Noise CONSULTANTS | PART OF Logika Group

Report

Land off Tattenhall Road, Tattenhall

Noise Assessment

For Gladman Developments Ltd

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Executive Summary

This report provides an assessment of the potential impact of noise on a proposed residential development located on land to the west of Tattenhall Road in Tattenhall and falls within the administrative boundary of Chester West and Chester Council.

The report describes the existing acoustic environment across the Site based on baseline noise monitoring, observations and road traffic noise modelling. The report evaluates potential impacts upon the proposed Development from road traffic on Tattenhall Road.

The outcome of the assessment shows that during the day and at night-time periods, road traffic noise on Tattenhall Road is negligible to low, when assessed in accordance with ProPG: Planning & Noise – New Residential Development.

The assessment demonstrates that for the entire Site, acceptable internal noise conditions can be achieved in all living rooms and bedrooms. Similarly, the assessment also demonstrates that acceptable noise conditions in rear gardens are capable of being achieved with good acoustic design and a layout that is sympathetic to the noise climate on the Site.

In respect of the control of overheating it is noted that this is now covered by Building Regulations Approved Document O – Overheating (ADO, 2021). It has, however, been demonstrated that for the vast majority of the site, noise presents a negligible constraint upon the overheating strategy.

In conclusion, the assessment demonstrates that, with good acoustic design, the minimal acoustic challenges of the Site are readily capable of being overcome. Overall, the Site is capable of accommodating noise-sensitive development that complies with paragraphs 187, 198 and paragraph 200 (agent of change principle) of the NPPF. The need for any noise mitigation measures can be secured by a suitably worded planning condition(s), if necessary.

1 Introduction

1.1 Noise Consultants Ltd (NCL), part of Logika Group, has been commissioned by Gladman Developments Ltd (Gladman) to undertake a noise assessment in connection with an outline proposed residential development (the 'Development') on Tattenhall Road, Tattenhall (the 'Site'). The Site falls within the administrative boundary of the Cheshire West and Chester Council (CWCC).

Existing Site and Environs

1.2 The Site is in a semi-rural setting to the north of the village of Tattenhall. The Site location, application boundary and wider area are shown in **Figure 1-1**.

1.3 The Site is bounded to the north and west by open fields.

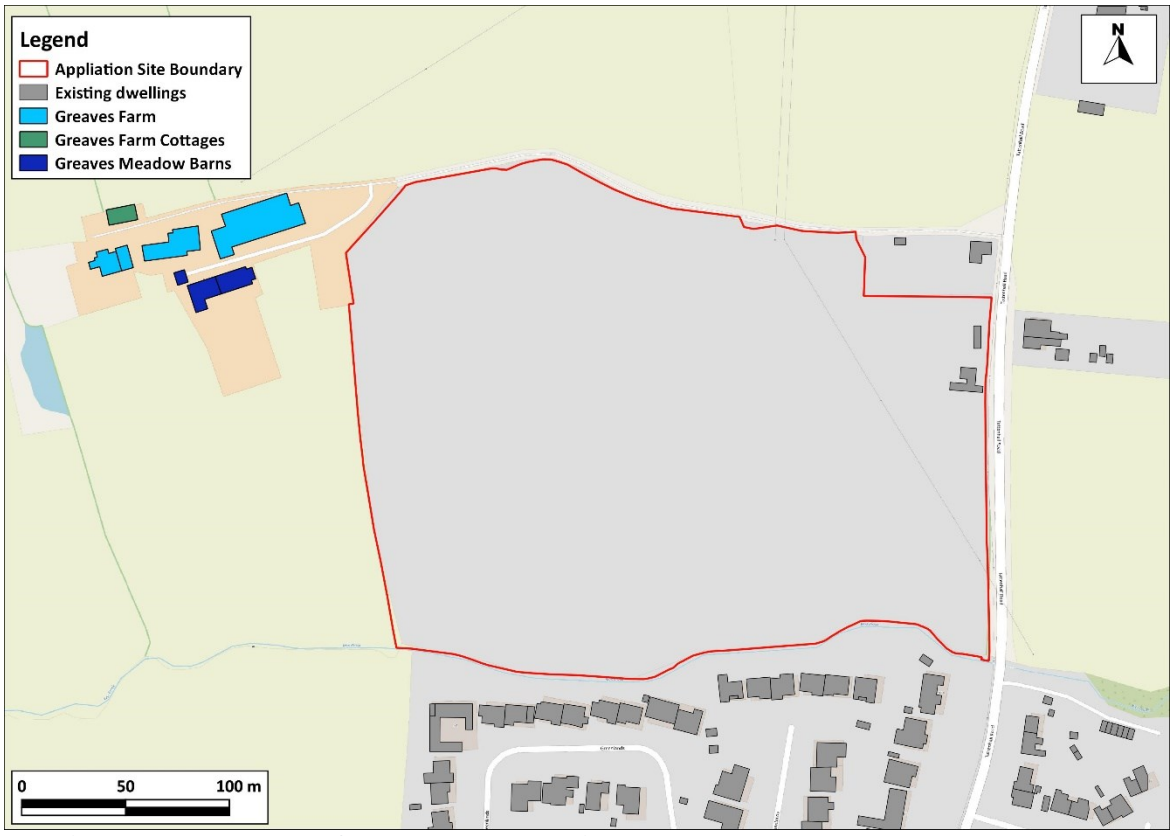
1.4 Greaves Farm is located to the north-western corner of the Site and comprises farm buildings and private dwellings (Greaves Farm Cottages and Greaves Meadow Barns). Greaves Farm is not a working farm and consequently does not generate any potentially significant operational noise.

1.5 The eastern Site is bounded by Tattenhall Road and is at grade with the land along the eastern Site boundary. Tattenhall Road has a speed limit of 40 mph on the northern half, and 30mph on the southern half of the eastern Site boundary.

1.6 Existing dwellings are located to the south.

1.7 The main noise source impacting the proposed development has been identified as road traffic noise from Tattenhall Road.

Figure 1-1: Site Location



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Proposed Development Details

1.8 The outline proposed development comprises the construction of up to 110 dwellings, structural planting and landscaping, public open space, sustainable urban drainage system and associated works with vehicular access to the Site from Tattenhall Road.

1.9 The proposed Development Framework Plan (DFP) is shown in Figure 1-2.

Figure 1-2: Proposed Development Framework Plan



Contains OpenStreetMap data © OpenStreetMap contributors.

Assessment Scope

1.10 The purpose of this noise assessment is to support an outline planning application to CWCC. This noise assessment has been prepared in accordance with National legislation, policies, and guidance and by reference to appropriate British and International standards which are summarised in **Appendix A1** and **Appendix A2.**

1.11 This report presents the findings of a baseline noise survey and an assessment of noise impacts on the suitability of the Site for residential development. The assessment has considered local ambient noise sources including road traffic noise.

1.12 The assessment has included:

- A long-term noise survey within the Site to establish existing road traffic noise levels at relevant locations around the Site.
- A noise modelling exercise to establish likely day and night-time road traffic noise exposure across the Site in the absence of any development and noise mitigation measures;

- Analysis and assessment of the measured and modelled noise levels with respect to appropriate standards and guidance; and,
- Where necessary, the provision of Acoustic Design Statement and an outline scheme of noise mitigation measures capable of securing suitable amenity for the future residents of the development.

Local Authority Consultation

1.13 NCL contacted the Environmental Health Department at CWCC in January 2025, to discuss the existing Site, proposed Development, environs, and agree upon the assessment methodology. To date, no response has been received.

Notes

1.14 Noise levels in the body of this report have been rounded to the nearest whole number since fractions of decibels (dB) are imperceptible. Noise data is reported in terms of an A-weighting (denoted by a subscript 'A') and approximates the frequency response of the human ear.

1.15 A glossary of acoustic terminology used in this report is provided in **Section 8.**

1.16 The recommendations presented within this report are based on acoustic considerations only and the assumptions stated.

2 Assessment Methodology

2.1 This report has been prepared in support of an outline planning application for the proposed Development taking into account all relevant local and national policy, guidance and regulations, as detailed in:

- **Appendix A1**: National Policy and Guidance
- **Appendix A2**: Residential Development Guidance

2.2 In summary, the following primary noise guidance has been considered in the assessment:

- Professional Practice Guidance on Planning and Noise: New Residential Development (ProPG, 2017);
- British Standard 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings (BS 8233:2014); and,
- World Health Organization Guidelines for Community Noise, 1999, (WHO GCN).

