



Openshaw Club Street

Noise impact assessment

11795.1

03rd June 2024

Revision A



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11795.1A

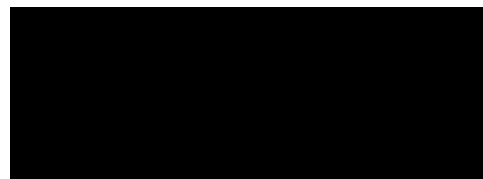
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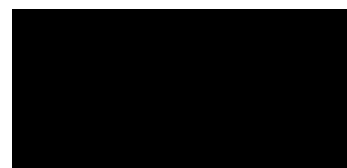
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1 Summary

1.1 This report assesses the potential noise impact on the proposed 51-dwelling residential development at Openshaw Club Street, Manchester, aiming to support a planning application by identifying noise sources and recommending mitigation strategies to ensure a comfortable living environment for future residents. The assessment adheres to national and local guidelines, ensuring compliance with the National Planning Policy Framework (NPPF), Noise Policy Statement for England (NPSE), and Manchester City Council's Planning & Noise Technical Guidance.

1.2 Key Findings

- Noise Sources: The primary noise sources affecting the site are road traffic from Ashton Old Road and commercial noise from the nearby Termstall fence contractor.
- Noise Measurements: Detailed noise measurements were conducted at two positions over 24 hours, capturing data on both daytime and nighttime noise levels. The data indicated that traffic noise from Ashton Old Road is the dominant source, particularly at the southern boundary of the site.

1.3 Mitigation Strategies

- Façade and Ventilation Solutions: Table 1 recommends the use of glazing and trickle vents with specified acoustic performance to achieve suitable indoor ambient noise levels (IANLs). These measures are designed to comply with the criteria set forth in BS 8233 and ProPG and ensure internal noise levels remain within acceptable limits during both daytime and nighttime periods.
- Amenity Areas: Noise levels in outdoor amenity spaces are expected to remain below the recommended 55 dB $L_{Aeq,16hr}$ threshold, with timber fences around private areas further mitigating noise exposure. No additional measures are required for these spaces.

1.4 In summary, through the implementation of the façade sound insulation measures in Table 1, the development can provide acceptable living conditions and align with the National Planning Policy Framework (NPPF) and the Noise Policy Statement for England (NPSE). The proposed noise mitigation strategies are sufficient to ensure that the residential environment will be comfortable and meet the relevant noise criteria, supporting the planning application for this development.

Plots	Min. required glazing performance	Potential AD-F whole dwelling ventilation strategy	Min. required trickle ventilator performance (if needed)
All Plots	$\geq 27 \text{ dB } R_w + C_{tr}$ (e.g. 4 mm glass + 16 mm cavity + 4 mm glass)	Natural ventilation	Either: 1 x 8000 mm ² EA vent, $\geq 30 \text{ dB } D_{ne,w} + C_{tr}$ <i>or</i> 2 x 4000 mm ² EA vents $\geq 33 \text{ dB } D_{ne,w} + C_{tr}$
		Continuous mechanical extract ventilation (MEV or dMEV)	Either: 1 x 4000 mm ² EA vent, $\geq 30 \text{ dB } D_{ne,w} + C_{tr}$ <i>or</i> 2 x 2000 mm ² EA vents $\geq 33 \text{ dB } D_{ne,w} + C_{tr}$
NOTE: Trickle ventilators not required where the ventilation strategy is mechanical ventilation with heat recovery (MVHR)			

Table 1: Summary of minimum façade sound insulation requirements for windows and trickle ventilation

2 Introduction

- 2.1 This report concerns an assessment of the potential noise impact on the proposed 51-dwelling residential development at Openshaw Club Street, Manchester. It is intended to accompany a planning application by identifying potential noise sources and recommending mitigation strategies. These strategies aim to ensure a comfortable living environment for future residents, in accordance with relevant guideline documents.
- 2.2 A detailed site plan is provided in Figure 1 for reference.



Figure 1: Proposed Development Site

3 Planning policy and noise criteria

- 3.1 **National Planning Policy Framework (NPPF)**
- 3.2 The National Planning Policy Framework (NPPF) Reference 1, sets out the Government’s planning policies for England and how these should be applied. It provides a framework within which locally-prepared plans for housing and other development can be produced. In respect of noise, Paragraph 180, 191 and 193 of the NPPF states the following:
- 3.3 Paragraph 180:
- 3.4 “e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability...”
- 3.5 Paragraph 191:
- 3.6 “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:
- 3.7 a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life⁶⁵ [See Explanatory Note to the Noise Policy Statement for England],
- 3.8 b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason;
- 3.9 Paragraph 193:
- 3.10 “Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or ‘agent of change’) should be required to provide suitable mitigation before the development has been completed. “
- 3.11 **Noise Policy Statement for England (NPSE)**
- 3.12 The Noise Policy Statement for England (Reference 2) states three policy aims as follows:
- "Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:*
- *avoid significant adverse impacts on health and quality of life;*

- *mitigate and minimise adverse impacts on health and quality of life; and*
- *where possible, contribute to the improvement of health and quality of life. "*

3.13 The NPSE defines adverse noise impact as follows:

- **No Observed Effect Level (NOEL)**
This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.
- **Lowest Observed Adverse Effect Level (LOAEL)**
This is the level above which adverse effects on health and quality of life can be detected.
- **Significant Observed Adverse Effect Level (SOAEL)**
This is the level above which significant adverse effects on health and quality of life occur

3.14 The first two aims of the NPSE require that no significant adverse impact should occur and that, where a noise level which falls between a level which represents the lowest observable adverse effect and a level which represents a significant observed adverse effect, then according to the explanatory notes in the statement:

"... all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life whilst also taking into consideration the guiding principles of sustainable development. This does not mean that such effects cannot occur."

