



Noise Impact Assessment

Land off Cronton Road, Widnes

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Basis of Report

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Executive Summary

Purpose of Report

This Noise Impact Assessment (NIA) report has been prepared to accompany an outline planning application for a proposed residential development located on land off Cronton Road, Widnes.

Assessment

This assessment has been prepared to demonstrate compliance with the National Planning Policy Framework (NPPF) and Noise Policy Statement for England (NPSE) and has been undertaken in accordance with relevant policy, standards and guidance.

The assessment has considered the potential impact of the existing noise environment on the Proposed Development. At this stage, the assessment is based on the illustrative proposals that have been submitted as part of the outline planning application. Should outline planning permission be granted, a further assessment will be undertaken at the reserved matters stage in relation to the detailed proposals.

A baseline noise level survey has been undertaken to determine existing sound levels across the Proposed Development. The dominant noise source affecting the Site is road traffic noise from Cronton Road, with shooting noise from Sandhall Air Rifle Club also audible.

For road traffic sources, computer noise modelling has been undertaken and calculated the noise propagation of existing noise sources across the Proposed Development. The noise model has been used to inform an assessment in accordance with Professional Practice Guidance on Planning and Noise, 2017 (ProPG), which has been undertaken to determine the noise impact of the Site.

For shooting noise, results from the baseline noise survey have been used to undertake an assessment in accordance with the Chartered Institute of Environmental Health (CIEH) (2003) Clay Target Shooting: Guidance on the Control of Noise.

Findings

The results of the assessment of shooting noise from the air rifle club has concluded that shooting noise levels are below the threshold for annoyance and considered to fall within the **No Observed Effect Level (NOEL)** category when considering planning policy.

For transportation noise, the ProPG Stage 1 initial site noise risk assessment concludes that during the daytime and night-time, ambient noise levels across the majority of the Proposed Development falls within the **'Negligible'** risk category, with areas adjacent to Cronton Road within the **'Medium'** to **'Low'** risk category.

For night-time maximum noise events, the north of the Proposed Development falls within the **'Negligible'** risk of adverse noise impact. Areas fronting Cronton Road will experience elevated noise levels within the **'High'** risk category, with dwellings behind these reduced to within the **'Medium'** and **'Low'** categories. The site is likely to be acceptable for residential development from a noise perspective provided that good acoustic design is applied.

The ProPG Stage 2 assessment concludes that openable windows will be suitable to achieve internal sound levels for dwelling to the north of the development. Where openable windows are not suitable, largely to the south of the development, a varying scheme of glazing and ventilation has been recommended such that the internal sound levels within BS 8233 can be achieved.



Sound levels within external amenity areas are predicted to be equal to or below 55dB $L_{Aeq,16hr}$ for the majority of the site and are therefore within the requirements of BS 8233. For areas along southern boundary, adjacent to the Cronton Road, noise levels in external amenity areas are expected to exceed BS 8233's upper guideline level of 55dB $L_{Aeq,16hour}$. Therefore, it is advised that external amenity areas should be located to the rear of dwellings fronting the Cronton Road, so that the buildings would screen the external amenity areas. Garden fences are also likely to reduce noise levels in these areas further.

An overheating assessment has been undertaken in accordance with AD-O. This concludes that the majority of the development can achieve overheating guideline levels with openable windows. However, façades to the south facing the Cronton Road would need alternative means of ventilation to meet criteria.

When assessed against the requirements of the National Planning Policy Framework (NPPF) and Noise Policy Statement for England (NPSE), a **No Observed Adverse Effect Level (NOAEL)** is predicted across the development on the basis that the façade mitigation strategies are implemented.



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Acronyms and Abbreviations

AD-O	The Building Regulations 2010 Approved Document O: Overheating, 2021
AD-F	The Building Regulations 2010 Approved Document F: Ventilation Volume 1 Dwellings, 2021
BS	British Standard
BS 5925	British Standard 5925:1991 Code of practice for ventilation principles and designing for natural ventilation
BS 8233	British Standard 8233: 2014 Guidance on sound Insulation and noise reduction for buildings
CRTN	Department for Transport (1988) Calculation of Road Traffic Noise
dB	Decibel
dB(A)	A-weighted decibel, accounting for human hearing sensitivity
EHO	Environmental Health Officer
ISO 9613-2	ISO 9613-2:2024 Acoustics — Attenuation of sound during propagation outdoors Part 2: Engineering method for the prediction of sound pressure levels outdoors
$L_{A90,T}$	A-weighted sound level exceeded for 90% of the time period T (typically used to describe background noise)
$L_{A10,T}$	A-weighted sound level exceeded for 10% of the time period T (commonly used for road traffic noise assessments)
$L_{Aeq,T}$	A-weighted equivalent continuous sound level over time period T
L_{AFmax}	A-weighted, Fast time-weighted maximum sound level
LPA	Local Planning Authority
SARC	Sandhall Air Rifle Club
WHO 1999	World Health Organization (WHO) Guidelines for Community Noise, 1999



1.0 Introduction

SLR Consulting Limited has been commissioned by Bellway Homes Limited (North West) (the 'Client') to undertake a Noise Impact Assessment (NIA) to accompany an outline planning application for a residential development (the 'Proposed Development') on land off Cronton Road, Widnes (the 'Site').

1.1.1 Site Location

The Proposed Development is situated to the north of Cronton Road (A5080) within the village of Cronton to the north of Widnes. The land is currently of agricultural use, with existing residential dwellings located to the east and southeast. Further agricultural fields bound the immediate northern and western boundaries, with Sandhall Air Rifle Club (SARC) located approximately 140m west of the Site.

1.1.2 Proposed Development

The Proposed Development comprises the erection of up to 120 residential dwellings on the Site.

1.1.3 Consultation

The Local Planning Authority (LPA), Knowsley Council, was consulted to seek agreement on the proposed assessment methodology by email on 31st October 2025.

A response was received from the Senior Officer in the Environmental Protection department at Knowsley Council on 31 October 2025, which highlighted the presence of the existing Sandhall Air Rifle Club (SARC).

Following this, SLR confirmed that SARC remains operational on Sundays between 09:00 and 15:00 and subsequently responded with the proposed methodology to assess shooting noise. The Officer responded on 4th November 2025 confirming that the proposed methodology was acceptable and as such an assessment of shooting noise from SARC has been included within this report.



2.0 Relevant Policy, Standards, and Guidance

2.1.1 National Planning Policy

There are a number of policies at the national level that will be relevant to the proposed development as listed below:

- National Planning Policy Framework, 2024¹ (NPPF);
- Planning Policy Guidance – Noise 2019² (PPG); and
- Noise Policy Statement for England, 2010³ (NPSE).

Further details of these documents are included in **Appendix A**.

2.1.2 Local Planning Policy

There are a number of policies at the local level that will be relevant to the proposed development as listed below:

- Knowsley Local Plan: Core Strategy, 2016⁴ (particularly Policy CS2); and
- Knowsley Replacement Unitary Development Plan, 2006⁵ (particularly Policy DQ1, Policy ENV2).

The Knowsley Local Plan: Core Strategy was adopted in January 2016 and forms part of the Knowsley Local Plan. The document contains policies and proposals for the development of land within Knowsley up to 2028.

Under Policy CS2 – Development Principles of the Core Strategy, Principle 4 states that:

“Recognise environmental limits, protect and enhance environmental assets, enhance local character and promote quality of place by:

“[...]

“- Mitigating potential negative impacts of traffic growth and road traffic on highway safety, air quality, noise and health;

“[...]

“- Minimising negative impact upon flood risk, air quality, water quality, land quality, soil quality, and noise or vibration levels and ensuring any negative impacts are appropriately mitigated.

“Development that will have an unacceptable impact upon any of the above will only be permitted where the benefits of the proposal clearly outweigh the harm.”

Knowsley Replacement Unitary Development Plan was adopted in June 2006.

1 Ministry of Housing, Communities & Local Government (2024). National Planning Policy Framework. [online] Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework-2>.

2 Ministry of Housing, Communities & Local Government (2019). Planning Practice Guidance. [online] Available at: <https://www.gov.uk/guidance/noise-2>.

3 Department of Environmental, Food & Rural Affairs (2010). Noise Policy Statement for England. [online] Available at: <https://www.gov.uk/government/publications/noise-policy-statement-for-england>.

4 Knowsley Council (2016) Knowsley Local Plan Core Strategy (online) Available at: <https://www.knowsley.gov.uk/sites/default/files/2023-11/knowsley-local-plan-adopted-core-strategy.pdf> [Accessed 31/10/2025]

5 Knowsley Council (2006) Knowsley Replacement Unitary Development Plan (online) Available at: <https://www.knowsley.gov.uk/sites/default/files/2023-11/Knowsley%20UDP%202006.pdf> [Accessed 31/10/2025]



Policy DQ1 – Design Quality in New Development states that:

“New development should be of a high quality design which will ... include any necessary noise attenuation and flood abatement measures as an integral part of design.”

Policy ENV2 – Noise and Vibration states that:

“1. Development that will either cause an unacceptable increase in noise or vibration levels or itself be subject to unacceptable noise or vibration from an existing source will not be permitted.

“2. Where developments are permitted, conditions may be attached to the planning permission to ensure effective noise insulation or other required mitigation measures are carried out.”

In the corresponding explanations of ENV2:

“13.15 Noise problems can be created when proposals for noise generating development would be located near to existing noise sensitive uses such as housing, hospitals and schools. Areas that are considered tranquil (e.g. parts of the countryside or urban greenspace areas) should also be considered as noise sensitive and preserved for their amenity value. Conversely, problems can also be experienced where proposals for sensitive uses such as new housing would be located close to existing factories, roads or other existing sources of noise.