Proposed Residential Development – Transportation Noise

Site Suitability Assessment

2.3 Assessment criteria adopted for road noise have been designed to follow the approach advocated in ProPG. The guidance has been produced to assist practitioners in matters relating to noise and new residential development. It focuses on existing transportation noise sources and has been developed to consider the Government's overarching noise policy, planning policy and policy guidance. It has also been developed to take into account other authoritative sources of guidance such as BS 8233:2014 and WHO GCN.

Site Risk Classification

2.4 Planning Practice Guidance for Noise (PPG-N) draws on the principles of the Noise Policy Statement for England (NPSE), in particular the concepts of 'No Observed Effect Level' (NOEL), 'Lowest Observed Adverse Effect Level' (LOAEL) and 'Significant Observed Adverse Effect Level' (SOAEL).

2.5 The NOEL is the level below which there is no detectable effect on health and quality of life due to noise. Where noise exposure is below LOAEL during both day and night-time periods, the noise risk is considered to be 'negligible'. The LOAEL is the level above which adverse effects on health and quality of life can be detected. The SOAEL is the level above which significant adverse effects on health and quality of life occur.

2.6 The ProPG site risk classification (**Table A2-1**) is a sliding scale that does not define precise noise exposure limits for road and rail transport to site risk classification. For the purposes of undertaking the initial site noise risk assessment in accordance with ProPG Stage 1, the selections of LOAELs align with the onset of adverse effects as outlined in **Appendix A1**. For the purposes of this assessment, the noise thresholds that have been adopted in order to classify site noise-risk are defined in **Table 2-1** for the daytime and night-time periods.

Table 2-1: Site Risk Noise Exposure Thresholds and Categories – Road and Rail Transport

ProPG Site Risk Category	Noise Exposure Threshold dB $L_{Aeq,16\text{-}hour}$	Noise Exposure Threshold dB $L_{Aeq,8\text{-}hour}$	ProPG Based Pre-Planning Application Advice
Negligible (below LOAEL)	<50	<40	Indicates development site is likely to be acceptable from a noise perspective.
Low (LOAEL- SOAEL)	50 – 63	40 – 53[1]	Indicates development site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed and demonstrated.
Medium (SOAEL - UAEL)	63 – 70	53 – 66	Indicates the development site is less suitable from a noise perspective. A subsequent application may be refused unless a good acoustic design process is followed and demonstrated.
High (UAEL)	>70	>66	Indicates an increased risk that the development would be refused on noise grounds. However, this risk may be reduced following a good acoustic design process.

2.7 With respect to the L_{Amax} levels at night (23:00-07:00), ProPG states that;

"the initial site noise risk assessment should include the consideration of the individual noise events when the external $L_{Amax,F}$ exceeds 60 dB. A site should not be regarded as negligible risk if the $L_{Amax,F}$ exceeds, or is likely to exceed 60 dB more than 10 times a night. A site should be regarded as high risk if the $L_{Amax,F}$ exceeds, or is likely to exceed 80 dB more than 20 times a night."

2.8 Therefore, taking this into account and with reference to the LOAEL and SOAEL noise risk due to L_{AFmax} levels has been assessed as presented in **Table 2-2**.

[1] 53 dB $L_{Aeq,8h}$ has been adopted as a noise exposure threshold value for compatibility with Approved Document O – Overheating (this assumes a 13dB attenuation with windows open to achieve 40dB internally)

Table 2-2: Site Risk – L_{AFmax}

ProPG Site Risk Category	Night-time $L_{Amax,F}$ Exposure
Negligible (below LOAEL)	10th highest measured $L_{Amax,F}$ is less than 60 dB
Low (LOAEL- SOAEL)	10th highest measured $L_{Amax,F}$ is between 60 dB and 80 dB or Exceeds 68 dB[2]
Medium (SOAEL - UAEL)	10th highest measured $L_{Amax,F}$ is greater than 80 dB and the 20th highest measured $L_{Amax,F}$ is below 80 dB
High (UAEL)	20th highest measured $L_{Amax,F}$ is greater than 80 dB

Internal and External Noise Amenity

2.9 For the purpose of considering internal noise levels, the assessment will be undertaken with reference to the noise criteria guidelines set out in in WC's PCGN, and as advocated by ProPG (**Appendix A2**) and summarised in **Table 2-3**.

Table 2-3: Target Noise Criteria.

Room / Location	Daytime (07:00-23:00)	Night-time (23:00-07:00hrs)
Living Room	≤ 35 dB $L_{Aeq,16hr}$	-
Bedroom		≤ 30 dB $L_{Aeq,8hr}$ and not exceeding 45 dB L_{AFmax} more than 10 times per night
Dining Room	≤ 40 dB $L_{Aeq,16hr}$	-
Rear Gardens	≤ 55 dB $L_{Aeq,16hr}$	-

2.10 The noise insulation performance of a closed window relates to the building's façade construction and the associated elements of a room (including the sound insulation performance of glazing and ventilation components) and their respective areas. At this stage detailed design information of the proposed dwellings is not available. For the purposes of this assessment, the following conservative assumptions have therefore been adopted for the 'closed window' scenario:

- Internal spaces have the following dimensions:
  - Living rooms – 4.0m x 3.0m
  - Bedrooms – 3.0m x 3.0m
  - Ceiling Heights – 2.4m (all rooms)
- The glazed areas of bedrooms and living rooms is equal to 30% of the area of the largest façade.

[2] 68 dB L_{AFmax} has been adopted as a noise exposure threshold value for compatibility with Approved Document O – Overheating to achieve 55 dB L_{AFmax} internally)

- Constructions of the dwellings are of a standard nature, i.e. brick and block wall construction as per the standard assumptions made within BS 8233:2014 with a sound reduction index (SRI) summarised in **Table 2-4**.
- Standard thermal double glazing and one non-acoustic trickle ventilator (not exceeding 8000mm^2 per room) will be incorporated into each room.

Table 2-4: Assumed Standard Building Envelope Sound Insulation Performance

	Sound Reduction Index (SRI) at Octave Centre Band Frequency (Hz)								R_w (C; C_{tr})
Element	**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**	
Double Glazing (6:12:4)	17	23	22	27	38	40	41	44	31 (-2; -4)
Brick and Block External Wall	34	40	44	45	51	56	56	59	51 (-2; -4)
Element	**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**	**$D_{ne,w}$ (C; C_{tr})**
Standard In/over-frame Trickle Vent	20	23	26	29	30	33	33	35	31 (0; -2)

2.11 For the purpose of this assessment, a reduction of -13dB has been assumed for a partially open window.

2.12 Furthermore, any description of 'uprated glazing and ventilation' and/or specific sound insulation for glazing and ventilation components refers to elements where the building envelope octave-band sound insulation performance is better than those presented in **Table 2-4**. Note that the broadband sound insulation performances are only provided as a guide.

3 Noise Survey

Survey Details

3.1 To quantify current levels of noise affecting the proposed Development, a part-attended baseline noise survey was conducted between 10:40 on Monday 10 March and 13:05 on Tuesday 11 March 2025. **Figure 3-1** presents the noise monitoring locations, which are described in **Table 3-1.** Full details of the baseline survey are provided in **Appendix A3**.

3.2 Noise monitoring was supplemented by observations of the acoustic environment and weather monitoring. Noise recorded during periods of adverse weather have been disregarded. The noise level meters were configured to capture continuous audio so that it could be reviewed to identify any significant noise events where necessary and assist in the assessment.

3.3 Temperature and wind speed during the survey are summarised in **Appendix A3** which shows that the prevailing weather was dry, mild (2-14°C) and calm with maximum wind speeds of no more than 5 ms^{-1}. There were no roadworks or other interventions on nearby roads at any time. Therefore, local conditions were judged to be acceptable for the survey and subsequent assessment.

Figure 3-1: Baseline Survey Measurement Locations



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Table 3-1: Summary of Baseline Survey Locations

Location	Description	Purpose	Date and Time
LT1	Approximately 15m from the edge of Tattenhall Road	To measure local road traffic noise from Tattenhall Road at the edge of the easternmost proposed developable area	10/03/2025 11:00 hrs – 11/03/2025 13:05 hrs.
LT2	Approximately 43m from the edge of Tattenhall Road	To measure middling road traffic noise from Tattenhall Road	10/03/2025 11:10 hrs – 11/03/2025 13:10 hrs.
LT3	Approximately 25m from the largest farm building in the north-west corner	To measure any noise originating from the farm in the north-west corner.	10/03/2025 10:45 hrs– 11/03/2025 13:05 hrs.
WML	Towards the centre of the Site	To measure the prevailing weather conditions	10/03/2025 11:00 hrs – 11/03/2025 13:00 hrs.