3.15 It is considered that meeting the internal ambient noise level limits given in BS 8233, which are in line with those given by the World Health Organisation (Reference 7) adequately achieve the first and second aims of the NPSE.

3.16 **Manchester City Council Planning & Noise Technical Guidance, October 2022**

3.17 The Manchester City Council (MCC) Planning & Noise Technical Guidance (Reference 4) aims to provide help and advice in relation to noise in a planning context to encourage good acoustic design. It outlines what is expected in relation to current guidance and policy with the aspiration that new developments achieve the highest possible standards without compromising the health and well-being of people that live and work within the City of Manchester.

3.18 The Sections of the guide which are relevant to the proposed development are as follows:

3.7.1.1 Residential Developments: *The Council has adopted the following noise limits for residential properties:*

- *Bedrooms (night time - 23.00 - 07.00) 30 dB L_{Aeq} (individual noise events should not normally exceed 45 dB $L_{Amax,F}$ by more than 10 times)*
- *Living Rooms (daytime - 07.00 - 23.00) 35 dB L_{Aeq}*
- *Gardens and terraces (daytime) 55 dB L_{Aeq}*

Noise and vibration from fixed plant / equipment: *'Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location'.*

Where fixed plant, equipment or machinery is attached to a building the vibration caused by it can pass through the building structure and cause structure borne noise elsewhere in the building. Where it is to be installed in or on a building containing a noise sensitive use structure borne noise should be considered in the noise assessment and adequate control measures should be proposed. An example of where this would be required is where there is a proposal to install ventilation equipment on the roof of a residential apartment block or it could be an air source heat pump attached to the side of a building.

5.3.1.6 Ventilation & Overheating: *An overheating assessment might not always be undertaken for a project and without this information it is difficult to identify noise impacts that may occur during the overheating condition. It is recommended that either where a condition has been imposed to control internal noise levels for residential development or where overheating may be an issue, the guidance provided in the AVO Guide is followed.*

3.19 **Professional Practice Guidance on Planning & Noise**

3.20 Professional Practice Guidance on Planning & Noise: New Residential Development (ProPG) (Reference 5) is a guidance document on the management of noise within the planning system in England for new build housing developments.

3.21 The document draws together guideline limits for internal noise levels from external transport sources from other sources of guidance, including BS 8233 (Reference 7) and the World Health Organisation (WHO) Guidelines for Community Noise (Reference 9).

3.22 These criteria are consistent with the Local Authority requirements and are presented in Table 2.

Activity	Location	Guideline upper limit, dB		
		$L_{Aeq, daytime}$	$L_{Aeq, night-time}$	L_{AFmax}
Resting	Living room	35	-	-
Dining	Dining room	40	-	-
Sleeping (daytime resting)	Bedroom	35	30	45

Table 2: Internal noise level requirements

3.23 The daytime period is defined as the 16 hours between 07:00 to 23:00 hours and the night-time period is defined as the 8 hours between 23:00 to 07:00 hours.

3.24 With regards to the night-time L_{AFmax} criterion, ProPG states:

"In most circumstances in noise-sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45 dB $L_{Amax,F}$ more than 10 times a night."

3.25 It is considered that the adopted internal ambient noise level targets align with the LOAEL following the terminology of the NPSE, such that meeting these targets adequately achieves the aims of the NPPF and NPSE.

3.26 ProPG states:

"Once internal L_{Aeq} levels exceed the target levels by more than 10 dB, they are highly likely to be regarded as "unacceptable" by most people, particularly if such levels occur more than occasionally."

3.27 Internal ambient noise levels 10 dB above the daytime and night-time values in Table 2 are therefore identified as the SOAEL.

3.28 Appendix A of the ProPG collates the results of various studies on sleep disturbance due to individual noise events, and states the following:

"it can be concluded that at night (2300 - 0700 hrs) a significant effect on sleep disturbance e.g. behavioural awakening, is likely to occur where the maximum sound level at the façade of a building with partially open windows is above:

- 85 dB $L_{Amax,F}$ (where the number of events exceeding this value is ≤ 20); or
- 80 dB $L_{Amax,F}$ (where the number of events exceeding this value is > 20)."

3.29 These values are identified as a SOAEL in the situation where windows are partially open.

3.30 ProPG guidance on external amenity area assessments "reflects and extends the advice contained in BS 8233:2014 and the current Government guidance in PPG-Noise". Relevant guidance from these sources is summarised in the document as follows:

- "If external 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."
- "The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50-55 dB $L_{Aeq, 16 hr}$."
- "These guideline values may not be achievable in all circumstances where development might be desirable. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces."

3.31 The BS 8233 'desirable' value of 50 dB $L_{Aeq, 16 hr}$ in external amenity areas is identified as the LOAEL.

3.32 Following DEFRA guidance (Reference 10) on the possible identification of LOAELs and SOAELs, 66 dB $L_{Aeq, 16 hr}$ is identified as the SOAEL.