“13.16 Problems can be avoided by ensuring adequate separation distances between sensitive uses and sources of noise or vibration. Where a development would be likely to generate significant levels of noise, or be sensitive to an existing noise source, the Council will require that a noise assessment report be submitted as part of the planning application. The proposals will also need to incorporate any necessary measures to reduce noise or disturbance to acceptable levels. Noise control measures such as earth mounds or fencing should be designed so that they are as visually attractive as possible (including sensitive design and siting and an appropriate degree of landscaping). Further guidance on noise assessments can be found in Planning Policy Guidance Note 24 “Planning and Noise”.”

2.1.3 Standards

The following standards have been used whilst preparing the assessment:

- ISO 9613-2:2024 Acoustics — Attenuation of sound during propagation outdoors Part 2: Engineering method for the prediction of sound pressure levels outdoors⁶ (ISO 9613-2);
- British Standard 8233: 2014 Guidance on sound Insulation and noise reduction for buildings⁷ (BS 8233);
- The Building Regulations 2010 Approved Document F: Ventilation Volume 1 Dwellings, 2021⁸ (AD-F);

⁶ International Organization for Standardization (2024). ISO 9613-2: Acoustics — Acoustics — Attenuation of sound during propagation outdoors Part 2: Engineering method for the prediction of sound pressure levels outdoors. ISO, London

⁷ British Standards Institution (2014). BS 8233:2014, Guidance on sound insulation and noise reduction on buildings. BSI: London, UK

⁸ HM Government(2021). The Building Regulations 2010, Approved Document F: Ventilation: Volume 1 Dwellings



- The Building Regulations 2010 Approved Document O: Overheating, 2021⁹ (AD-O).

Further details of these documents are included in **Appendix A**.

2.1.4 Guidance

The following standards have been used whilst preparing the assessment:

- Chartered Institute of Environmental Health (CIEH) (2003) Clay Target Shooting: Guidance on the Control of Noise¹⁰;
- Professional Practice Guidance on Planning and Noise (ProPG), New Residential Development, 2017¹¹;
- World Health Organization (WHO) Guidelines for Community Noise, 1999¹²;
- Association of Noise Consultants (2024) Approved Document O Noise Guide (November 2024)¹³; and

Further details of these documents are included in **Appendix A**.

9 HM Government(2021). The Building Regulations 2010, Approved Document O - Overheating

10 Chartered Institute of Environmental Health (2003). Clay Target Shooting: Guidance on the Control of Noise

11 Association of noise consultants (ANC), Institute of Acoustics (IOA) & Chartered Institute of Environmental Health (CIEH), 2017. Professional Practice Guidance on Planning & Noise, New Residential Development. May 2017.

12 World Health Organization (1999) Guidelines for Community Noise. [online] Available at: <https://www.who.int/publications/i/item/a68672>

13 Association of Noise Consultants (2024) Approved Document O Noise Guide v1.1



3.0 Assessment Methodology

This section presents the assessment methodology adopted in preparation of this NIA.

3.1.1 Air Rifle Club Noise

Sandhall Air Rifle Club (SARC) is located approximately 140m west of the Proposed Development. In the absence of specific air rifle noise guidance, an assessment in accordance with CIEH Clay Target Shooting: Guidance on the Control of Noise has been undertaken to determine noise levels from SARC across the Proposed Development Site.

The CIEH guidance recommends a detailed procedure for the measurement of shooting noise levels and provides a methodology for the assessment of shooting noise at sensitive receptors. Section 6.1 of the guidance states:

“Annoyance is less likely to occur at a mean shooting noise level (mean SNL) below 55 dB(A), and highly likely to occur at a mean shooting noise level (mean SNL) above 65dB(A)”

The mean SNL is defined as the arithmetic average of individual Shooting Noise Level (SNL) values. The mean SNL can be calculated using the logarithmic average of the 25 highest shot levels over a 30-minute measurement period.

Appendix 5 of the guidance states that when calculating the mean SNL for a new development, one or two 30-minute measurement periods would be appropriate for a small shoot.

3.1.1.1 Planning Policy for Air Rifle Club Noise

To determine the impact in accordance with the NPSE, **Table A** presents thresholds to describe the effect level regarding noise and its relationship to the guidance documents listed in the section above.

Table A: Comparison of National Planning Policy with Air Rifle Assessment Criteria

Impact Threshold	External Noise Levels	Action
No Observed Effect Level (NOEL)	<55 dB(A) (mean SNL)	No specific measures required.
No Observed Adverse Effect Level (NOAEL)	55 dB(A) – 60 dB(A) (mean SNL)	No specific measures required.
Lowest Observed Adverse Effect Level (LOAEL)	60 dB(A) – 65 dB(A) (mean SNL)	Context of the existing noise environment should be considered. Where required, noise levels should be mitigated and reduced to a minimum.
Significant Observed Adverse Effect Level (SOAEL)	>65 dB(A) (mean SNL)	Avoid.

3.1.2 Residential Suitability Assessment

An assessment has been undertaken to determine noise impacts from the existing road network across the Proposed Development.

Noise predictions from the surrounding road network have been undertaken using SoundPLAN 9.1. The modelling is based on the results of a baseline noise survey. Full details of the baseline noise survey and noise modelling is presented in **Sections 4.0** and **5.0**.



A ProPG stage 1 assessment has been undertaken to determine the suitability of the Site for residential development. The ProPG criteria for continuous daytime and night-time noise levels due to transport sources is reproduced in **Table B**.

Table B: ProPG 1 Initial Site Risk Assessment Criteria

Risk category	Daytime Sound Levels	Night-time Sound Levels	Night-time Maximum Sound Levels
High	>70 dB LAeq,16hr	>60 dB LAeq,8hr	> 80 dB LAfmax
Medium	60 – 70 dB LAeq,16hr	50 – 60 dB LAeq,8hr	70 - 80 dB LAfmax
Low	50 – 60 dB LAeq,16hr	40 – 50 dB LAeq,8hr	60 - 70 dB LAfmax
Negligible	< 50 dB LAeq,16hr	< 40 dB LAeq,8hr	< 60 dB LAfmax

To determine glazing and ventilation specifications and any external mitigation, an assessment has been undertaken in accordance with guidance and criteria presented within ProPG Stage 2.

The recommended internal and external criteria for daytime, night-time and maximum noise levels presented within ProPG, BS 8233 is reproduced in **Table C**.

Table C: Recommended Internal and External Noise Level Criteria

Location	ProPG / BS 8233 Recommended Criteria	
	Daytime (07:00 – 23:00)	Nighttime (23:00 – 07:00)
Living Room	35 dB LAeq,16hr	-
Bedroom	-	30 dB LAeq,8hr
	-	45 dB LAfmax
External Amenity Areas	50dB – 55dB LAeq,16hr	-

For this assessment daytime hours are taken to be 07:00 to 23:00 and night-time hours to be 23:00 to 07:00.

3.1.2.1 Planning Policy for Residential Suitability

To determine the impact in accordance with planning policy requirements, **Table D** presents the threshold to describe the effect level regarding noise and its relationship to guidance documents.

Table D: Comparison of National Planning Policy with Assessment Criteria

Impact Threshold	External Noise Levels	Internal Noise Levels	Action
No Observed Effect Level (NOEL)	External Amenity <50dB LAeq,16hr	Living Rooms <35dB LAeq,16hr Bedrooms <30dB LAeq,8hr <45dB LAfmax	No specific measures required.
No Observed Adverse Effect Level (NOAEL)	External Amenity 50-55dB LAeq,16hr	Living Rooms 35-40dB LAeq,16hr Bedrooms	No specific measures required.



Impact Threshold	External Noise Levels	Internal Noise Levels	Action
		30-35dB $L_{Aeq,8hr}$ 45-50 L_{AFmax}	
Lowest Observed Adverse Effect Level (LOAEL)	External Amenity 55-60dB $L_{Aeq,16hr}$	Living Rooms 40-45dB $L_{Aeq,16hr}$ Bedrooms 35-40 dB $L_{Aeq,8hr}$ 50-55 L_{AFmax}	Context of the existing noise environment should be considered. Where required, noise levels should be mitigated and reduced to a minimum.
Significant Observed Adverse Effect Level (SOAEL)	External Amenity >60dB $L_{Aeq,16hr}$	Living Rooms >45dB $L_{Aeq,16hr}$ Bedrooms >40dB $L_{Aeq,8hr}$ >55 L_{AFmax}	Avoid.

3.1.3 Approved Document O: Overheating

An assessment of overheating has been carried out using the following internal noise criteria as set out in AD-O:

- 40dB $L_{Aeq,8hr}$ at night; and
- 55dB L_{AFmax} more than 10 times a night.

Where the internal noise level exceeds these values, then overheating mitigation, using a method other than openable windows, is likely to be required.



4.0 Baseline Conditions

SLR Consulting Limited carried out a noise survey between Friday 7th and Tuesday 11th November 2025 representative of the Site and existing noise sources.

Noise measurements were taken at locations considered to be representative of road traffic noise from Cronton Road (A5080) and SARC.

4.1 Noise Survey

The sound level meters were calibrated to a reference level of 94 dB at 1 kHz both before, and on completion of, the noise survey. No drift in calibration was measured during the survey.

The noise measurements were made using Class 1, integrating sound level meters. The microphones were mounted vertically on a tripod approximately 1.5 m above the ground and more than 3.5 m from any other reflecting surfaces.

A weather station was deployed for the duration of the survey period. Weather conditions during the survey were dry for the majority of the measurement period with wind speeds of less than 5m/s. Occasional precipitation was recorded during the measurement, which has been omitted from the measurement results.