Survey Observations

3.4 Observations of the acoustic climate at the survey locations are summarised in **Table 3-2**, photographs of monitoring locations are provided in **Appendix A4.**

Table 3-2: Summary of Survey Observations

Noise Measurement Location	Observations
LT1	Road traffic. Occasional distant aircraft.
LT2	Road traffic. Occasional distant aircraft. Occasional horses.
LT3	Birdsong. Occasional distant aircraft.

Summary and Analysis of Measured Noise Levels

3.5 Due to the amount of noise data obtained over the survey period, the measured noise levels at **LT1**, **LT2** and **LT3** are shown graphically as a level-history in **Appendix A3.** Full survey data can be provided on request. The results of the noise survey at these locations show the general diurnal change in noise levels consistent with a semi-rural location near sources of transportation noise.

3.6 **Table 3-3** summarises the results of the environmental baseline noise survey used in this assessment. Daytime ($L_{Aeq,16hr}$) and night-time noise levels ($L_{Aeq,8hr}$) have been calculated using a logarithmic average of the 5-minute measurements. The 10th highest measured $L_{Amax,5min}$ during the night-time period has been adopted for the night-time assessment, with the range of measured maximum noise levels shown in brackets.

Table 3-3: Summary and Analysis of Unattended Noise Levels at NML1-NML4 (dB)

Period	LT1		LT2		LT3	
	$L_{Aeq,T}$	L_{AFmax} (Range)	$L_{Aeq,T}$	L_{AFmax} (Range)	$L_{Aeq,T}$	L_{AFmax} (Range)
Daytime (07:00-23:00)	52	70 (30-75)	46	66 (39-78)	43	66 (32-80)
Night-time (23:00-07:00)	43	64 (26-69)	38	57 (27-64)	36	55 (24-68)

4 Road Traffic Noise Propagation Model

Noise Model Parameters

4.1 To assist in this assessment, the propagation of road traffic noise across the Site from Tattenhall road has been predicted in a computer noise model using DGMR Software's iNoise, publicly available data, and the input parameters summarised in **Table 4-1.**

Table 4-1: Noise Model Parameters

Modelling Parameter	Input Parameter
Calculation methodology	ISO 9613 2:2024 'Acoustics — Attenuation of sound during propagation outdoors — Part 2: Engineering method for the prediction of sound pressure levels outdoors'
Topography	Obtained from Environment Agency's National LIDAR Programme, 0.5m vertical intervals
Order of reflections	1
Ground absorption, G	0.5
Temperature / Humidity	10 °C / 70%
Adverse weather conditions	No
Heights of existing and buildings	Existing two storey dwellings - 7.5m Single storey dwellings and garages - 3.0m
Road traffic source	Line source, 0.5m above carriageway centre

Road Traffic Noise Model Calibration

4.2 The model includes the digitisation of Tattenhall Road as a line source. A model calibration exercise was carried out which involved digitising a receptor point representative of noise monitoring location **LT1.**

4.3 Daytime and night-time road traffic emission levels of Tattenhall Road were adjusted through an iterative process until the modelled broadband and octave-band noise levels were parity with the adopted road traffic noise exposure levels at **LT1**.

4.4 Predicted noise levels at **LT1** and **LT2** have then been verified by comparison to the adopted road traffic noise levels in **Table 3-3**. The comparison is shown in **Table 4-2**. The modelled road traffic noise levels show a good correlation to the measured noise levels, and the model is considered reasonably accurate.

Table 4-2: Road Traffic Noise Model Verification (dB $L_{Aeq,T}$)

Road Traffic	Descriptor	Daytime (07:00-23:00hrs)			Night-time (23:00-07:00hrs)		
		Measured	Predicted	Diff.	Measured	Predicted	Diff.
LT1	$L_{Aeq,T}$	51.8	51.8	0.0	43.1	43.1	0.0
LT2	$L_{Aeq,T}$	46.0	46.1	0.1	38.1	37.4	0.7

Noise Modelling Results

Noise contours at heights of 1.5m (ground floor) and 4.0m (first-floor) above local ground have been produced from the noise modelling exercise and can be seen in **Appendix A5**.

5 ProPG Noise Risk Assessment

5.1 An initial ProPG site noise risk assessment has been undertaken to provide an indication of the likely risk of adverse effects of road traffic on an open site basis, excluding any subsequent mitigation measures which may be included as part of the Development.

ProPG Stage 1 – Initial Assessment

5.2 The result of the noise survey and noise modelling exercise (shown in **Appendix A5**) show that during both the day and night (when considering both the ambient ($L_{Aeq,8hr}$) and maximum (L_{AFmax}) noise levels), land closest to Tattenhall Road is at 'Low Risk' of adverse noise effects. The remainder of the Site is considered to be at 'Negligible Risk'.

5.3 A Stage 2 full assessment is therefore required, supported by an Acoustic Design Statement (ADS) to demonstrate a good acoustic design process.

ProPG Stage 2 - Full Assessment

Internal Noise Levels

5.4 For the partially open window scenario, a reduction to noise ingress of 13 dB has been assumed. For the closed window scenario, internal noise levels have been calculated using the rigorous calculation methodology outlined in BS 8233:2014, based on the assumptions detailed in **paragraph 2.10** and **Table 2-4**. **Table 5-1** presents the calculated internal noise levels at each noise monitoring location and their correspondence with BS 8233:2014 guidelines and target noise design criteria.

Table 5-1: BS 8233:2014 Assessment Assuming a Standard Building Envelope Solution

Location	Window Condition	Living Areas	Bedrooms		Comment
		$L_{Aeq,\ 16\text{-}hour}$	$L_{Aeq,\ 8\text{-}hour}$	10th Highest Internal $L_{AFmax,5min}$ (night)	
LT1	Partially Open	39	30	51	Meets 'Desirable' BS8233:2014 criteria in the daytime and night-time with windows open. Exceeds night-time 45 dB L_{Amax} criterion with windows open but meets this criterion with windows closed.
	Closed	29	20	41	
LT2	Partially Open	33	25	44	Meets all criteria with windows open.
	Closed	23	15	34	
LT3	Partially Open	30	23	42	
	Closed	20	13	32	

Location	Window Condition	Living Areas	Bedrooms		Comment
		$L_{Aeq,\ 16\text{-}hour}$	$L_{Aeq,\ 8\text{-}hour}$	10th Highest Internal $L_{AFmax,5min}$ (night)	
Key					
BS 8233:2014 Internal Noise Levels				**Action**	
Achieves BS 8233:2014 Guidelines or < 45 dB L_{Amax} in bedrooms ('Desirable' standard)				No Action	
Within +5 dB of BS 8233:2014 Guidelines ('Reasonable' standard)				Mitigate and reduce if sustainable	
Exceeds BS 8233:2014 Guidelines and/or > 45 dB L_{Amax} in bedrooms				Avoid – sound attenuated measures required	

5.5 **Table 5-1** and **Appendix A5** show that with windows partially open, internal noise levels;

- Exceed the adopted 45 dB $L_{AFmax,5min}$ night-time criterion in bedrooms on dwelling façades close to and fronting Tattenhall Road which is a small number of bedrooms (but would meet this criterion with windows closed); and
- meet the 'desirable' BS 8233:2014 guidelines and adopted 45 dB L_{Amax} night-time criterion further back from Tattenhall Road and the remainder of the Site.

5.6 The calculations assume standard double glazing and non-acoustic trickle ventilation. Therefore, uprated glazing/ventilation measures are not considered necessary for any habitable room provided dwellings are set back at least 10m from the eastern boundary with Tattenhall Road.

External Amenity

5.7 The measured noise levels summarised in **Table 3-3** and modelled noise contours in **Appendix A5** show that on an open site basis and in the absence of any development and any specific noise mitigation measures, that daytime noise levels would be at or below the target noise criteria of 55 dB $L_{Aeq,16hr}$ across the entire Site.

5.8 Therefore, no specific mitigation measures are considered necessary to achieve acceptable external amenity for the Development.

5.9 A site-specific Acoustic Design Statement (ADS) is presented in **Section 6**.

6 Acoustic Design Statement (ADS)

6.1 Following a good acoustic design process is an implicit part of achieving good design as required by Government planning and noise policy, set out in the Noise Policy Statement for England (NPSE, 2010) and the National Planning Policy Framework (NPPF, 2024).