3.33 **AVO Guide**

3.34 Section 2.4 of ProPG refers to the importance of providing a thermal comfort/cooling strategy to reduce the potential impacts of noise on future occupants of new residential development.

3.35 The AVO guide (Reference 6) is intended to demonstrate good acoustics design as described in the ProPG when considering IANLs guidelines.

3.36 The document provides guidelines for environmental noise from transportation sources and internal noise from mechanical services such as ventilation.

3.37 Following a process of Good Acoustic Design for the site layout, the AVO Guide suggests three steps to consider the impact of noise on potential amenity:

- Characterise the noise impacts on the proposed development
- Evaluate and advise the implications and constraints of ventilation strategies
- Evaluate and advise the implications and constraints for strategies to mitigate overheating.

3.38 The AVO Guide indicates a two-stage process to determine the risk of adverse noise effects while using opening windows for ventilative cooling.

4 Noise sources and measurements

4.1 This section provides an overview of the noise sources affecting the proposed development site and details the methodology and results of noise measurements conducted to assess the existing noise environment.

4.2 Noise Sources

4.3 The site is affected by two main noise sources:

- **Road traffic** on Ashton Old Road, located to the south of the proposed development.
- **Commercial noise** from the existing fence contractor (Termstall), situated to the northwest of the proposed development.

4.4 Measurement Methodology

4.5 To assess the existing noise environment, measurements were conducted at two positions on the 5th and 6th of March 2024, for a total of 24 hours (see Figure 2).

- **Position A (northwest boundary):** Chosen to minimize influence from Ashton Old Road and evaluate noise levels primarily from the fence contractor Termstall.
- **Position B (southern boundary):** Selected to capture typical noise levels from Ashton Old Road and the surrounding access road.

4.6 Equipment and Calibration

4.7 Sound level meters and calibrators used during the survey meet the technical specifications of BS 7445 and hold current calibration certificates traceable to national standards. Field calibration was performed before and after measurements, confirming no significant drift in sensitivity.

4.8 Details of the equipment used are presented in Table 3.

Equipment	Model	Serial No.
Class 1 Sound Level Meter	NTi XL2	A2A-05832-E0
Calibrator	Larson Davis CAL 200	9462
Class 1 Sound Level Meter	NTi XL2	A2A-19046-E0
Calibrator	Larson Davis CAL 200	12572

Table 3: Equipment used

4.9 Weather Conditions

4.10 Weather conditions throughout the measurement period were suitable for sound measurements, characterized by light winds, dry roads, and stable temperatures. Short periods of light rain were registered but had no significant impact.



Figure 2: Adopted measurements positions

4.11 Soundscape Analysis

- **Position A (northwest boundary):** Dominated by natural sounds, primarily birdsong. Only one heavy vehicle movement and some impulsive noise from the Termstall site were noted during the entire measurement period.
- **Position B (southern boundary):** Consistently dominated by traffic noise from Ashton Old Road.

4.12 Results

4.13 The measured daytime and nighttime noise levels at each monitoring position are presented in Table 4. Time history plots for the L_{Aeq} and L_{AFmax} indexes are presented in Figure 5 and Figure 6 for each respective position. Table 5 and Table 6 detail the highest maximum nighttime noise levels from specific events at Positions A and B, respectively.

- 4.14 At Position A, only two aircraft noise events were recorded during the nighttime. At Position B, seven events were noted, comprising a mix of aircraft noise and car/HGV passes. Since there were fewer than 10 nighttime noise events at each position, which is below the maximum allowable number of events above the threshold, night-time noise events are not considered to be relevant.
- 4.15 However, for completeness calculations of L_{AFmax} have been carried out considering recorded levels of 64 dB(A) and 62 dB(A) at positions A and B, respectively.
- 4.16 The day and night time representative background noise levels at Positions A and B, have been determined in line with the Association of Noise Consultants (ANC) BS 4142:2014+A1:2019 Technical Note document (Reference 7) and are presented in the Figures below.

Position	Parameter	dB(A)	Octave band centre frequency, Hz Measured A-weighted noise levels, dB							
			63	125	250	500	1k	2k	4k	8k
A	Daytime, L_{Aeq} , 16 hr	57	30	35	41	44	50	50	51	52
	Night time, L_{Aeq} , 8 hr	48	21	24	30	35	38	39	45	40
B	Daytime, L_{Aeq} , 16 hr	52	30	36	42	44	48	44	41	34
	Night time, L_{Aeq} , 8 hr	49	24	29	36	40	44	40	42	38

Table 4: Measured A-weighted noise levels

Event	Start Time	L_{AFmax} , 2min dB
Aircraft	23:54:00	70
Aircraft	23:12:00	64

Table 5: Measured L_{AFmax} noise levels associated with specific events during the night-time period at position A

Event	Start Time	L_{AFmax} , 2min dB
Motorcycle	00:44:00	74
Aircraft	23:54:00	71
HGV pass	03:20:00	67
HGV pass	01:10:00	66
Aircraft	23:12:00	66
Car pass	00:42:00	65
Aircraft	02:52:00	62

Table 6: Measured L_{AFmax} noise levels associated with specific events during the night-time period at position B