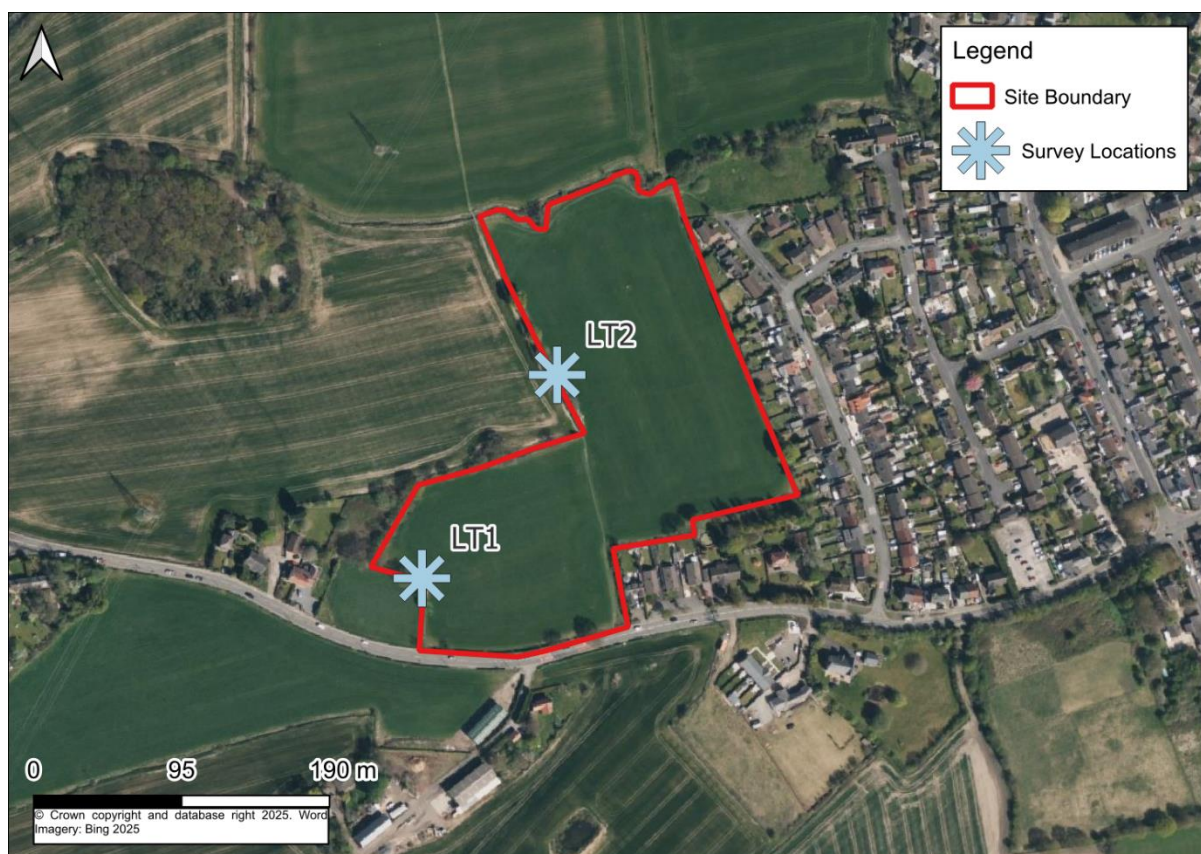
Table E summarises the monitoring locations with **Figure A** presenting them illustratively.

Table E: Noise Monitoring Locations

Monitoring Location	Coordinates (X,Y)	Start Date & Time (hh:mm)	End Date & Time (hh:mm)	Description
LT1 (Unattended)	348900, 388230	12:14 7 th November 2025	10:16 11 th November 2025	Dominant road traffic noise from Cronton Road. Other noise sources included occasional noise from aircrafts overhead and birdsong.
LT2 (Unattended)	348990, 388360	11:51 7 th November 2025	10:00 11 th November 2025	Road traffic noise from Cronton Road. Other noise sources included occasional noise from aircrafts overhead, birdsong and dog walkers on field. Shooting noise from the Air Rifle Club was audible on Sunday but not during set up or collection.



Figure A - Noise Monitoring Locations



4.2 Summary of Monitoring Results

A-weighted L_{eq} and maximum noise levels were measured to comply with the requirements of BS 8233. A-weighted L_{90} noise levels were also measured to provide additional information.

The noise levels measured during the noise survey have been divided into daytime (07:00-23:00 hours) and night-time (23:00-07:00 hours) categories. The results of the noise surveys are presented in **Table F** and **Table G** below.



Table F: LT1 Summary of Noise Monitoring Results

Parameter	Background Sound Level, dB L _{A90,T}		Residual Sound Level, dB L _{Aeq,T}		Maximum Sound Level, dB L _{AFmax}	
	Day (16 hour)	Night (8 hour)	Day (16 hour)	Night (8 hour)	Day (16 hour)	Night (8 hour)
Range	38 - 57	31 - 52	51 - 70	36 - 60	63 - 91	43 - 73
25th %ile	45	35	56	45	67	63
Median	47	37	57	47	69	65
75th %ile	50	39	59	50	72	67
Arithmetic Avg	47	37	57	48	70	65
Log Avg	-	-	58	50	-	-
Modal Value	48	37	-	-	-	-
10 th Highest	-	-	-	-	-	70

Table G: LT2 Summary of Noise Monitoring Results

Parameter	Background Sound Level, dB L _{A90,T}		Residual Sound Level, dB L _{Aeq,T}		Maximum Sound Level, dB L _{AFmax}	
	Day (16 hour)	Night (8 hour)	Day (16 hour)	Night (8 hour)	Day (16 hour)	Night (8 hour)
Range	42 - 53	39 - 51	45 - 72	41 - 53	54 - 88	47 - 73
25th %ile	46	41	49	42	61	51
Median	47	42	50	45	65	54
75th %ile	48	44	52	46	70	57
Arithmetic Avg	47	43	50	45	66	55
Log Avg	-	-	53	45	-	-
Modal Value	47	41	-	-	-	-
10 th Highest	-	-	-	-	-	65

4.3 Determination of Shooting Noise Level

Thorough analysis of audio recordings and measured data has been undertaken for measurement location LT2 to determine an appropriate shooting noise level from SARC.

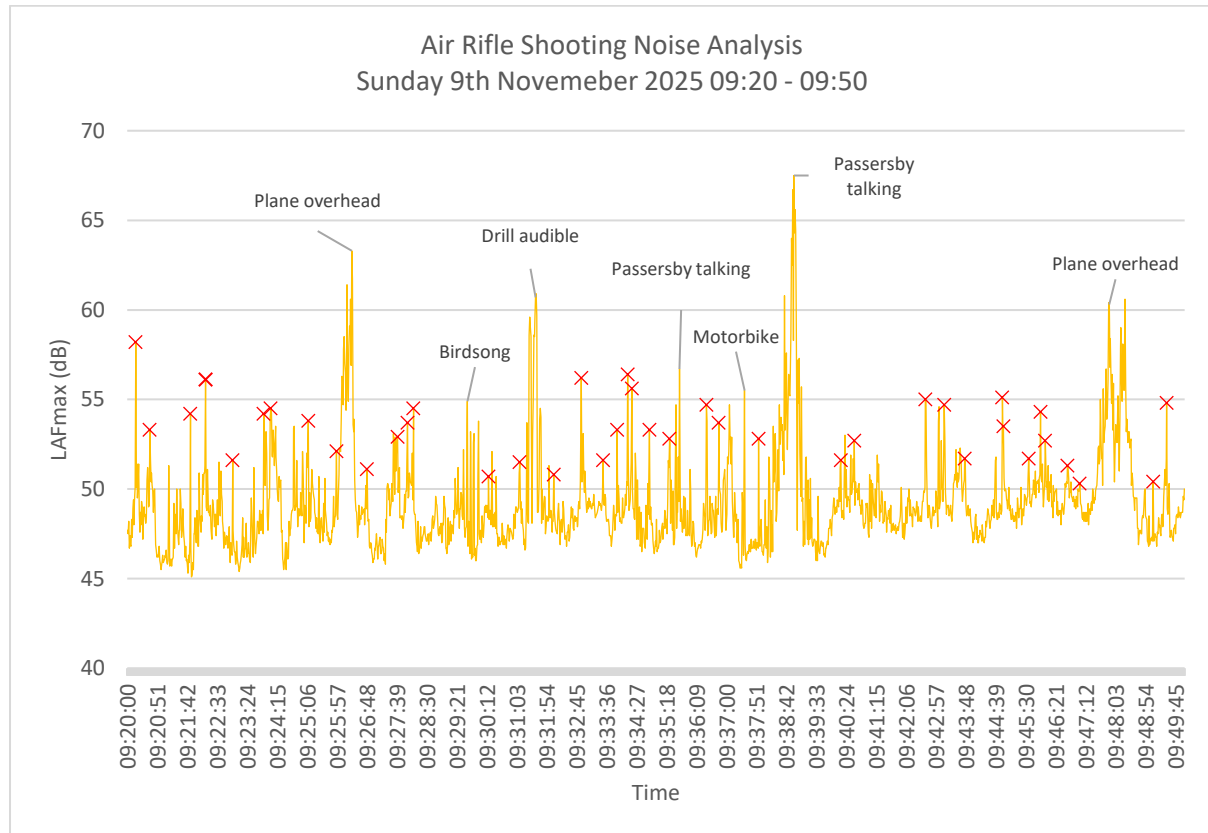
Upon review of SARC's opening hours, it is understood that the club operates on Sundays between 09:00 – 15:00.

To determine a shooting noise level in line with the CIEH Clay Target Shooting: Guidance on the Control of Noise, the maximum A-weighted fast sound pressure level across a continuous 30-minute period of shooting was analysed. In accordance with the above, the most identifiable period of shooting noise across the measurement period was on Sunday 9th November 2025 between 9:20 - 9:50.