6.2 A good acoustic design process should achieve optimal acoustic conditions, both internally and external amenity spaces, but should avoid "*unreasonable*" acoustic conditions. Good acoustic design should prevent "*unacceptable*" acoustic conditions and embrace integrated solutions to deliver the optimum acoustic outcome for a particular site without design compromises that will adversely affect living conditions and the quality of life of the inhabitants or other sustainable design objectives and requirements.

6.3 The ProPG assessment in **Section 5** demonstrates that good acoustic design of the proposed development is required, specifically for the small section of land closest to Tattenhall Road. The following sections provide acoustic design information that should be considered during the detailed design of the development, prior to any reserved matters application.

Application of the ADS

6.4 This ADS applies to the proposed DFP shown in **Figure 1-2**. Should any layout be brought forward for the Site with residential dwellings closer than 10m to the eastern Site boundary, new advice may be required.

Location of Dwellings

6.5 As shown in **Table 5-1**, internal noise levels meet the target noise criteria in the majority of the Site with open windows. For dwellings closest to Tattenhall Road, the target noise criteria would likely be achieved with closed windows and standard glazing/ventilation.

6.6 Therefore, the separation distance between proposed dwellings and Tattenhall Road the proposed developable areas should be maximised as far as reasonably practicable to minimise the sound insulation requirements for glazing and ventilation.

External Amenity

6.7 The results of the baseline noise survey (**Table 3-3)**, and road traffic noise modelling (**Appendix A5**) demonstrate that daytime noise levels in the al land within the proposed developable areas of the site achieve the target noise criterion of 55 dB $L_{Aeq,16hr}$.

6.8 Where feasible, dwellings closest to the eastern boundary should front Tattenhall Road to provide self-screening for rear gardens.

6.9 Consequently, noise mitigation measures for private rear gardens are unlikely to be required.

Internal Amenity (Glazing and Ventilation)

Glazing

6.10 The assessment indicates that acceptable internal noise levels can be achieved with standard glazing and ventilation. Therefore, uprated glazing/ventilation is unlikely to be required for dwellings within the proposed developable areas shown in **Figure 1-2**.

Ventilation

Whole dwelling Ventilation

6.11 Noise ingress calculations indicate that non-acoustic trickle ventilation that achieves a normalised sound reduction of 31 dB $D_{ne,w}$ would be sufficient to achieve the target noise criteria for all areas of the Site.

Purge Ventilation

6.12 With regard to openable windows, it should be noted that Building Regulations Approved Document F – Ventilation (ADF) advises that "*purge ventilation*" is required "*for rapidly diluting indoor air pollutants and extracting water vapour where necessary*". Therefore "purge ventilation" is intermittent, i.e. required only when such occasional activities occur, and open windows are suitable for this purpose.

Control of Overheating

6.13 In respect of the control of overheating it is noted that this is now covered by Building Regulations Approved Document O – Overheating (ADO, 2021). ADO introduces noise constraints in respect of bedrooms at night, ensuring that the overheating strategy needs to cognisant of the noise climate.

6.14 Consequently, where the overheating strategy's reliance upon openable windows is constrained by elevated external noise levels, it will be necessary to explore alternative means of passive ventilation in addition to active means such as positive input ventilation (PIV), or mechanical ventilation heat recovery (MVHR), including tempered air/ peak lopping as necessary. Whilst the overheating strategy has not yet been developed, by inspection it can be seen from **Table 3-3** that the majority of the site noise presents a minimal constraint[3] upon the overheating strategy.

Further Considerations for Mitigation

Internal Building Layout

6.15 Consideration of the internal building layout (where noise sensitive rooms such as bedrooms could be positioned to the least exposed elevations of the dwellings with respect to the road traffic noise) could afford further reductions to internal noise level and increasing the likelihood that internal noise guideline criteria can be achieved with open windows for dwellings closest to Tattenhall Road.

6.16 However, road traffic noise levels at the Site are not of the order of magnitude that would require uprated building envelope sound insulation performance.

[3] The majority of the Site is exposed to external noise levels below 40 dB $L_{Aeq,T}$ and 64 dB L_{AFmax} at night. Assuming 13dB attenuation for a partially open window (commensurate with an opening area of 2% of the floor area), this results in an internal level of 27 dB $L_{Aeq,T}$ and 51 dB L_{AFmax}, which are below the ADO noise limits, and provides some headroom in the event that larger window open areas are required as part of the overheating strategy.

7 Conclusion

7.1 This report determines the potential impact of noise upon an outline proposed residential development (the 'Development') on land off Tattenhall Road, Tattenhall, Cheshire, (the 'Site') that falls within the administrative boundary of Cheshire West and Chester Council.

7.2 The report describes the existing acoustic environment across the Site based on baseline noise monitoring and observations. The report evaluates potential impacts upon the proposed Development from road traffic noise which was found to be the main source of noise across the Site.

7.3 An initial site risk assessment has been undertaken in accordance with ProPG which has been based on both measured and modelled noise levels. The assessment demonstrates that a small section of land closest to Tattenhall Road is at a 'Low Risk' of adverse noise effects in the daytime and a slightly larger area at night-time. This is on an open site basis and in the absence of development including any specific mitigation measures. Land away from Tattenhall Road (the vast majority of the Site) is at 'Negligible Risk' of adverse noise effects during the daytime and night-time.

7.4 With windows closed, noise levels within habitable rooms closest to and facing Tattenhall Road are expected to achieve the targe noise criteria with windows closed and a standard glazing and ventilation. Façades of habitable rooms on the shielded side of these dwellings, as well as the majority of all other dwellings (i.e. the vast majority of the Site) are expected to meet the target noise criteria with windows open in both the daytime and night-time.

7.5 In respect of the control of overheating it is noted that this is now covered by Building Regulations Approved Document O – Overheating (ADO, 2021). It has however been demonstrated that for the majority of the site, noise presents a minimal constraint upon the overheating strategy.

7.6 Daytime road traffic noise levels across the vast majority of the Site are below the target noise criteria for gardens. Therefore, noise mitigation measures for rear gardens are unlikely to be required.

7.7 There are no potentially significant sources of noise attributable to the Greaves Farm. Notably, existing dwellings are located as close or closer to Greaves Farm than proposed developable areas. Therefore, whilst the Development will likely place dwellings in close proximity to Greaves Farm, the potential noise constraints upon the Farm will remain unchanged.

7.8 In conclusion, the assessment demonstrates that, with good acoustic design, the minimal acoustic challenges of the Site are readily capable of being overcome. Overall, the Site is capable of accommodating noise-sensitive development that complies with paragraphs 187, 198 and paragraph 200 (agent of change principle) of the NPPF. The need for any noise mitigation measures can be secured by a suitably worded planning condition(s), if necessary

8 Glossary

Term	Description
dB	Decibel. The logarithmically scaled measurement unit of sound.
A-weighting	Frequency weighting applied to measured sound in order to account for the relative loudness perceived by the human ear.
$L_{Aeq,T}$	A-weighted equivalent continuous sound level over a given time period. It is the sound level of a steady sound that has the same energy as a fluctuating sound over the same time period.
$L_{A10,T}$	The A-weighted sound level exceeded for 10% of the measurement period. It is widely used as a descriptor of road traffic noise.
$L_{A90,T}$	The A-weighted sound level exceeded for 90% of the measurement period. Often referred to as the background sound level.
L_{Amax}	The A-weighted maximum recorded noise level during a measurement period.
R_w	The weighted Sound Reduction Index which characterises the airborne sound insulation of a building element over a range of frequencies with a single number quantity.
C and C_{tr}	Spectrum adaption terms that uses standard reference curves to determine the weighted value of airborne sound insulation. C and C_{tr} take into account different source spectra, where C considers the A-weighted pink noise spectrum and C_{tr} considers the A-weighted urban traffic noise spectrum.
$D_{ne,w}$	The normalised weighted airborne sound insulation performance of a ventilation element over a range of frequencies, expressed as a single number.

9 Appendices

A1 Relevant Policy and Guidance

National Noise Policy

Noise Policy Statement for England (NPSE, 2010)

A1.1 The Noise Policy Statement for England (NPSE, 2010) sets out the Government's Noise Policy Vision to:

"Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development".

A1.2 This long-term vision is supported by three Noise Policy Aims that can be delivered through effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development. These aims are to:

- 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.