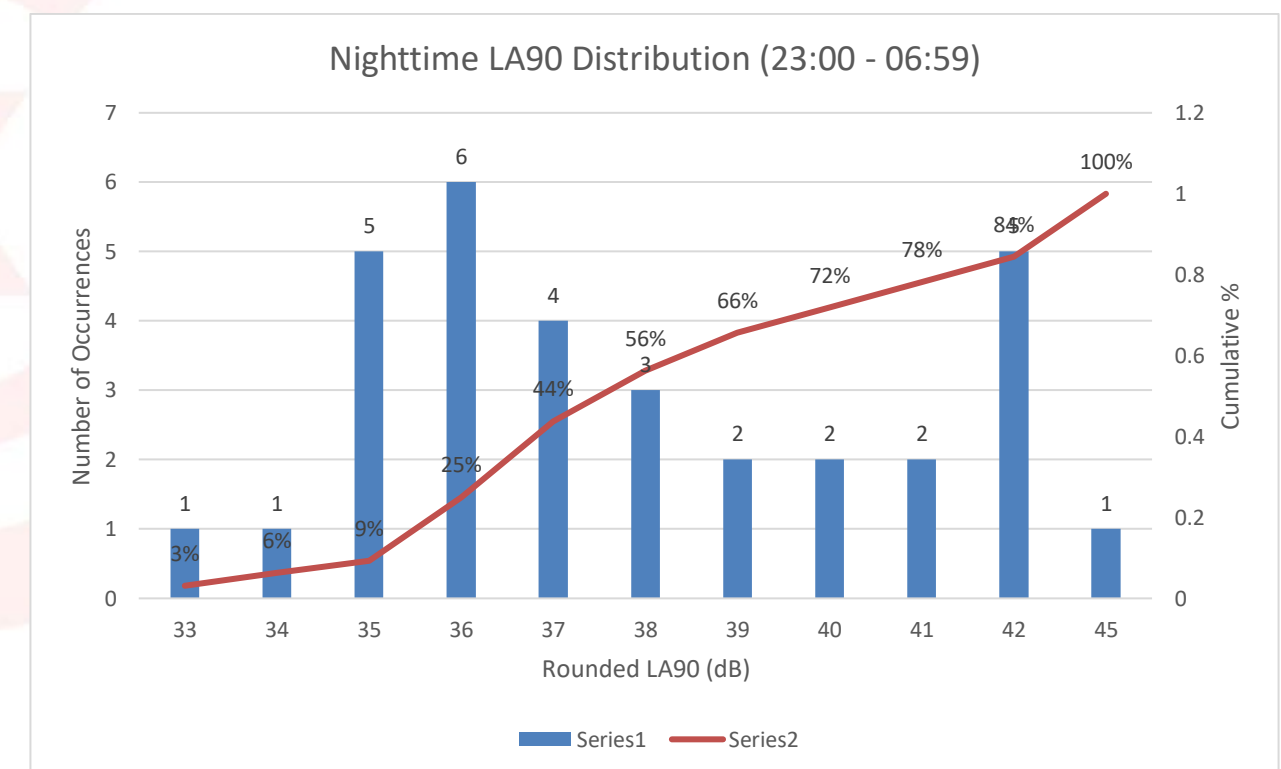
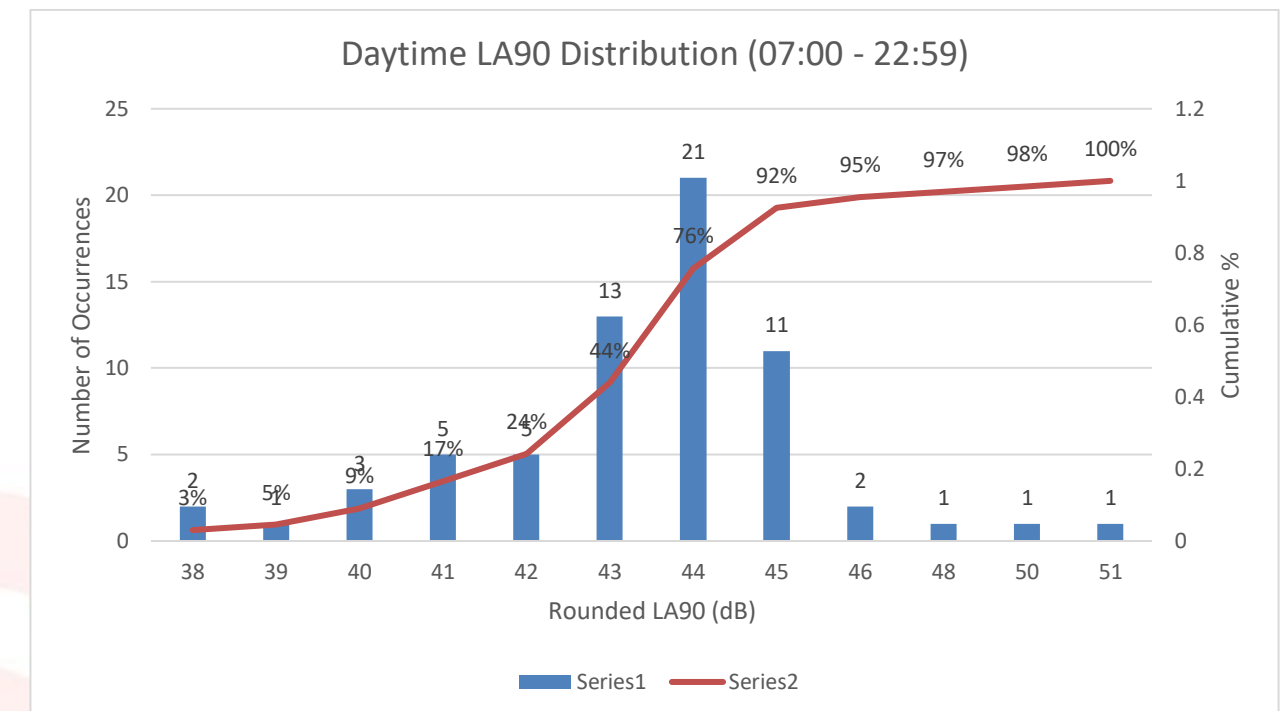