The 25 highest shooting noise levels recorded between 9:20 - 9:50 at measurement location LT2 have been used to determine the shooting noise level. **Figure B** presents a graphical representation of the 30-minute period, with data attributable to shooting noise identified as red crosses. The mean shooting noise level determined over this period was 54.9 dB(A) at measurement location LT2.

Figure B – 30 Minute Shooting Noise Analysis



5.0 Noise Modelling

To inform the noise assessment, a noise model has been produced using SoundPLAN 9.1 to predict noise levels at the ESRs. The SoundPLAN model uses the noise prediction methodology set out in ISO 9613-2:2024 and CRTN.

5.1 Noise Model Setup

SoundPLAN modelling software utilises publicly available topography data and digital terrain mapping to generate 3D environmental models. The model implements the following factors to predict noise propagation:

- Sound source location;
- Relative distances between sound sources/receivers;
- Location and dimensions of object barriers including man-made or natural;
- Ground contours, determining the relative ground heights; and
- Ground absorption effects due to soft/hard ground.
- The ground absorption factor has been set to $G=0.8$ across the development Site and surrounding area.
- Orders of reflections has been set to 3.

Buildings surrounding the Site have been modelled at a height of 8 m height for two storey properties and 4m for one storey properties.

5.2 Model Noise Source Inputs

5.2.1 Road Traffic Noise

Road traffic noise from Cronton Road was noted as being the dominant noise source on Site.

Road traffic noise levels measured as part of the baseline noise survey representative of Cronton Road have been included within the noise model using line sources for continuous noise. Night-time maximum noise levels have been modelled as points sources.

Sound power levels of the line sources and point sources have been determined by calibrating the predicted noise level to what was measured at measurement location LT1.

For LT1 the logarithmic average $L_{Aeq,16hour}$ and $L_{Aeq,8hour}$ and the 10th highest measured L_{AFmax} value have been used to calibrate the model.

The sound power levels used to achieve these sound levels are presented within **Table H** for daytime $L_{Aeq,16hour}$ and night-time $L_{Aeq,8hour}$ and L_{AFmax} noise events.



Table H: Road Traffic Noise – Noise Model Source Input

Period	Sound Power Level Octave Band Used in Model, Hz, dB								Measured Noise Level at Monitoring Location dB	Predicted Noise Level at Monitoring Location dB
	63	125	250	500	1000	2000	4000	8000		
Cronton Road (LT1)										
L _{eq,16hr}	111	109	112	114	113	104	96	98	58	58
L _{eq,8hr}	103	102	107	107	105	96	88	92	50	50
L _{AFmax}	-	-	-	118	-	-	-	-	70	70

Table H demonstrates that predicted noise levels at the monitoring locations are equal to the measured noise level and therefore the model is considered suitably verified.



6.0 Assessment of Effects

6.1 Air Rifle Club Noise

An assessment of the shooting noise from SARC has been undertaken in accordance with guidance presented in CIEH (2003) Clay Target Shooting: Guidance on the Control of Noise.

Section 4.3 of this report identifies that the mean shooting noise level at measurement location LT2 was 54.9dB(A). LT2 was positioned on the western boundary of the Site, approximately 145m from SARC and is considered representative of a worst-case location for determining noise levels from SARC.

Based on this, noise levels at LT2 are below the 55dB(A) threshold for annoyance from shooting noise, as defined in CIEH (2003) Clay Target Shooting: Guidance on the Control of Noise. As the measurement was undertaken at the Site boundary, it is likely that noise levels at proposed dwellings would be lower than those recorded at LT2.

Therefore, in accordance with planning policy, shooting noise from the air rifle club upon the Proposed Development is considered to fall within the **NOEL** category.

6.2 Residential Site Suitability Assessment

6.2.1 Pro PG Stage 1: Initial Site Noise Risk Assessment

In accordance with Pro PG Stage 1, a Site Noise Risk Assessment (SNRA) has been carried out. The SNRA assesses the risk of existing noise having an adverse impact on the proposed development based on the predicted noise levels with no development or mitigation in place.

The propagation of noise across the Proposed Development has been calculated in SoundPLAN 9.1 for daytime $L_{Aeq,16hour}$ and night-time $L_{Aeq,8hour}$ and L_{AFmax} noise events, in accordance with the methodology and modelling inputs presented in **Section 5.0**.

Drawing 001 illustrates daytime noise propagation across the Proposed Development. To assess potential noise impacts, the colour coded contours shown should be referenced against the ProPG risk of adverse effect scale for daytime conditions. The contours indicate that areas to the north of the Site fall within the '**Negligible**' risk category. However, areas adjacent to Cronton Road will experience elevated noise levels within the '**Medium**' risk category, with areas further into site experiencing a '**Low**' risk.

Drawing 002 presents the propagation of noise across the development site during the night-time period. To assess potential noise impacts, the colour coded contours shown should be referenced against the ProPG risk of adverse effect scale for night-time conditions. The contours indicate that most of the Site falls within the '**Low**' risk category. However, areas fronting Cronton Road will experience elevated noise levels within the '**Medium**' risk category. Areas to the north of site will fall within a '**Negligible**' risk category.

Drawing 003 presents the propagation of noise across the development site for night-time maximum noise levels. To assess potential noise impacts, the colour coded contours shown should be referenced against the ProPG risk of adverse effect scale for night-time maximum noise levels. The contours indicate that the north of the Site falls within the '**Negligible**' risk category. However, areas adjacent to Cronton Road will experience elevated noise levels within the '**High**' risk category, with further into site being reduced to within the '**Medium**' and '**Low**' categories.

The SNRA concludes that good acoustic design is required to ensure that the potential risk of the noise impact is minimised, and guideline internal noise levels are achieved. Therefore, a Stage 2 full assessment is required to ensure that future residents are protected, and noise impacts are minimised to within acceptable levels.



6.2.2 ProPG Stage 2: Full Assessment

6.2.2.1 Element 1 – Good Acoustic Design

Good acoustic design should be a factor considered at the design stage to ensure acceptable internal and external noise environments are achieved.

It is recommended that, where possible, habitable rooms (living/dining areas and bedrooms) are positioned facing away from the adjacent roads to minimise internal noise levels. Conversely, rooms which are less sensitive (kitchens, bathrooms, storage rooms, corridors etc.) should be placed on the noisy side of the building. This should avoid the potential for significant adverse effects of individual noise events (L_{AFmax}) on sleep i.e. behavioural awakenings and physiological impacts. An additional way of minimising the intrusion of noise is to minimise the number of doors and windows on the noisy side of dwellings.

6.2.2.2 Element 2 – Internal Noise Level Guidance

In accordance with ProPG Stage 2 and BS8233, the criteria for living rooms during the daytime period is 35dB $L_{Aeq,16hr}$. The criteria for noise levels in bedrooms during the night-time period are 30dB $L_{Aeq,8hr}$ and 45dB L_{AFmax} .

As windows may be required to be shut for habitable rooms which are most exposed to the Cronton Road, consideration has been given to the minimum specification of glazing and ventilation to achieve the necessary internal acoustic performance criteria.

To determine the internal noise levels within sensitive rooms and assess the potential glazing and ventilation requirements to meet the requirements of BS8233, indicative single figure break-in calculations have been undertaken based on how much attenuation is needed to meet ProPG internal noise levels for each noise risk category.

Indicative break-in calculations for achieving acceptable internal daytime noise levels based on the upper range of the ProPG noise risk categories are presented in **Table I**.

Table I: Indicative Break-In Calculations – Daytime $L_{Aeq,16hour}$

	Class A (ProPG Medium Risk)	Class B (ProPG Medium – Low Risk)	Class C (ProPG Low Risk)
Sound Pressure Level (Upper Range of ProPG Category), dB $L_{Aeq,16h}$	69	64	59
Window Sound Reduction Index, dB $R_w + C_{tr}$	38	29	25
Window Area, m ²	2	2	2
Wall Sound Reduction Index, dB $R_w + C_{tr}$	47	47	47
Wall Area, m ²	11	11	11
Vent Sound Reduction Index, dB $D_{ne,w} + C_{tr}$	42	40	33
Corrected Vent Sound Reduction Index, dB $D_{ne,w}$ for x2 vent units	39	37	30
Composite (Whole Façade) Weighted SRI, dB R_w	34	29	24



	Class A (ProPG Medium Risk)	Class B (ProPG Medium – Low Risk)	Class C (ProPG Low Risk)
Average sound pressure level in receiving room, normalised to 10 m ² absorption, dBA L _{2,n}	35	35	35

Indicative break-in calculations for achieving acceptable internal night-time and night-time maximum noise levels based on the upper range of the ProPG noise risk categories are presented in **Table J**.

Table J: Indicative Break-In Calculations – Night-time L_{Aeq,8hour} & L_{AFmax}

	Class A (ProPG Medium Risk)		Class B (ProPG Medium – Low Risk)		Class C (ProPG Low Risk)	
	L _{Aeq,8hour}	L _{AFmax}	L _{Aeq,8hour}	L _{AFmax}	L _{Aeq,8hour}	L _{AFmax}
Sound Pressure Level (Upper Range of ProPG Category), dB L _{Aeq,16h}	59	79	54	74	49	69
Window Sound Reduction Index (SRI), dB R _w + C _{tr}	38	38	29	29	25	25
Window Area, m ²	2	2	2	2	2	2
Wall SRI, dB R _w + C _{tr}	47	47	47	47	47	47
Wall Area, m ²	11	11	11	11	11	11
Vent SRI, dB D _{ne,w} + C _{tr}	42	42	40	40	33	33
Corrected Vent SRI, dB D _{ne,w} for x2 vent units	39	39	37	37	30	30
CompoSite (Whole Façade) Weighted SRI, dB R _w	34	34	29	29	24	24
Average sound	25	45	25	45	25	45



	Class A (ProPG Medium Risk)		Class B (ProPG Medium – Low Risk)		Class C (ProPG Low Risk)	
	L _{Aeq,8hour}	L _{AFmax}	L _{Aeq,8hour}	L _{AFmax}	L _{Aeq,8hour}	L _{AFmax}
pressure level in receiving room, normalised to 10 m ² absorption, dBA L _{2,n}						

The break-in calculations demonstrate that three façade mitigation strategies are required across the development so that required internal noise levels are achieved. Where noise levels fall within the Negligible ProPG risk category, external incident noise levels will be less than 10 dB above the internal noise level criteria and therefore openable windows are concluded to be adequate, with no upgraded glazing or ventilation. This is in accordance with BS 8233, where a partially open window offers 15dB of attenuation. The specifications advised for each noise risk category based on the results of the break-in calculations are summarised in **Table K** and shown illustratively across the Proposed Development in **Drawing 004** and **Drawing 005**.