A1.3 The explanatory note to the NPSE sets out 'effect levels' which are aligned to the Policy Aims. Drawing upon established concepts from toxicology, the NPSE defines the following noise effect levels:

- NOEL - 'No Observed Effect Level';
- LOAEL - 'Lowest Observed Adverse Effect Level'; and
- SOAEL - 'Significant Observed Adverse Effect Level'.

A1.4 The explanatory note describes SOAEL as the effect level above which significant adverse effects on health and quality of life occur, aligning this level with the first policy aim.

A1.5 LOAEL is described as the level at which adverse effects begin and the second aim of the NPSE refers to a situation where the effect lies somewhere between LOAEL and SOAEL. It requires that all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development however this does not mean that such adverse effects cannot occur.

A1.6 NOEL is described as a level of noise exposure below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life.

A1.7 The third aim seeks, where possible, to positively improve health and quality of life through the pro-active management of noise while also taking into account the guiding principles of sustainable development, recognising that there will be opportunities for such measures to be taken and that they will deliver potential benefits to society.

A1.8 The protection of quiet places and quiet times as well as the enhancement of the acoustic environment will assist with delivering this aim.

A1.9 NPSE states that it is not possible have a single, numerical definition of the SOAEL that is applicable to all sources of noise in all situations, since the SOAEL is likely to be different for different noise sources, for different receptors and at different times.

A1.10 The setting of LOAELs and SOAELs for transportation sources has however reached a form of consensus following a number of high-profile infrastructure projects in England, namely HS2 and a series of

Highways England Road schemes which have been successful through the Government's Hybrid Bill and Development Consent Order (DCO) consenting processes.

A1.11 In these projects, the setting of SOAEL has been aligned to Government policy and legislation in relation to the provision of noise insulation where it has been argued that significant adverse effects can be avoided through these means. **Table A1-1** provides a summary of the LOAEL and SOAEL values applied on these projects.

Table A1-1: LOAELs and SOAELs for Road Traffic Projects

Source / Project	Period	LOAEL	SOAEL
Road Traffic (Highway Agency A14 DCO)	Daytime	50 dB $L_{Aeq, 16hr}$	63 dB $L_{Aeq, 16hr}$
	Night-time	40 dB $L_{Aeq, 8hr}$	55 dB $L_{Aeq, 8hr}$

National Planning Policy Framework (NPPF, 2024)

A1.12 The National Planning Policy Framework (NPPF), originally introduced in 2012, sets out the Government's planning policies for England and how these should be applied. The NPPF was most recently updated in December 2024. The Planning Practice Guidance (PPG) provides further context to the NPPF, and it is intended that the two documents should be read in conjunction.

A1.13 NPPF provides policies to promote sustainable development and sets out that the purpose of the planning system is to contribute to the achievement of sustainable development. Sustainable development includes three dimensions: economic, social, and environmental, and thus, when planning decisions are made to increase capacity, the process requires weighing the relative balance of these three factors.

A1.14 The NPPF provides a framework within which locally prepared plans for housing and other development can be produced. Planning law requires that applications for planning permission must be determined in accordance with the development plan, unless material considerations indicate otherwise. Planning policies and decisions must reflect and where appropriate promote relevant obligations and statutory requirements.

A1.15 In relation to noise, it states:

"187. Planning policies and decisions should contribute to and enhance the natural local environment by: …

- 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. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and…"

A1.16 The NPPF includes policy which makes reference to "*significant adverse impacts on health and quality of life*", as per the NPSE. NPPF policy states:

"198. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

- mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;

- identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and…"

A1.17 NPPF has also introduces the agent of change principle as follows:

"200. 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."

Planning Practice Guidance – Noise (PPG-Noise, 2023)

A1.18 The Planning Practice Guidance (PPG-Noise, 2019) provides further detail about how the effects of noise can be described in terms of perception and outcomes. It aligns this to increasing effect levels as defined in the NPSE. In addition, the PPG-Noise adds a fourth term and corresponding effect level:

- UAEL – 'Unacceptable Adverse Effect Level'.

This effect level is higher than the significant adverse effect on health and quality of life (SOAEL) and requires that unacceptable adverse effects are to be prevented. In PPG-Noise, prevention is not in the context of Government policy on sustainable development.

Table A1-2 presents the noise exposure hierarchy described in PPG-Noise.

Table A1-2: Planning Practice Guidance – 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 and not intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g., turning up volume of television; speaking more loudly; 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 and 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 Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g., regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g., auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

A1.19 This noise exposure hierarchy is based on the principle that once noise or vibration becomes perceptible, the effect on people and other receptors increases as the level increases. PPG-Noise presents example outcomes to help characterise these effects using non-technical language. In general terms, an observed adverse effect is characterised as a perceived change in quality of life for occupants of a building or a perceived change in the acoustic character of an area, whereas a significant observed adverse effect disrupts activities.

A1.20 PPG-Noise also provides guidance in terms of what factors may influence whether noise could become a concern, and how adverse effects of noise can be mitigated. Examples of mitigation provided include:

- "engineering: reducing the noise generated at source and/or containing the noise generated;
- layout: where possible, optimising the distance between the source and noise-sensitive receptors and/or incorporating good design to minimise noise transmission through the use of screening by natural or purpose built barriers, or other buildings;
- using planning conditions/obligations to restrict activities allowed on the site at certain times and/or specifying permissible noise levels differentiating as appropriate between different times of day, such as evenings and late at night, and;
- mitigating the impact on areas likely to be affected by noise including through noise insulation when the impact is on a building".

A1.21 In the case of residential development, PPG-Noise also states that the impact of noise can be "*partially off-set*" if occupants have access to:

- "a relatively quiet façade (containing windows to habitable rooms) as part of their dwelling, and/or;
- a relatively quiet external amenity space for their sole use, (e.g. a garden or balcony). Although the existence of a garden or balcony is generally desirable, the intended benefits will be reduced with increasing noise exposure and could be such that significant adverse effects occur, and/or;
- a relatively quiet, protected, nearby external amenity space for sole use by a limited group of residents as part of the amenity of their dwellings, and/or;
- a relatively quiet, protected, external publicly accessible amenity space (e.g. a public park or a local green space designated because of its tranquillity) that is nearby (e.g. within 5 minutes walking distance)".

A2 Residential Development Guidance and Standards

Professional Practice Guidance (ProPG, 2017) on Planning & Noise – *'New Residential Development'*

A2.1 Professional Practice Guidance: Planning & Noise – *'New Residential Development'* (ProPG, 2017) is a joint publication by the Chartered Institute of Environmental Health (CIEH), the Association of Noise Consultants (ANC) and the Institute of Acoustics (IoA).

A2.2 The primary goal of ProPG is "to assist the delivery of sustainable development by promoting good health and wellbeing through the effective management of noise".

A2.3 The guidance has been produced to assist practitioners in matters relating to noise and new residential development. It focuses on existing transportation noise sources and has been developed to consider the Government's overarching noise policy, planning policy and policy guidance. It has also been developed to take into account other authoritative well-rehearsed sources of guidance such as British Standard 8233:2014 *'Guidance on Sound Insulation and Noise Reduction for Buildings'* (BS 8233:2014).

A2.4 The guidance provides advice for Local Planning Authorities (LPAs) and developers, and practitioners. ProPG aims to:

- Advocate the full consideration of the acoustic environment from the earliest possible stage of the development control process;
- Promote and encourage the process of good acoustic design in and around new residential developments;
- Set out the considerations which should be taken into account in deciding planning applications for new noise-sensitive developments;
- Promoting the use of appropriate noise exposure standards and policies in assessment; and
- Provide assistance in the delivery of sustainable development.

A2.5 ProPG advocates a two-stage assessment approach:

- **Stage 1** – an initial noise risk assessment of the proposed development site; and
- **Stage 2** – a systematic assessment considering four key elements.