Figure 3: Analysis of daytime and night time background noise levels at Position A

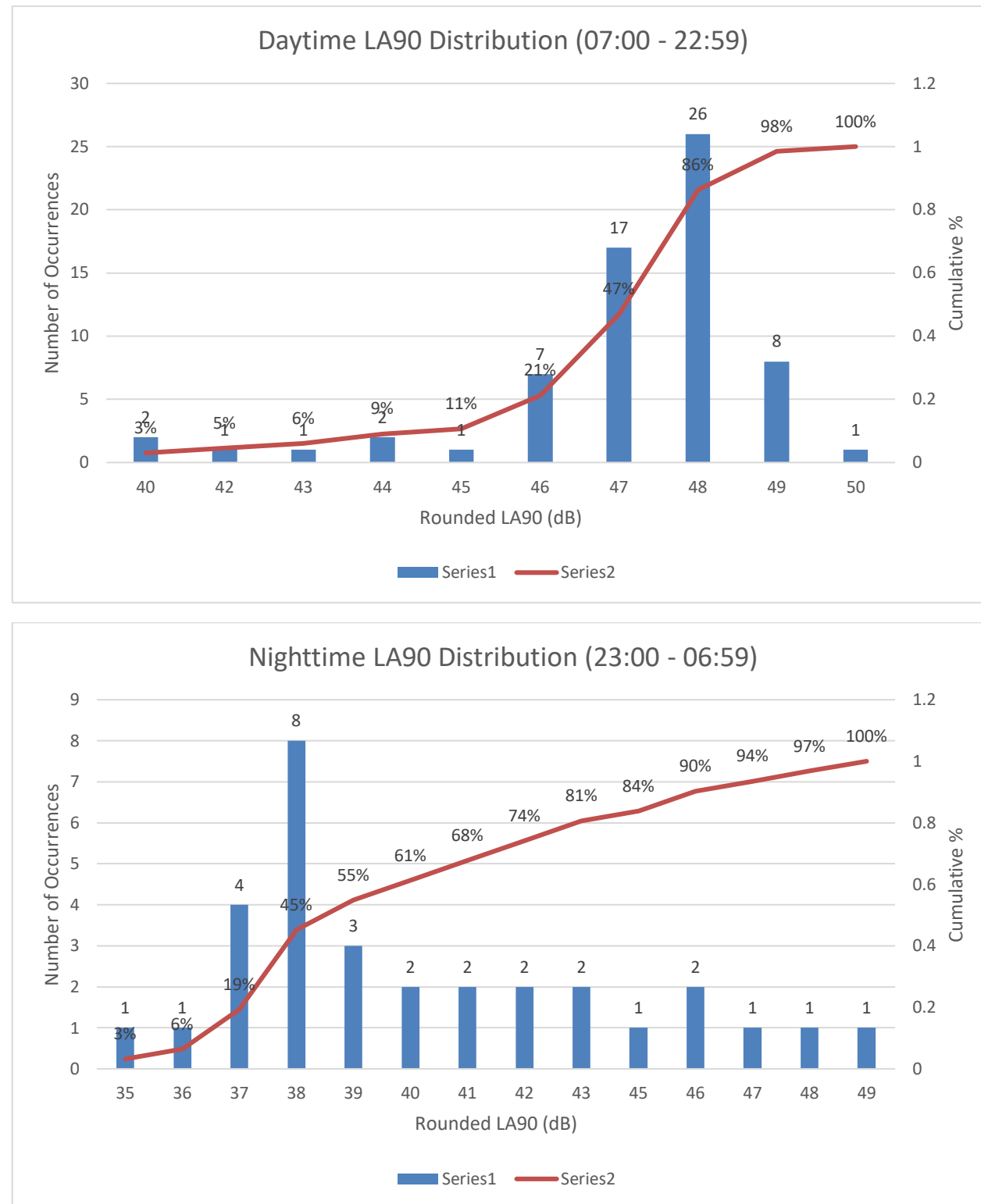


Figure 4: Analysis of daytime and night time background noise levels at Position B