Table K: Proposed Façade Mitigation Strategies for Living Rooms and Bedrooms

ProPG Noise Risk Category	Façade Mitigation Strategy Minimum Sound Reduction Index (SRI)	Example Product	Room Type	External Noise Level Threshold Where Façade Mitigation Strategy is Required dB
Negligible	Openable Windows		Living Rooms	≤ 50 L _{Aeq}
			Bedrooms	≤ 40 L _{Aeq} ≤ 60 L _{AFmax}
Low	Glazing – 25dB R _w +C _{tr} Ventilation – 33dB D _{ne,w} + C _{tr} (vent in open position)	4(6-16)4 glazing paired with Greenwoods 4000L trickle vent(s)	Living Rooms	≤ 59 L _{Aeq}
			Bedrooms	≤ 49 L _{Aeq} ≤ 69 L _{AFmax}
Low – Medium	Glazing – 29dB R _w +C _{tr} Ventilation – 40 D _{ne,w} + C _{tr} (vent in open position)	8(6-16)4 glazing paired with Greenwoods 2500EAW.AC1 trickle vent(s)	Living Rooms	≤ 64 L _{Aeq}
			Bedrooms	≤ 54 L _{Aeq} ≤ 74 L _{AFmax}
Medium	Glazing – 38dB R _w +C _{tr} Ventilation – 42dB D _{ne,w} + C _{tr} (vent in open position)	6(6-16)6 laminated glazing paired with Greenwoods 2500EAW.AC2 trickle vent(s)	Living Rooms	≤ 69 L _{Aeq}
			Bedrooms	≤ 59 L _{Aeq} ≤ 79 L _{AFmax}

These are only example products and any specification with similar or better performances would be suitable. Alternative ventilation strategies could also be suitable and will need to comply with Building Regulations ADF and ADO.



It is recommended that any acoustic ventilation proposed at the Site should, as a minimum, comply with Building Regulations 2000 Approved Document F Means of Ventilation and British Standard BS5925 1991: "Code of Practice for Ventilation Principles and Designing for Natural Ventilation".

The implementation of the recommended glazing together with appropriate acoustic ventilators would ensure that the required internal daytime and night-time noise levels are achieved.

6.2.2.3 Element 3 – External Amenity Areas

In accordance with the requirements of BS 8233, it is desirable that noise levels in external amenity areas do not exceed 50dB $L_{Aeq,16hr}$, with an upper guideline value of 55dB $L_{Aeq,16hr}$ which is acceptable in noisier environments.

Drawing 006 - Daytime External Amenity Noise Levels @1.5m indicates that external amenity areas across the majority of the Proposed Development will be equal to or below the desirable noise level of 50dB $L_{Aeq,16hr}$. For external amenity areas to the south of the development, noise levels exceed 50dB $L_{Aeq,16hr}$ but the majority is within the upper guideline value of 55dB $L_{Aeq,16hr}$. It is considered that noise levels within 55dB $L_{Aeq,16hr}$ would be acceptable due to the Site's close proximity to the existing road network. For areas along southern boundary, adjacent to the Cronton Road, noise levels in external amenity areas are expected to exceed BS 8233's upper guideline level of 55dB $L_{Aeq,16hr}$. Therefore, it is advised that external amenity areas should be located to the rear of dwellings fronting the Cronton Road, so that the buildings would screen the external amenity areas. Incorporation of garden fences is also likely to reduce noise levels in these areas further.

Should outline planning permission be granted, further assessment of noise levels within external amenity areas will be undertaken at the reserved matters to determine if mitigation measures are required.

6.2.2.4 Element 4 – Assessment of Other Relevant Issues

Compliance with National Planning Policy

The assessment demonstrates that noise from the surrounding road network is unlikely to cause a significant effect across internal habitable rooms on the basis that good acoustic design and various façade mitigation strategies are implemented. On this basis, and in consideration of national planning policy, it is considered that adverse effects due to internal noise levels will be no greater than NOEL.

Noise levels within external amenity areas are predicted to fall within the NOEL category across the majority of the Proposed Development, and within the NOAEL category for amenity areas to the south-east and majority of the south-west of the Site. External amenity noise levels in a small part of the garden in Plot 22 remains within the LOAEL category, however,

noise levels within these areas considered acceptable given the Site's proximity to the existing road network and the incorporation of 2.4m garden fences within the design to reduce noise levels as much as reasonably practicable.

Likely Occupants of the Development

The guidance under paragraph 2.26 of ProPG:2017 states that the "detailed design may, to a certain extent, both reflect and influence the likely occupants of new residential development... certain groups such as families with young children, students and the elderly may all have different requirements and sensitivities as regards to acoustic conditions and, in particular, varying needs for access to quiet external space....".



The Proposed Development is considered typical in terms of layout, setting and features. Future residents would therefore be expected to be composed of a typical mix of ages. The Proposed Development will offer good access to private quiet external amenity areas. Areas in close proximity to Cronton Road will be exposed to higher noise levels than others, however noise levels within these areas considered acceptable given the Site's proximity to the existing road network.

On this basis it is considered that the Proposed Development is not prejudicial to any future occupants in terms of access to varying acoustic conditions appropriate to their likely requirements.

Acoustic Design vs Unintended Adverse Consequences

ProPG:2017 identifies a number of unintended consequences that may arise when addressing acoustic challenges. These include, but are not limited to:

- affecting the attractiveness of the living environment;
- sealed balconies reducing the connection with the external environment;
- roadside barriers removing views or preventing road crossings; and
- sealed façades affecting personal control over the internal environment.

During the detailed design stage, the specification of any required acoustic fences should be undertaken with care to ensure that no gardens are enclosed on all sides with tall boundary treatments.

Windows will be openable but alternative provision to provide background ventilation and remove excess heat from the indoor environment should the occupant need to keep their window closed to control noise ingress will be provided during the detailed design stage as part of a reserved matters application.

6.3 Overheating Assessment

An assessment of overheating has been carried out using criteria presented in ADO for both night-time L_{Aeq} and L_{AFmax} night-time noise levels. To comply with ADO, internal noise levels should not exceed $40dB_{L_{Aeq,8hr}}$ for the duration of the night-time and $55dB_{L_{AFmax}}$ more than 10 times a night. Where internal noise levels exceed these values, then overheating mitigation, using a method other than an open window, is likely to be required.

The results set out in **Drawing 007** show the areas of the Proposed Development that are likely to exceed the ADO limits, assuming 10dB reduction for an open window.

For those properties where the internal noise level thresholds are achieved with an open window natural ventilation can be used to remove excess heat from the indoor environment.

Where facades are identified as needing windows to remain closed to limit external sound ingress, alternative provision will be needed to remove excess heat from the indoor environment.

The predicted noise levels indicate that areas adjacent to Cronton Road will exceed ADO criteria with openable windows. Therefore, overheating mitigation would be required for any bedrooms on these facades.

We recommend that an M&E specialist is employed to provide a detailed overheating assessment to determine if these properties are at risk of overheating. If properties are identified as likely to overheat with windows closed detailed design can form part of the Building Regulation submission. Examples of methodologies to remove excess heat, other than an open window could include:

- A noise mitigated ventilation louvre in an external wall,



- A mechanical ventilation system, such as MVHR, and
- Mechanical cooling, (e.g. air conditioning).



7.0 Conclusion

A Noise Impact Assessment has been prepared to accompany an outline planning application for a residential development on land off Cronton Road, Widnes.

A baseline noise level survey has been undertaken to determine existing sound levels across the development site. The dominant noise source affecting the Site is road traffic noise from Cronton Road, with shooting noise from Sandhall Air Rifle Club also audible.

For shooting noise, results from the baseline noise survey have been used to undertake an assessment in accordance with the Chartered Institute of Environmental Health (CIEH) (2003) Clay Target Shooting: Guidance on the Control of Noise. The results of the assessment of shooting noise from the air rifle club has concluded that shooting noise levels are below the threshold for annoyance and considered to fall within the **NOEL** category when considering planning policy.

For road traffic sources, computer noise modelling has been undertaken and calculated the noise propagation of existing noise sources across the Proposed Development. The noise model has been used to inform an assessment in accordance with Professional Practice Guidance on Planning and Noise, 2017 (ProPG), which has been undertaken to determine the noise impact of the Site.

The ProPG Stage 1 initial site noise risk assessment concludes that during the daytime and night-time, ambient noise levels across the majority of the Proposed Development falls within the '**Negligible**' risk category, with areas adjacent to Cronton Road within the '**Medium**' to '**Low**' risk category. For night-time maximum noise events, the north of the Proposed Development falls within the '**Negligible**' risk of adverse noise impact. Areas fronting Cronton Road will experience elevated noise levels within the '**High**' risk category, with dwellings behind these reduced to within the '**Medium**' and '**Low**' categories. The site is likely to be acceptable for residential development from a noise perspective provided that good acoustic design is applied.

The ProPG Stage 2 assessment concludes that openable windows will be suitable to achieve internal sound levels for dwelling to the north of the development. Where openable windows are not suitable, largely to the south of the development, a varying scheme of glazing and ventilation has been recommended such that the internal sound levels within BS 8233 can be achieved.