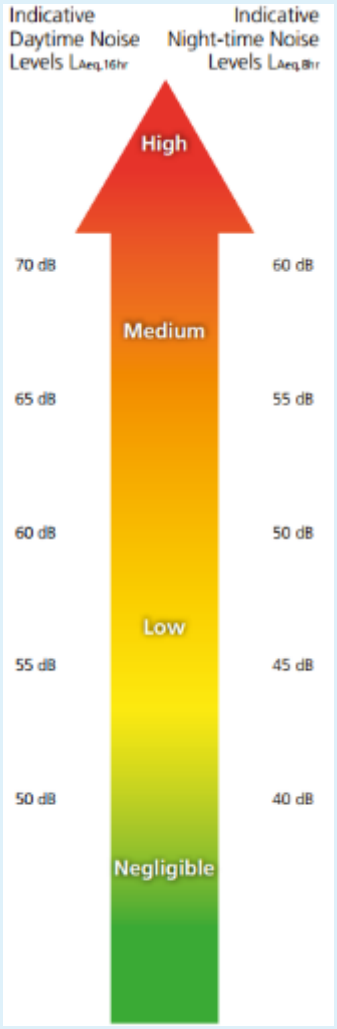
A2.6 ProPG is underpinned by the preparation and delivery of an Acoustic Design Statement (ADS).

Stage 1 – Initial Risk Assessment

A2.7 Stage 1 of ProPG provides guidance to practitioners as to whether the site poses a risk in terms of noise for any future site occupants. To identify this, ProPG sets out a number of considerations for inclusion within an 'initial risk assessment'. **Table** A2-1 reproduces Figure 1 from ProPG, which describes the initial site risk assessment.

A2.8 ProPG is clear that an Acoustic Design Statement should be included as part of a planning application where the risk is anything above 'negligible'.

Table A2-1: ProPG – Stage 1 Initial Site Risk Assessment

Noise Risk Assessment	Potential Effect Without Noise Mitigation	Pre-Planning Application Advice
	Increasing risk of adverse effect	High noise levels indicate that there is an increased risk that development may be refused on noise grounds. This risk may be reduced by following a good acoustic design process that is demonstrated in a detailed ADS. Applicants are strongly advised to seek expert advice. As noise levels increase, the site is likely to be less suitable from a noise perspective and any subsequent application may be refused unless a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised, and which clearly demonstrate that a significant adverse noise impact will be avoided in the finished development. At low noise levels, the site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised in the finished development.
	No adverse effect	These noise levels indicate that the development site is likely to be acceptable from a noise perspective, and the application need not normally be delayed on noise grounds.
Notes: a. Indicative noise levels should be assessed without inclusion of the acoustic effect of any scheme specific noise mitigation measures. b. Indicative noise levels are the combined free-field noise level from all sources of transport noise and may also include industrial/commercial noise where this is present but is "not dominant". c. $L_{Aeq,16hr}$ is for daytime 07:00 – 23:00, $L_{Aeq,8hr}$ is for night-time 23:00 – 07:00. d. An indication that there may be more than 10 noise events at night (23:00 – 07:00) with $L_{Amax,F}$ > 60 dB means the site should not be regarded as negligible risk.		

Stage 2 – Full Assessment

A2.9 Stage 2 of ProPG describes four elements required for a full assessment. These are:

- **Element 1** – demonstrating a "Good Acoustic Design Process"
- **Element 2** – observing internal "Noise Level Guidelines"

- **Element 3** – undertaking an "External Amenity Area Noise Assessment"; and
- **Element 4** – the consideration of "Other Relevant Issues".

A2.10 A summary of the considerations required in each of the four elements is provided in **Table A2-2**.

Table A2-2: ProPG Stage 2 – Summary of Four Key Elements

Element	Potential Effect Without Noise Mitigation
Element 1 Good Acoustic Design Process	Considerations include: • Good acoustic design is not just compliance with recommended internal and external noise exposure standards. Good acoustic design should provide an integrated solution whereby the optimum acoustic outcome is achieved, without design compromises that will adversely affect living conditions and the quality of life of the inhabitants or other sustainable design objectives and requirements. • Using fixed unopenable glazing for sound insulation purposes is generally unsatisfactory and should be avoided. Any reliance upon building envelope insulation with closed windows should be justified in supporting documents. The Planning Application MUST: • Check the feasibility of relocating, or reducing noise levels from relevant sources. • Consider options for planning the site or building layout. • Consider the orientation of proposed building(s). • Select construction types and methods for meeting building performance requirements. • Examine the effects of noise control measures on ventilation, fire regulation, • health and safety, cost, CDM (construction, design and management) etc. • Assess the viability of alternative solutions. • Assess external amenity area noise.
Element 2 Internal Noise Level Guidelines	Considerations include: • Reference to BS 8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings' for internal noise level guidelines • Most residents value the ability to open windows at will, for a variety of reasons, and LPAs should therefore normally request that designers principally aim, through the use of good acoustic design, to achieve the internal noise level guidelines in noise-sensitive rooms with windows open.

Element	Potential Effect Without Noise Mitigation
	Where internal noise levels are assessed with windows closed the justification for this should be included in the ADS. In the case of sites exposed to industrial and/or commercial noise: • Where industrial and/or commercial noise is present on the site and is considered to be "dominant" (i.e. where the impact would be rated as adverse or greater (subject to context)) then this is outside the scope of this ProPG and regard should be had to the guidance in BS 4142:2014. • In the special case where industrial and/or commercial noise is present on the site but is "not dominant" (i.e. where the impact would be rated as lower than adverse (subject to context) if a BS 4142:2014 assessment was to be carried out), its contribution may be included in the noise level used to establish the degree of risk in Stage 1 and may also be included in the consideration of Stage 2 Element 2 Internal Noise Level Guidelines (and if included, this should be clearly stated).
Element 3 External Amenity Area Noise Assessment	The assessment must provide and demonstrate: • Full details of the external amenity area noise assessment should be included in an Acoustic Design Statement. • The term "assessment" is deliberately used because this element concerns more than just the level of noise outside. • ProPG external amenity area noise assessment reflects and extends the advice contained in BS 8233:2014 and the current Government guidance in PPG-Noise Where external amenity areas are exposed to "dominant" industrial and/or commercial noise, the impact of the noise should be assessed in accordance with BS 4142:2014 over the time period that the amenity area is likely to be used. In the special case where industrial and/or commercial noise is present on the site but is "not dominant", its contribution may be included in the noise level used to establish the degree of risk in Stage 1 and may also be included in the consideration of Stage 2 Element 3 External Amenity Area Noise Assessment (and if included, this should be clearly stated).
Element 4 Assessment of Other Relevant Issues	Consideration should be given to: • Compliance with relevant national and local policy: i.e., NPSE, PPG-Noise and The Environmental Noise Regulations. • Magnitude and extent of compliance with ProPG • Likely occupants of the development • Acoustic design vs unintended adverse consequences: Examples include sealed up balconies that result in a lack of connection with the external environment, roadside barriers that remove views or prevent crossing roads, sealed facades that affect personal control over the

Element	Potential Effect Without Noise Mitigation
	internal environment etc. Wherever possible, such unintended adverse consequences should be obviated by good acoustic design. • Acoustic design vs wider planning objectives

Acoustic Design Statement (ADS)

A2.11 ProPG requires that the Acoustic Design Statement (ADS) provides sufficient evidence that the ProPG Stage 1 and Stage 2 Elements 1 – 4 have been followed. It also advises that the ADS should be proportionate to the scale of the development and the degree of noise risk at the proposed development site. In this context, ProPG states that the level of detail to be provided within the ADS should increase with the increasing level of risk.

Supporting Decision-Makers

A2.12 ProPG also provides advice and support to decision-makers when taking into account noise and new residential development. These recommendations are aligned to the outcomes of Stage 1 and Stage 2 of the assessment along with the considerations made within the Acoustic Design Statement. Section 3 of ProPG details the recommendations to decision-makers.

Sites Exposed to Industrial and/or Commercial Noise

A2.13 In the case of sites exposed to industrial and/or commercial noise, ProPG states that if the industrial and/or commercial noise is present but not dominant, then its contribution may be included in the noise level used to establish the degree of risk.

A2.14 If the industrial and/or commercial noise is considered to be dominant, then the risk assessment should not be applied to the industrial or commercial noise and instead the assessment should follow the methodology and guidance provided in British Standard 4142:2014+A1:2019 '*Methods for rating and assessing industrial and commercial sound*' (BS 4142:2014+A1:2019).

A2.15 ProPG states that "[t]he judgement on whether or not to undertake a BS 4142:2014 assessment to determine dominance should be proportionate to the level of risk. In low-risk cases a subjective judgement of dominance, based on audibility, would normally be sufficient."

British Standard 8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings' and World Health Organization 'Guidelines for Community Noise'

A2.16 BS 8233:2014 provides guidance for the control of noise in and around buildings. It is applicable to the design of new buildings, or refurbished buildings undergoing a change of use and states that the internal noise levels should take account of the proposed ventilation strategy.