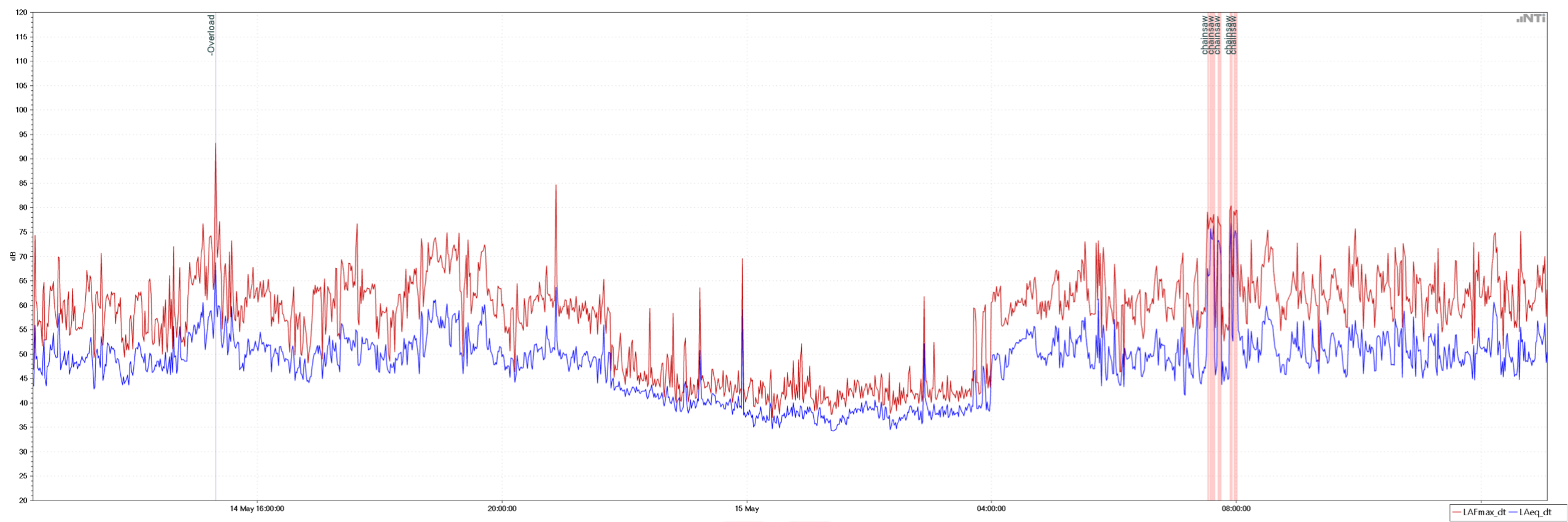


Figure 5: Time history of the recorded L_{Aeq} and L_{AFmax} at Position A (showing periods of chainsaw activity)