Sound levels within external amenity areas are predicted to be equal to or below 55dB $L_{Aeq,16hr}$ for the majority of the site and are therefore within the requirements of BS 8233. For areas along southern boundary, adjacent to the Cronton Road, noise levels in external amenity areas are expected to exceed BS 8233's upper guideline level of 55dB $L_{Aeq,16hour}$. Therefore, it is advised that external amenity areas should be located to the rear of dwellings fronting the Cronton Road, so that the buildings would screen the external amenity areas. Garden fences are also likely to reduce noise levels in these areas further.

An overheating assessment has been undertaken in accordance with AD-O. This concludes that the majority of the development can achieve overheating guideline levels with openable windows. However, façades to the south facing the Cronton Road would need alternative means of ventilation to meet criteria.

When assessed against the requirements of the National Planning Policy Framework (NPPF) and Noise Policy Statement for England (NPSE), a **No Observed Adverse Effect Level (NOAEL)** is predicted across the development on the basis that the façade mitigation strategies are implemented.



8.0 Closure

The assessment has required a suitable level of technical ability and has been undertaken by a Suitably Qualified Person (SQP). An individual with all the following credentials has been considered a SQP for this assessment:

- Has a minimum of three years' verifiable experience (within the last five years) of providing noise impact assessments in planning. Such experience has clearly demonstrated a practical understanding of factors affecting acoustics in relation to the proposed development use and in the built environment in general, including acting in an advisory capacity to provide recommendations and design advice in planning, and;
- Holds a recognised acoustic qualification and membership of an appropriate professional body. The primary professional body for acoustics in the UK is the Institute of Acoustics.

This assessment has been led and managed by a SQP as defined above.

Where some elements of the assessment (e.g. measurements) have been carried out by an acoustician who does not meet the requirements above, this has been undertaken with the direct guidance and supervision of a SQP who has reviewed, agreed and overseen the measurement methodology and any results obtained.

The SQP confirms that the relevant measurements and calculations:

- Represent good industry practice in accordance with available guidance.
- Are appropriate given the development being assessed and scope of works proposed.
- Avoid invalid, biased and exaggerated claims.

The checker and author of this document confirm that they both comply with the definition of a SQP defined in this Section.

Regards,

SLR Consulting Limited



Cavan Garfield
Acoustics Consultant

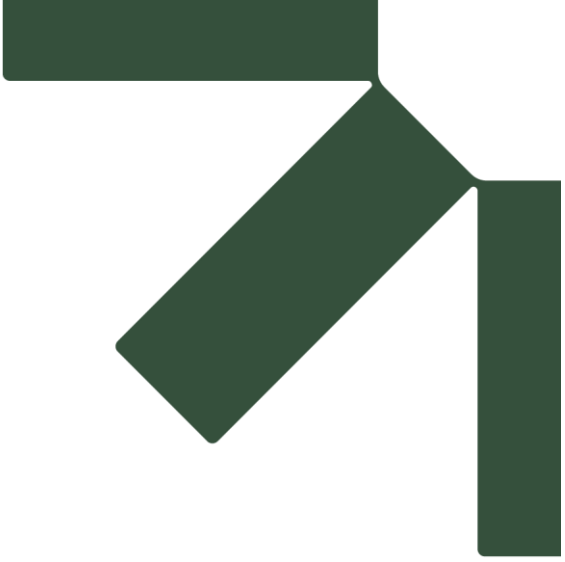


Chloe Glenn, AMIOA
Senior Acoustics Consultant



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Appendix A Relevant Policy, Standards and Guidance

Noise Impact Assessment

Land off Cronton Road, Widnes

Bellway Homes Limited (North West)

SLR Project No.: 440.021314.00001

12 December 2025

Policy		Policy Context												
National Planning Policy Framework (NPPF)		Paragraph 187 states that the planning system should contribute to and enhance the natural and local environment by (amongst other considerations) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of noise pollution.												
Noise Policy Statement for England (NPSE)		Paragraph 1.6 sets out the long-term vision of Government noise policy, i.e. to “<i>promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.</i>” Paragraph 1.7 states that the NPSE vision is supported by aims to effectively manage and control environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development by avoiding significant adverse impacts, mitigating and minimising adverse impacts and contributing to the improvement of health and quality of life. Paragraph 2.20 states that to identify “significant adverse” and “adverse” impact in line with the three aims of NPSE, there are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organization: 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. Paragraph 2.24 states that where an impact lies somewhere between LOAEL and SOAEL, 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 (paragraph 1.8). This does not mean that such adverse effects cannot occur. Paragraph 2.22 notes that the NPSE states “<i>it is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available.</i>”												
Planning Practice Guidance - Noise (PPG-N)		The PPG-N provides guidance in the form of a noise exposure hierarchy, which details the levels of perception to noise exposure and the expected outcomes and required actions. <table><tr><th colspan="4">Table 1 PPG Noise exposure Hierarchy</th></tr><tr><th>Perception</th><th>Examples of Outcomes</th><th>Increasing Effect Level</th><th>Action</th></tr><tr><td>Not Present</td><td>No Effect</td><td>No Observed Effect</td><td>No Specific Measures Required</td></tr></table>	Table 1 PPG Noise exposure Hierarchy				Perception	Examples of Outcomes	Increasing Effect Level	Action	Not Present	No Effect	No Observed Effect	No Specific Measures Required
Table 1 PPG Noise exposure Hierarchy														
Perception	Examples of Outcomes	Increasing Effect Level	Action											
Not Present	No Effect	No Observed Effect	No Specific Measures Required											



Policy	Policy Context			
	Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No Specific Measures Required
	Lowest Observed adverse Effect Level (LOAEL)			
	Present and not intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, 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 small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
	Significant Observed adverse Effect Level (SOAEL)			
	Present and not disruptive	The noise causes a material change in behaviour, attitude or other physiological response, 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, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically	Unacceptable Adverse Effect	Prevent



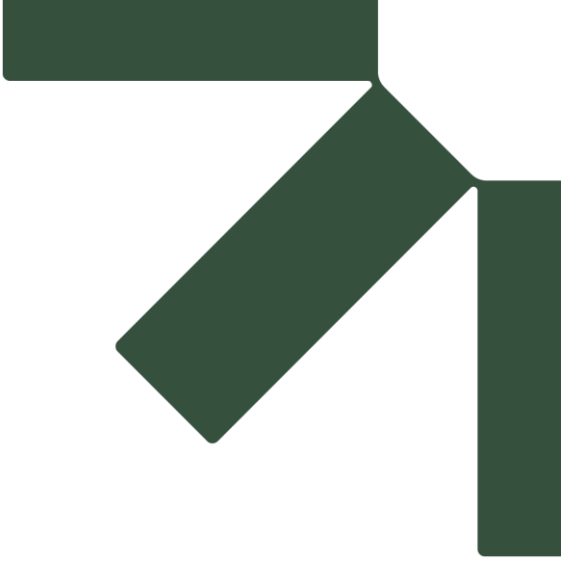
Policy	Policy Context
	definable harm, e.g. auditory and non-auditory.

Guidance document	Summary
Chartered Institute of Environmental Health (CIEH) (2003) Clay Target Shooting: Guidance on the Control of Noise	The document provides guidance on how to assess shooting noise upon sensitive receptors. It states that "Annoyance is less likely to occur at a mean shooting noise level (mean SNL) below 55dB(A), and highly likely to occur at a mean shooting noise level (mean SNL) above 65dB(A)"
Department for Transport (1988) Calculation of Road Traffic Noise (CRTN)	Describes procedures for calculating noise from road traffic.
ISO 9613:2024 Acoustics – Attenuation of sound during propagation outdoors: Part 2 General Method of Calculation (ISO 9613-2)	Defines a method for calculating the attenuation of sound during propagation outdoors in order to predict the levels of environmental noise at distances from a source.
BS 8233:2014 Guidance on sound insulation and noise reduction for buildings	BS8233:2014 presents design criteria for noise within habitable rooms in new residential developments to avoid adverse impacts on sustainability for the intended use. In summary, these are: • Resting in Living Rooms: 35 dB L_{Aeq,16hr} (daytime) • Dining in Dining Rooms / Areas: 40 dB L_{Aeq,16hr} (daytime) • Sleeping or resting in Bedrooms: 35 dB L_{Aeq,16hr} (daytime) / 30 dB L_{Aeq,8 hr} (night-time).
BS 5925:1991 Code of Practice for Ventilation Principles and Designing for Natural Ventilation	BS5925:1991 presents the code of practice for ventilation principles and designing for natural ventilation. It gives recommendations on the principles which should be observed when designing for the natural ventilation of buildings for human occupation.
Professional Practice Guidance on Planning and Noise, New Residential Development, 2017 (ProPG).	This Professional Practice Guidance on Planning and Noise (ProPG) has been produced to provide practitioners with guidance on a recommended approach to the management of noise within the planning system in England.
The Building Regulations Approved Document O - Overheating, 2021 (ADO)	This approved document provides guidance on how to comply with Part O of the Building Regulations. In locations where external noise may be an issue (for example, where the local planning authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11pm to 7am). Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.



Guidance document	Summary
	a. 40dB $L_{Aeq,T}$, averaged over 8 hours (between 11pm and 7am). b. 55dB L_{AFmax}, more than 10 times a night (between 11pm and 7am). Where in-situ noise measurements are used as evidence that these limits are not exceeded, measurements should be taken in accordance with the Association of Noise Consultants' Measurement of Sound Levels in Buildings with the overheating mitigation strategy in use.
Approved Document O Noise Guide (November 2024)	The Approved Document O Noise Guide provides guidance on managing noise levels in residential buildings when addressing overheating through ventilation. It clarifies how to meet the noise requirements outlines in Approved Document O, ensuring that noise levels do not compromise sleep comfort.
The Building Regulations 2010 Approved Document F: ventilation Volume 1 Dwellings, 2021	Approved Document F, Volume 1: Dwellings provides guidance on ventilation in residential buildings. It focusses on ensuring adequate ventilation for occupants and the requirements of ventilation provision.