A2.17 BS 8233:2014 provides noise guidance for buildings of different uses, however in respect to dwellings and habitable residential spaces, Table 4 of BS 8233:2014 provides guideline values that it is desirable not to exceed during daytime and night-time periods. These guideline values are reproduced in **Table A2-3**.

Table A2-3: Indoor Ambient Noise Levels for Residential Dwellings

Activity	Location	Daytime Guideline (07:00-23:00hrs)	Night-time Guideline (23:00-07:00hrs)
Resting	Living Room	35 dB $L_{Aeq, 16hr}$	-
Dining	Dining Room / Area	40 dB $L_{Aeq, 16hr}$	-
Sleeping (Daytime Resting)	Bedroom	35 dB $L_{Aeq, 16hr}$	30 dB $L_{Aeq, 8hr}$

A2.18 BS 8233:2014 also notes that: "Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved".

A2.19 BS 8233:2014 does not provide specific guidance on noise levels for regular individual noise events, such as passing trains, which can cause sleep disturbance. Guidance on suitable noise levels for individual events is provided in ProPG, which 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. However, where it is not reasonably practicable to achieve this guideline then the judgement of acceptability will depend not only on the maximum noise levels but also on factors such as source, number, distribution, predictability and regularity of noise events'.

A2.20 On this basis, it is considered appropriate to adopt the 10th highest $L_{Amax,F}$ noise event at night period for the purposes of the assessment.

A3 Baseline Survey - Instrumentation and Results

A3.1 Noise monitoring was undertaken on a part-attended basis using time-synchronised and fully calibrated Class 1 instrumentation as defined in BS EN 61672-1:2013[4], calibrated to traceable standards within 2 years of the surveys. Calibration certificates can be provided on request. Details of the instrumentation used are summarised in **Table A3-1**.

A3.2 The survey instrumentation was fitted with suitable windshields for the duration of the survey and located in free-field conditions at a height of 1.5m above local ground.

A3.3 The sound level meters were set to record several noise parameters, including the ambient (L_{Aeq}), maximum (L_{AFmax}), and background (L_{A90}) noise levels. All sound level meters were configured to capture continuous audio so that it could be reviewed where necessary to identify any noise events during unattended periods, to assist in analysis of the measured noise data. The sound level meters were set to record in 5-minute logging periods.

A3.4 All noise measurements were conducted, where possible, in accordance with BS 7445:2003[5] and supplemented by detailed observations of the sound climate at each monitoring location.

A3.5 Prior to and following the noise measurements, acoustic field-calibration of the sound level meters and microphones used in the survey was performed using an acoustic calibrator. No significant drift (i.e. ≥0.1dB) in the field-calibrated noise level was observed.

Table A3-1: Baseline Survey Instrumentation

Type	Make	Model / Type	Serial	Date of Last Calibration
Sound Level Meter	Rion	NL-52	01009670	04/02/2025
			00687043	22/12/2023
			01176453	31/07/2023
Acoustic Calibrator		NC-75	35281145	14/03/2024

[4] BS EN 61672-1:2013 'Electroacoustics. Sound level meters Specifications' (2013)
[5] BS EN 7445:2003 'Description and measurement of environmental noise. Guide to quantities and procedures' (2003)

Survey Results

A3.6 It is worth noting that some sections of data have been excluded from the assessment due to them affecting the assessment. These can be seen in NML2, and NML3 and include excavator, compound activity, helicopter and aircraft, motorbike, construction plant noise. It is also worth being cognizant of prominent noise sources that are present in the recordings which are detailed in the below figures for each NML

Figure A3-1: Level History, Location LT1 (Unattended Noise Measurements)

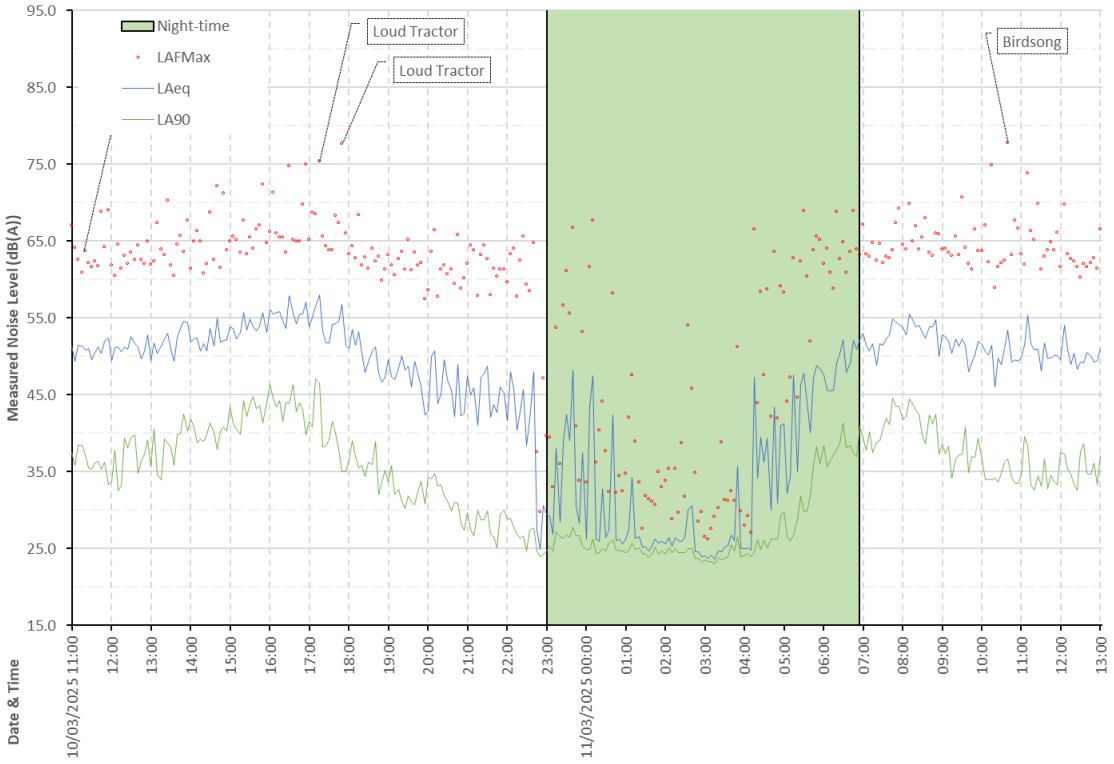


Figure A3-2: Level History, Location LT2 (Unattended Noise Measurements)