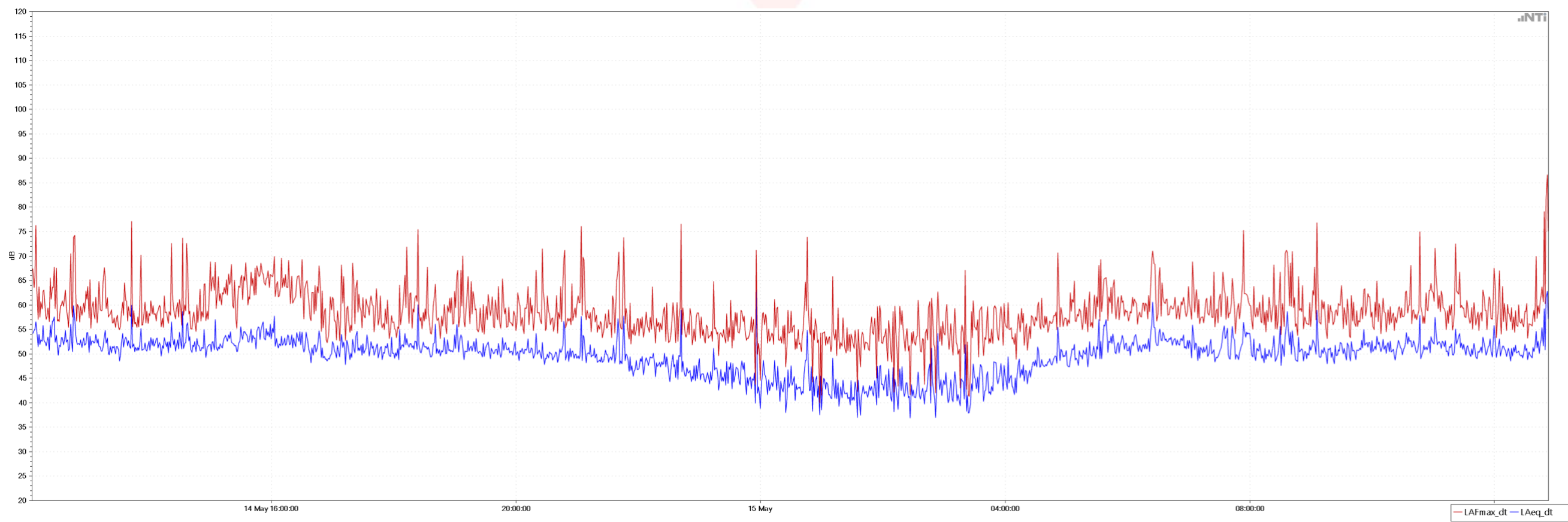


Figure 6: Time history of the recorded L_{Aeq} and L_{AFmax} at Position B

5 Commercial Noise (BS 4142)

- 5.1 During the on-site assessment and further review of the audio and sound level measurements, chainsaw noise was observed emanating from the Termstall premises for a total duration of 12 minutes within the 16-hour daytime period as defined by BS 4142.
- 5.2 The specific noise level ($L_{Aeq,12\text{ min}}$) measured was 74 dB(A). Considering this to be an intermittent and tonal noise source, and therefore applying a +6dB correction, results in an $L_{A,Tr,1hr}$ value of 73 dB(A) which is substantially higher than the daytime representative background noise of 44 dB(A).
- 5.3 However, following the principles in BS 4142, based on context, the chainsaw noise, which occurred at 7:30 AM, a time when people are typically awake, is unlikely to have an adverse impact due to its very short duration. Such short-term noise events during the day are less likely to cause significant disturbance, especially when they occur at a time when people are typically not resting or sleeping.
- 5.4 Additionally, it is noted that a 2.1-meter high close-boarded timber fence will be installed for the rear gardens, which is expected to provide an attenuation of 5-10 dB, depending on the exact location of the noise source.
- 5.5 Apart from the registered chainsaw noise, the dominant sources consist of natural sounds, mainly from birdsong. Therefore, based on the BS 4142:2014 guidance and the context of the noise occurrence, it is concluded that the chainsaw noise does not have a dominant influence on the overall noise environment and its impact is minimal. The contribution of this noise has been appropriately included in the noise break-in calculations, as recommended by ProPG.

6 Achieving the required internal noise levels

6.1 Methodology

- 6.2 To determine facade and ventilation solutions that achieve suitable indoor ambient noise levels (IANLs), the methodologies outlined in BS 8233 (Reference 7) and BS EN ISO 12354-3 (Reference 13) were followed. A typical reverberation time of 0.5 seconds across relevant frequencies, as specified for a furnished living room in ISO 16283 (Reference 15), was applied to both living rooms and bedrooms.
- 6.3 The calculations focus on the rooms on the rear facade of Plot 40 and the front facade of Plot 1, which are subject to the highest noise levels due to their proximity to the identified commercial areas and road noise. These plots effectively represent worst-case scenarios. The client provided the room dimensions, window characteristics, external wall properties, and volumes. Noise transmission through masonry elements is considered negligible.
- 6.4 To estimate the noise levels reaching the front facade of Plot 1, the measured noise levels at Position B were adjusted to account for the shorter distance between the noise sources and this

plot. Position B is 70 meters from the road, while the front facade of Plot 1 will be 35 meters from the road. Therefore, a distance correction of +3 dB was applied. The adjusted noise levels used in the calculations are presented in Table 7. For Plot 40, no distance correction was necessary as the measurements were carried out at a position representative of the rear facade of Plot 40.

Position	Parameter	dB(A)	Octave band centre frequency, Hz Measured A-weighted noise levels, dB							
			63	125	250	500	1k	2k	4k	8k
Plot 40 rear facade	Daytime, $L_{Aeq, 16\text{ hr}}$	57	30	35	41	44	50	50	51	52
	Night time, $L_{Aeq, 8\text{ hr}}$	48	21	24	30	35	38	39	45	40
	Night time, L_{AFmax}	64	-	-	-	-	-	-	-	-
Plot 1 front facade	Daytime, $L_{Aeq, 16\text{ hr}}$	55	33	39	45	47	51	47	44	37
	Night time, $L_{Aeq, 8\text{ hr}}$	52	27	32	39	43	47	43	45	41
	Night time, L_{AFmax}	62	-	-	-	-	-	-	-	-

Table 7: Estimated free-field noise levels at Plot 40 rear façade and Plot 1 front facade

6.5 Façade acoustic requirements

- 6.6 The calculations carried out demonstrate that glazing and trickle vents with the minimum acoustic performances identified in Table 1 effectively achieve the required internal ambient noise levels.
- 6.7 Table 8 summarises the calculated Internal Ambient Noise Levels (IANLs) based on the identified minimum performance requirements for sound insulation. Appendix A provides a sample calculation for the plots most affected by noise. This calculation uses manufacturer test data for representative products.
- 6.8 Based on the proposed façade sound insulation provision and the level and frequency of the measured maximum noise event, 45 dB $L_{Amax, F}$ is unlikely to be exceeded more than 10 times per night and is therefore below the LOAEL described in paragraph 3.24.

Location	Room affected	Calculated internal level		
		Daytime dB $L_{Aeq, 16\text{ hr}}$	Night-time dB $L_{Aeq, 8\text{ hr}}$	Night-time dB $L_{Amax, F}$
Plot 40 rear facade	Bedroom	34	24	39
	Living room	32	-	-
Plot 1 front facade	Bedroom	34	28	37
	Kitchen / Dining room	31	-	-

Table 8: Summary of calculated worst-case internal noise levels

6.9 **Approved Document F ventilation conditions**

- 6.10 The proposed development will be required to comply with Part F of the Building Regulations regarding whole dwelling ventilation, as described in Approved Document F (AD-F) (Reference 12).
- 6.11 Based on the ventilation strategies in AD-F, the façade sound insulation with provision for whole dwelling ventilation can be assessed with windows closed.
- 6.12 Purge ventilation as described in AD-F is the manual ventilation of rooms or spaces at a relatively high rate to rapidly dilute pollutants and/or disperse water vapor. Purge ventilation can be achieved through natural means (e.g. openable windows) or mechanical means (e.g. fans).
- 6.13 For AD-F purge ventilation conditions, ProPG states:
"It should also be noted that the internal level guidelines are generally not applicable under "purge ventilation" conditions as defined by Building Regulations Approved Document F, as this should only occur occasionally (e.g. to remove odour from painting and decorating or from burnt food)."
- 6.14 Considering this guidance, briefly opening windows is acceptable for these occasional events without adverse effects on occupants.
- 6.15 It should be emphasized that the above is not intended as a ventilation strategy design, which is the responsibility of others. If the actual ventilation details vary from those described, the proposed details should be reassessed for acoustic performance.
- 6.16 Where mechanical ventilation is preferred or required for whole-dwelling ventilation, AD-F specifies that the average A-weighted sound pressure level for a normally operating fan should not exceed the noise levels stated in Table 9.

