenwoods DN Vent Can be used where a sound reduction performance of up to 36dB Rw +Ctr is required. Greenwoods Acoustic Trickle Ventilator EAQ42W. Can be used where a sound reduction performance of up to 42dB Rw +Ctr is required.
	Through-wall ventilator.	Greenwoods Wall Ventilator MA3051. Provides a sound reduction performance of 55dB D_{n,e,w} +C_{tr} in its open position. Highest performing acoustic wall ventilator in the UK - the MA3051 is ideal for new build applications where noise planning restrictions are in place. Providing up to 55dB reduction and suitable for wall thicknesses of 140mm and above
3	Continuous Mechanical Extract Ventilation (MEV) system. Centralised Mechanical Extract Ventilation (cMEV) is a whole-house extract system should be installed in conjunction with acoustic trickle ventilators which provide the air inlet.	Greenwoods CMEV.4e/CMEV.4eHT The low energy continuously running whole house extract system is ideal for apartments and houses. The HT model is available with additional SMART technology for humidity and timer sensor controls.
	Positive Input Ventilation (PIV) system. De-centralised PIV system is a room-by-room (bedroom / living room) wall mounted ventilation input fan. Can be installed in conjunction with acoustic trickle ventilators which provide air expulsion.	Blauberg Fresher 50 PIV Self-contained. low energy, acoustic positive input filtered supply air ventilation input fan. The unit provides a sound reduction performance of 41dB(A) with an internal (motor) noise level of 29dB(A) at 1m.
4	Mechanical Ventilation Heat Recovery (MVHR).	Zehnder ComfoAir Q350 ST Wall or floor mounted mechanical supply and extract ventilation with heat recovery (MVHR) with humidity sensor. Nuaire MRXBOXAB-ECO2B
*Example products detailed; other products are available.		

APPENDIX 9: EXAMPLE SAINT GOBAIN GLAZING SOUND REDUCTION SPECIFICATIONS

Glazing Configuration					Sound Reduction Performance (dB)		
Glass Type	Thickness (mm)	Cavity (mm)	Glass Type	Thickness (mm)	Rw	Rw +C (rail traffic noise)	Rw +Ctr (road traffic noise)
PLANICLEAR	6	10	PLANICLEAR	4	33	32	30
PLANICLEAR	4	12	PLANICLEAR	8	36	34	31
PLANICLEAR	4	10	PLANICLEAR	10	36	35	32
PLANICLEAR	4	6	PLANICLEAR	10	36	35	33
PLANICLEAR	6	12	PLANICLEAR	10	37	36	34
PLANICLEAR	6	16	STADIP SILENCE	8.8	42	40	35
PLANICLEAR	6	15	STADIP SILENCE	12.4	42	40	36
PLANICLEAR	10	15	STADIP SILENCE	8.8	42	40	37
PLANICLEAR	10	12	STADIP SILENCE	8.8	42	41	38
PLANICLEAR	12	15	STADIP SILENCE	8.8	43	42	39
PLANICLEAR	10	16	STADIP SILENCE	12.8	44	43	40
STADIP	14.4	24	STADIP SILENCE	8.4	47	46	41
STADIP SILENCE	12.8	16	STADIP SILENCE	8.8	48	46	42

APPENDIX 10: CORRESPONDING ROOMS FOR FAÇADE NOISE LEVELS