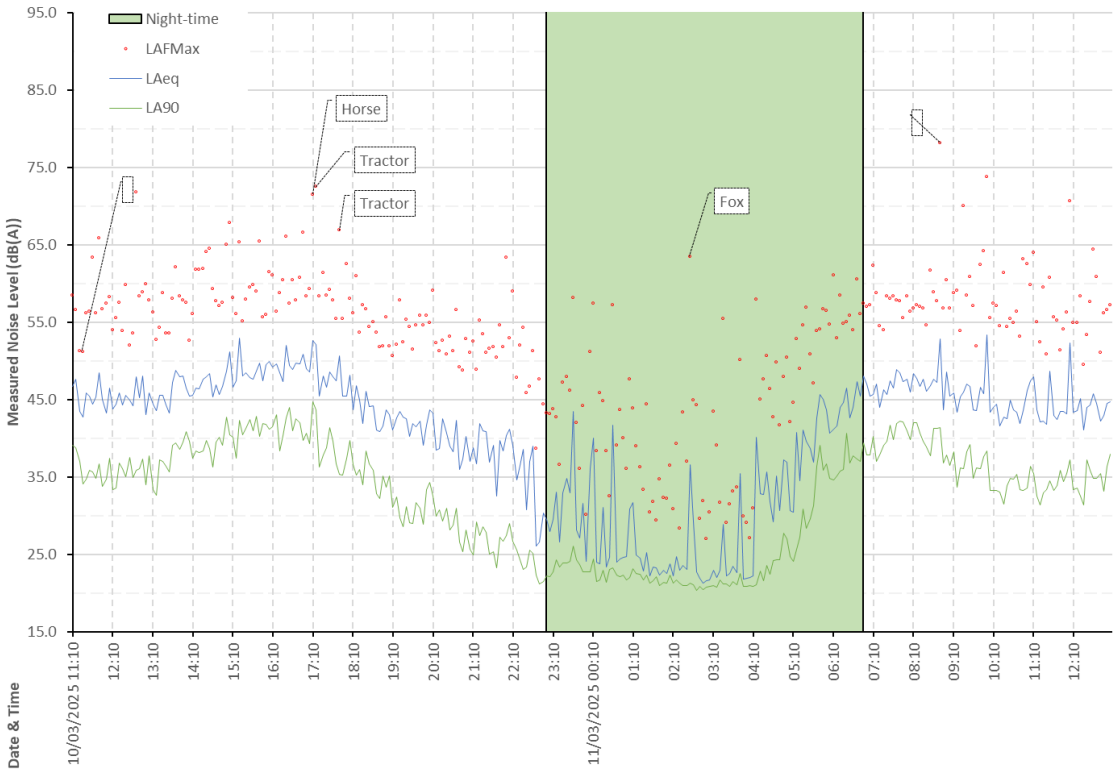
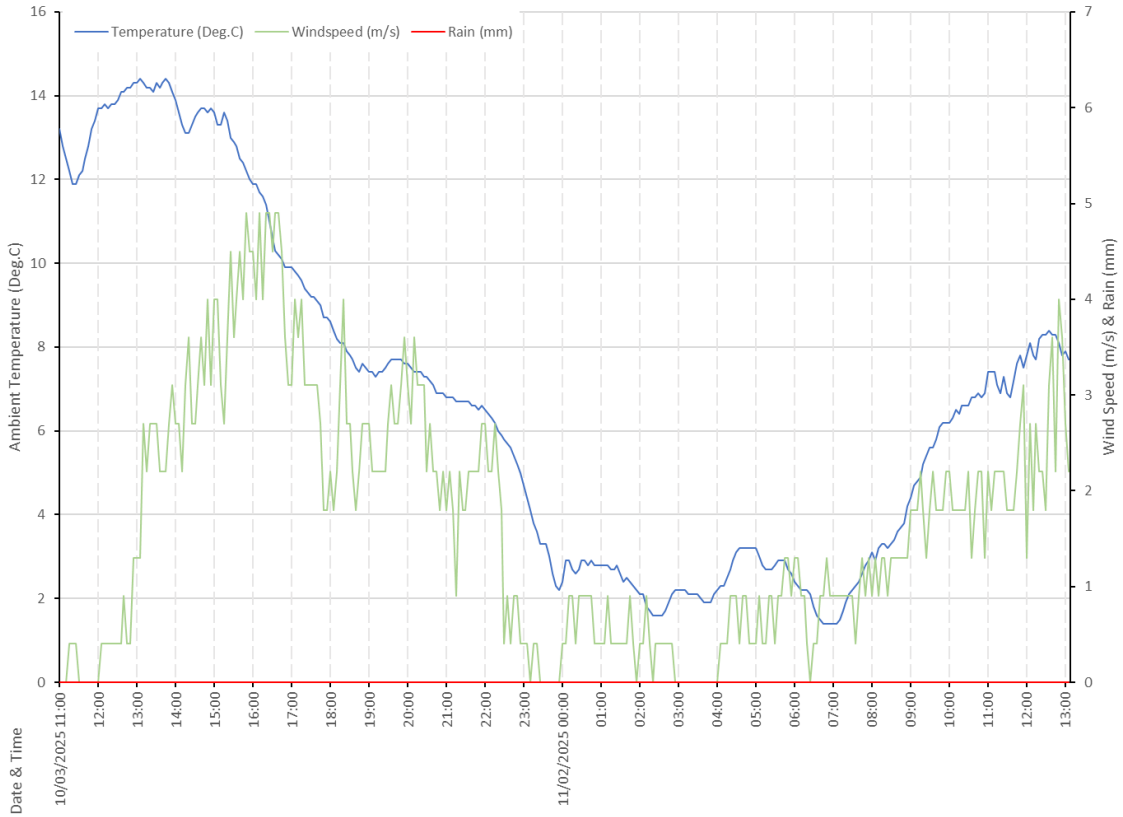


Figure A3-3: Level History, Location LT3 (Unattended Noise Measurements)



Figure A3-4: Weather Monitoring Data, WS1



A4 Baseline Survey – Site Photographs

Figure A4-1: Noise Monitoring Location LT1 (Facing East)



Figure A4-2: Noise Monitoring Location LT2 (Facing East)

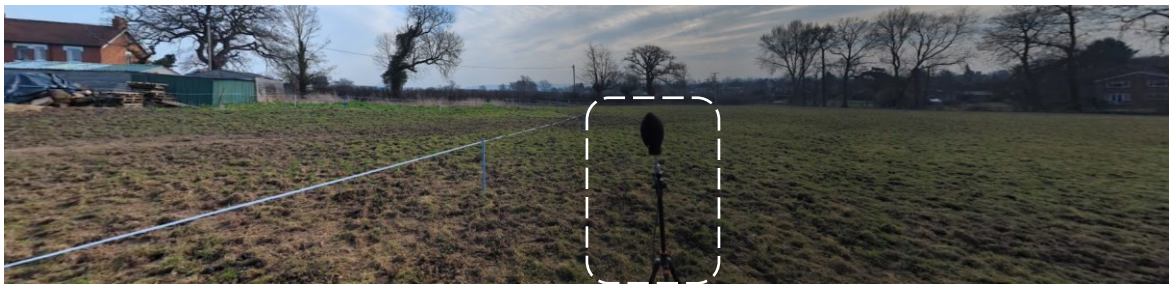


Figure A4-3: Noise Monitoring Location LT3 (Facing West)



A5 Noise Modelling Results – Road Traffic

Figure A5-1: Daytime ProPG Stage 1 Risk Assessment – Open Site



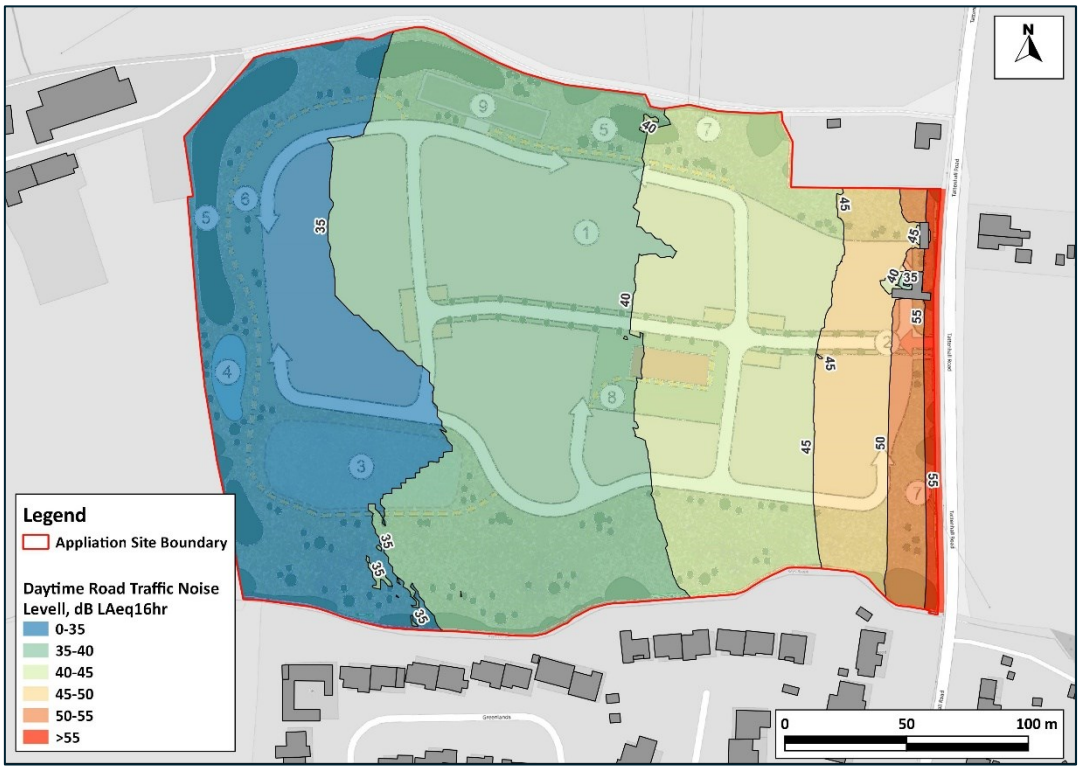
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Figure A5-2: Night-time ProPG Stage 1 Risk Assessment – Open Site



Contains OpenStreetMap data © OpenStreetMap contributors.

Figure A5-3: Daytime Road Traffic Noise Contours, dB $L_{Aeq,16hr}$



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