Room type	Continuous mechanical system MEV or MVHR		Intermittent system
	Min. low rate	Min. high rate	Operational
Bedrooms, living rooms	30 dBA	-	-
Kitchens, bathrooms	-	45 dBA	45 dBA

Table 9: AD-F noise criteria for mechanical ventilation systems

7 **Amenity areas**

- 7.1 Based on the site survey results, noise levels in amenity spaces are expected to remain below 55dB LAeq,16hrs across the entire site. Additionally, timber fences around each private area are likely to reduce noise levels below 55 dB further. This aligns with the recommendations in ProPG, BS 8233:2014, and PPG-Noise, indicating that no changes or mitigation measures are necessary.

8 **Noise limits for mechanical plant**

- 8.1 Noise emissions from mechanical plant can significantly impact the acoustic environment of surrounding areas, particularly in residential and noise-sensitive zones.
- 8.2 The noise limits for any mechanical plant associated with the proposed development must comply with the requirements set by the Manchester City Council (MCC). These limits are established to minimise noise pollution and protect the acoustic quality of the environment.
- 8.3 These noise limits are aligned with the Lowest Observed Adverse Effect Level (LOAEL) as per the terminology of the National Planning Policy Framework (NPPF) and the Noise Policy Statement for England (NPSE). The limits ensure that noise emissions from the mechanical plant do not adversely affect the quality of life of nearby residents.
- 8.4 In the event that these noise limits are exceeded, appropriate noise mitigation measures will need to be implemented. This may include the use of acoustic enclosures, barriers, or the strategic placement of mechanical plant to minimise noise impact.

Period	Plant noise limit, LA _{r,Tr} dB
Daytime 07:00 – 23:00 hrs	44
Night time 23:00 – 07:00 hrs	37

Table 10: Noise limits for mechanical plant at NSRs

9 Conclusion

- 9.1 This noise impact assessment has evaluated the potential noise effects on the proposed 51-dwelling residential development at Openshaw Club Street, Manchester, from environmental sources, primarily road traffic noise from Ashton Old Road and commercial noise from the nearby fence contractor, Termstall.
- 9.2 Based on noise measurements conducted on the site and calculations following methodologies outlined in British Standards, it has been demonstrated that the internal ambient noise level guidelines recommended in national planning policy guidance can be achieved through the incorporation of glazing and trickle vents with the minimum acoustic performance identified in Table 1.
- 9.3 The resulting internal noise levels in the dwellings most exposed to road traffic noise are predicted to comply with the Lowest Observed Adverse Effect Level criteria during both daytime and night-time periods.
- 9.4 With regards to external amenity areas, the noise survey results indicate that levels across the development site should remain within the 50-55 dB $L_{Aeq,16hr}$ desirable range specified in BS 8233. As such, no additional mitigation measures are deemed necessary for these outdoor spaces.
- 9.5 In summary, through the implementation of conventional façade sound insulation measures, the development can provide acceptable living conditions and align with the NPPF and NPSE. The proposed noise mitigation strategies are sufficient to ensure that the residential environment will be comfortable and meet the relevant noise criteria, supporting the planning application for this development.

10 References

- 1 National Planning Policy Framework, Department for Communities and Local Government, December 2023.
- 2 Noise Policy Statement for England, Department for Environment, Food and Rural Affairs, March 2010.
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Appendix A Example façade sound insulation calculations

1st Floor Bed	
Volume, V / m ³	19.92
Window area, S / m ²	3
Reverberation Time, T / s	0.5
Number of vents feasible	2

Daytime L _{Aeq, 16 hr} (dB)	dB(A)	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz
External free-field noise, L _{1in}	57	38	44	47	53	53
Glazing: 4/16/4 mm, R		23	17	25	38	44
Equation 1, L ₂ (a)	29	15	27	23	15	9
Vent: 4000 L, D _{n,e}		39	36	34	31	34
Equation 2, L ₂ (b)	32	8	17	21	30	27
Total noise through all elements, L ₂	34					

Night-time L _{Aeq, 8 hr} (dB)	dB(A)	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz
External free-field noise, L _{1in}	48	29	35	40	43	44
Glazing: 4/16/4 mm, R		23	17	25	38	44
Equation 1, L ₂ (a)	20	6	17	15	5	0
Vent: 4000 L, D _{n,e}		39	36	34	31	34
Equation 2, L ₂ (b)	23	-1	7	14	20	18
Total noise through all elements, L ₂	24					

Night-time L _{AFmax} (dB)	dB(A)
External free-field noise, L _{1in}	64
Glazing: 4/16/4 mm, R	
Equation 1, L ₂ (a)	34
Vent: 4000 L, D _{n,e}	
Equation 2, L ₂ (b)	38
Total noise through all elements, L ₂	39

Table 11: Example façade sound insulation calculation for Plot 40 bedroom 3