Appendix B Terminology

Noise Impact Assessment

Land off Cronton Road, Widnes

Bellway Homes Limited (North West)

SLR Project No.: 440.021314.00001

12 December 2025

This section provides explanations and definitions for terms which may be used in this report.

The decibel scale, A-weighting & typical sound levels

A logarithmic scale is used when defining sound level measurements, the scale used is the decibel (dB). This is due to the ratio between the lowest audible sound and the highest being a million to one in terms of change in sound pressure. The human response to airborne sound pressure level is typically between 0 – 140 dB.

Due to the sensitivity of the ear in terms of pitch and frequency, A-weighting is applied to instrument measured sound which accounts for the relative loudness perceived by the human ear. Therefore, these measurements with this correction factor are written as dBA or dB(A).

The dB(A) unit is internationally accepted and has been found to correspond well with people's subjective reaction to sound. Typical dB(A) sound levels for familiar sounds are given in **Table B.1**.

Approximate noise level dB(A)	Example
0	Threshold of hearing for normal young people.
20	Recording studio, ambient level.
40	Quiet residential neighbourhood, ambient level.
60	Department store, restaurant, speech levels.
80	Next to busy highway, shouting.
100	Textile mill; press room with presses running; punch press and wood planers, at operators' position.
120	Ship's engine room, rock concert, in front and close to speakers.
140	Moon launch at 100m; artillery fire, gunner's position.

Sound power, sound level indices and other descriptors

The sound levels given in Table A.1 are sound pressure levels (L_p) and describe the sound level at a measurable distance from a source. Sound power level (L_w) is the total acoustic energy emitted by a source and are intrinsic.

Sound pressure levels vary over time depending on sound generating activities. The following indices are used to take account of these variations:

$L_{Aeq, T}$ - the equivalent continuous sound level. This is the sound level of a steady sound having the same energy as a fluctuating sound over the same period. Ambient sound levels are described with this index. $L_{Aeq, T}$ is considered the best general-purpose index for environmental sound, as it is the index which generally best represents how sound levels are perceived;

$L_{A90, T}$ - this noise index represents the sound level exceeded for 90% of the measurement period and is used to indicate quieter times during the measurement period. In BS 4142 assessments it is usually referred to as the background sound level, and describes the quietest 10% of a measurement period; and

L_{Amax} - is the maximum recorded sound level during the measurement period.

In addition, the following descriptors are often used in noise assessments:



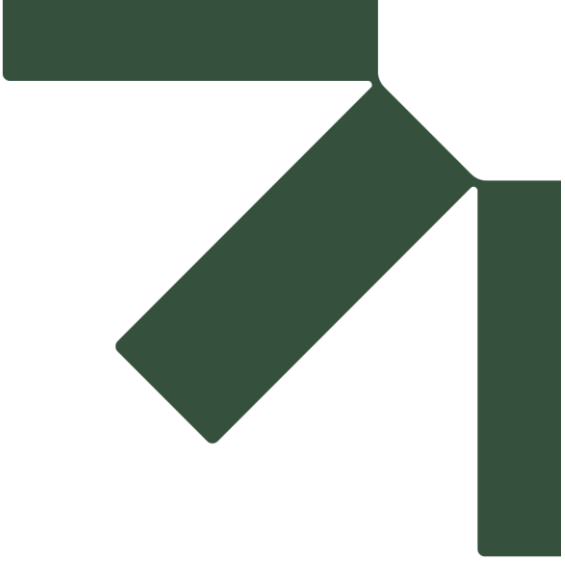
Ambient sound is the totally encompassing sound in a given situation, at a given time, usually composed of sound from many sources near and far;

Fast time weighting is where a sound pressure level measurement using a 125 ms moving average time weighting period has been used;

Free field signifies that a sound measurement has been undertaken in 'free field' conditions i.e., away from any reflecting facades, other than the ground, e.g., building facades, close boarded fence work etc.; and

Façade level: A standard correction of +3 dB may be added to a free field sound level to estimate the sound level 1 m away from a façade to account for both the sound upon the façade and the reflected sound from the façade. When considering the break in of external sound into a room, the sound level which is incident upon the façade, rather than the façade level, is considered because only the incident sound will pass through the fabric of the building, whilst reflected sound travels away from the building. The standard +3 dB façade correction is most applicable in situations where the façade has a relatively unobstructed angle of view of the source (i.e., an uninterrupted 180° angle of view of the source in the horizontal plane)





Drawing 001 - ProPG Stage 1 Daytime Noise Levels @ 1.5m

Noise Impact Assessment

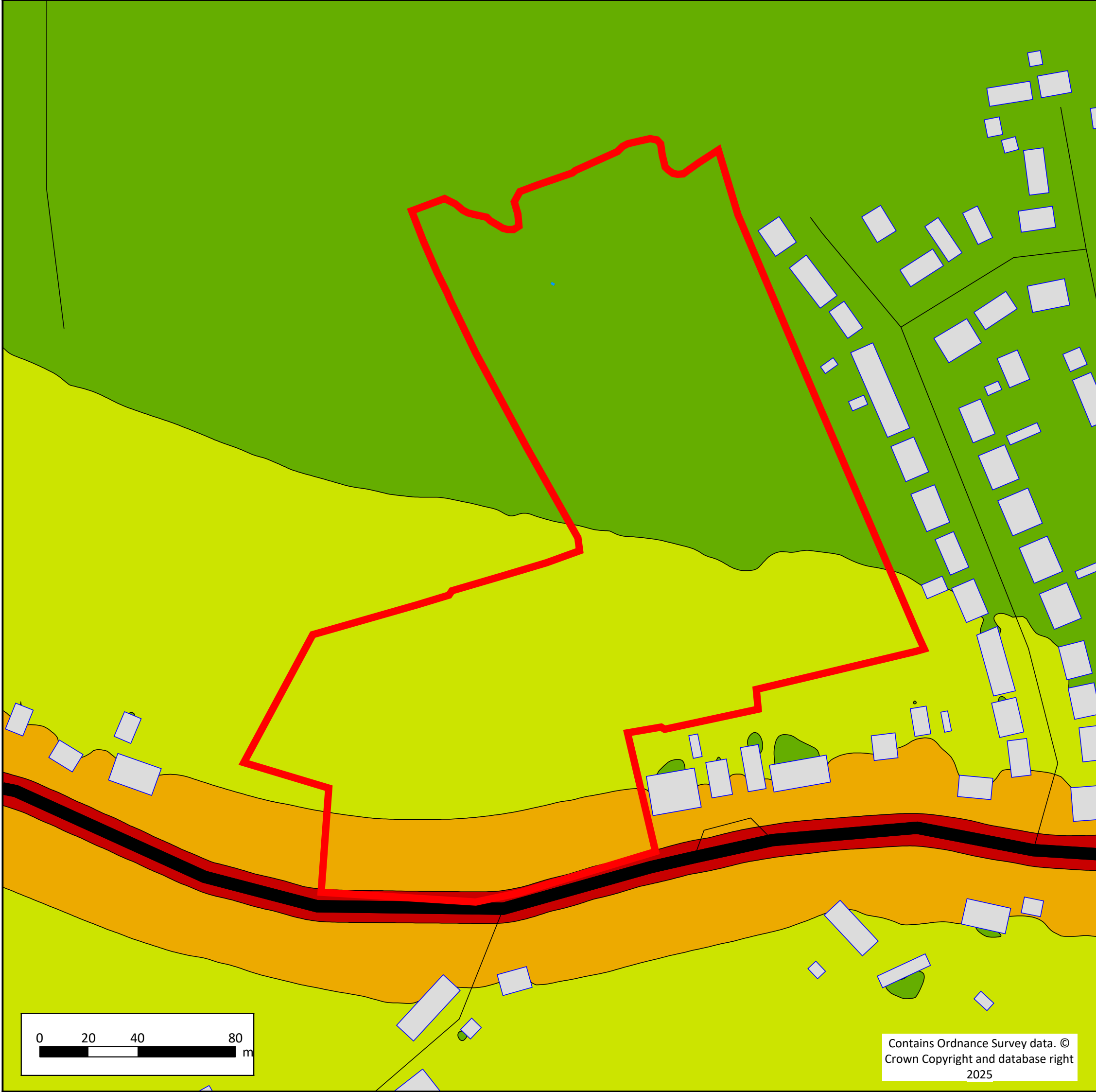
Land off Cronton Road, Widnes

Bellway Homes Limited (North West)

SLR Project No.: 440.021314.00001

12 December 2025





Key

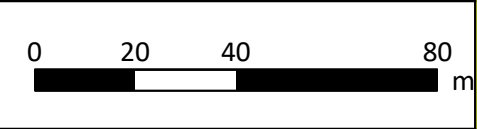
- Site Boundary
- Existing Building
- Road

Daytime Sound Levels, L_{Aeq} 16hour dB

- <= 50 Negligible
- <= 60 Low
- <= 70 Medium
- > 70 High

CLIENT	Bellway Homes Ltd (North West)	
PROJECT	Land off Cronton Road, Widnes	
TITLE	ProPG Stage 1 - Daytime Noise Levels @ 1.5m Above Ground	
DRG NO	440.02314.0001/001	REV A
DRG SIZE A3	SCALE 1:1500	DATE 09/12/2025
DRAWN BY CG	CHECKED BY CSG	APPROVED BY PB





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Drawing 002 - ProPG Stage 1 Nighttime Noise Levels @ 4m

Noise Impact Assessment

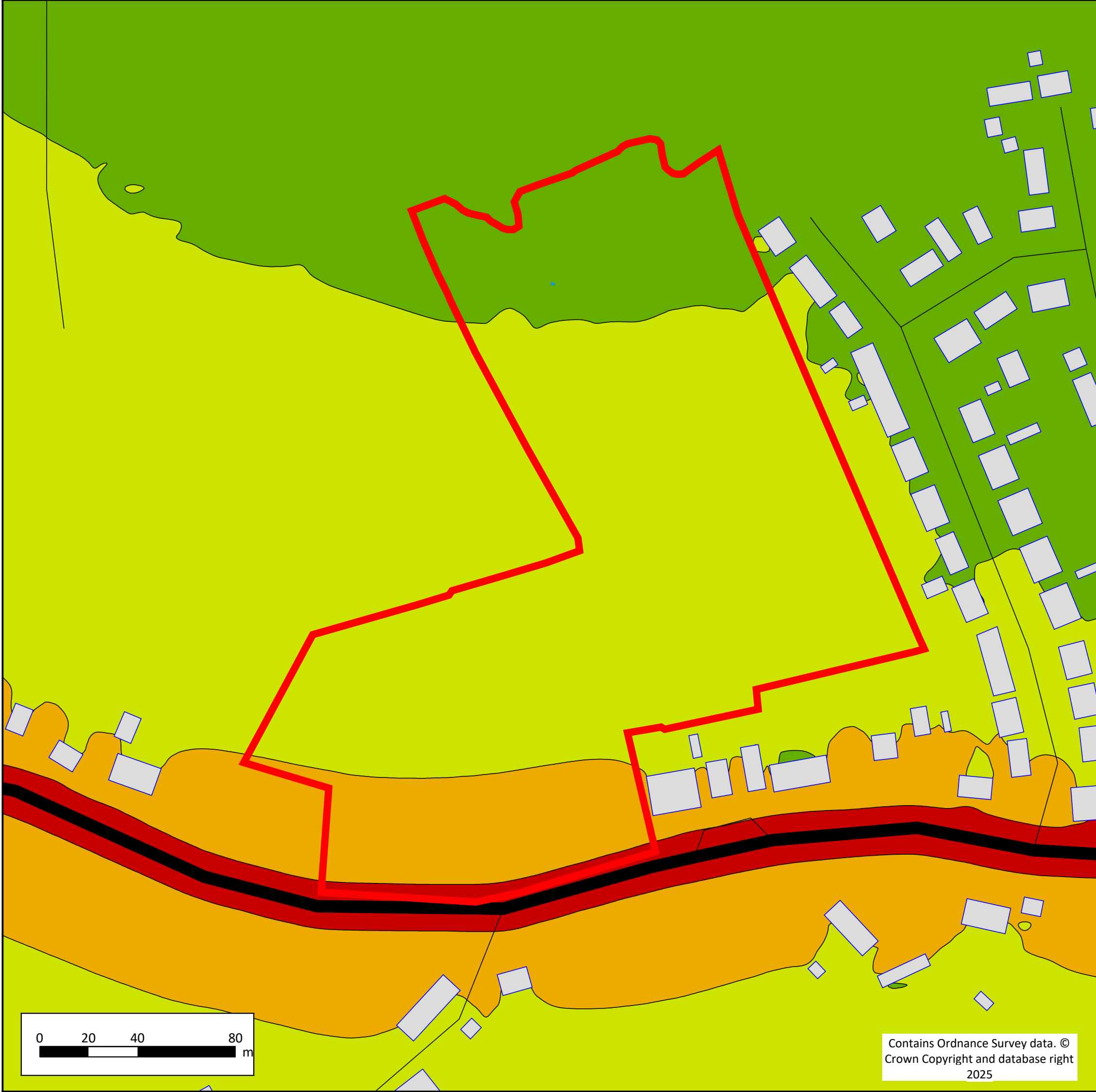
Land off Cronton Road, Widnes

Bellway Homes Limited (North West)

SLR Project No.: 440.021314.00001

12 December 2025





Key

-  Site Boundary
-  Existing Building
-  Road

Night-time Sound Levels, L_{Aeq} 8hour dB

-  <= 40 Negligible
-  <= 50 Low
-  <= 60 Medium
-  > 60 High

CLIENT	Bellway Homes Ltd (North West)	
PROJECT	Land off Cronton Road, Widnes	
TITLE	ProPG Stage 1 - Night-time Noise Levels @ 4.0m Above Ground	
DRG NO	440.02314.0001/002	REV A
DRG SIZE A3	SCALE 1:1500	DATE 09/12/2025
DRAWN BY CG	CHECKED BY CSG	APPROVED BY PB



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Drawing 003 - ProPG Stage 1 Nighttime Maximum Noise Levels @4m

Noise Impact Assessment

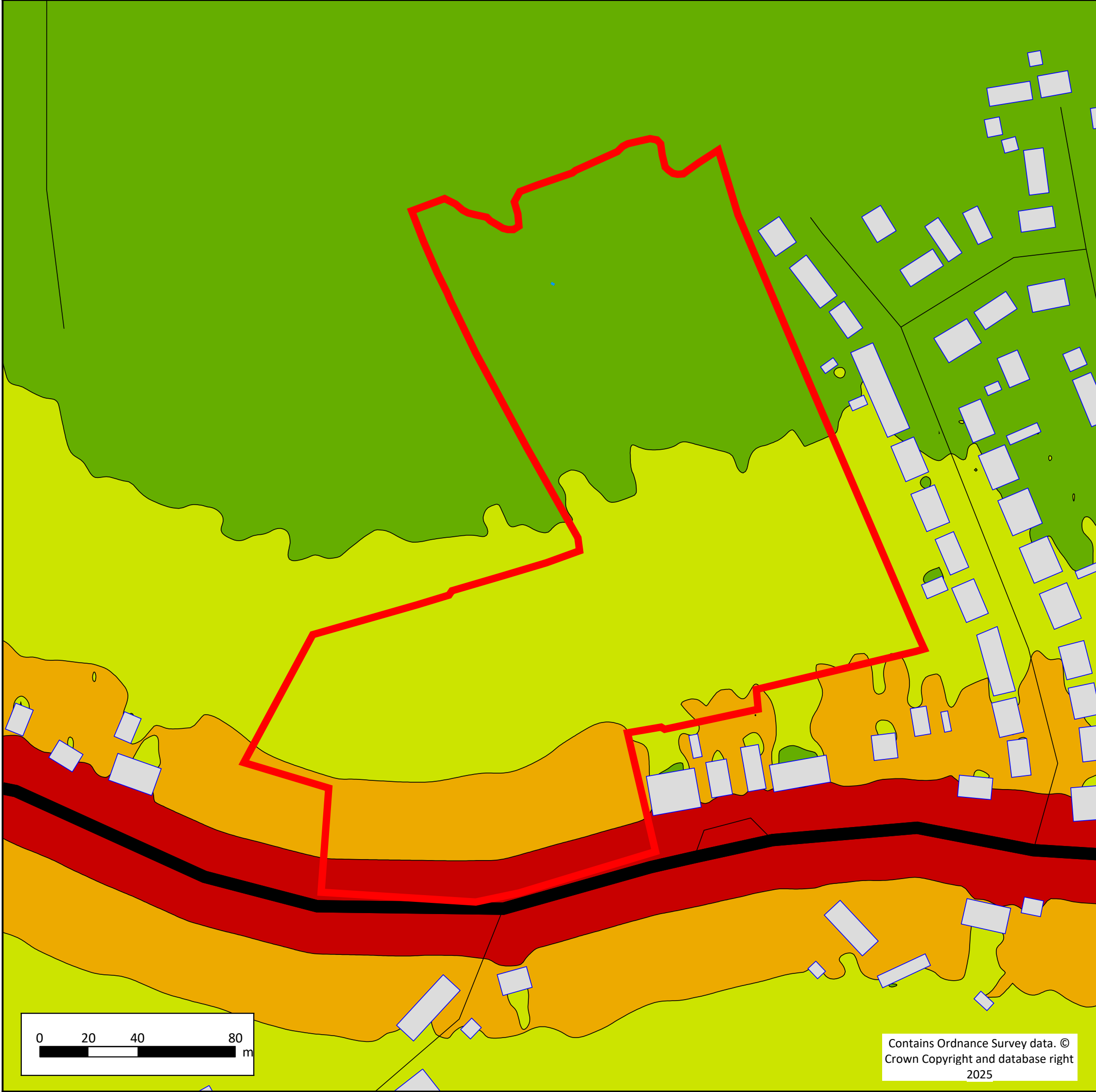
Land off Cronton Road, Widnes

Bellway Homes Limited (North West)

SLR Project No.: 440.021314.00001

12 December 2025





Key

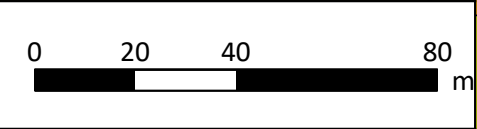
-  Site Boundary
-  Existing Building
-  Road

Night-time Sound Levels, L_{AFmax} dB

-  ≤ 60 Negligible
-  ≤ 70 Low
-  ≤ 80 Medium
-  > 80 High

CLIENT		Bellway Homes Ltd (North West)	
PROJECT		Land off Cronton Road, Widnes	
TITLE		ProPG Stage 1 - Night-time Maximum Noise Levels @ 4m Above Ground	
DRG NO		440.02314.0001/003	REV A
DRG SIZE A3	SCALE 1:1500	DATE 09/12/2025	
DRAWN BY CG	CHECKED BY CSG	APPROVED BY PB	





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Drawing 004 - ProPG Stage 2 Ground Floor Daytime Façade Mitigation Strategies

Noise Impact Assessment

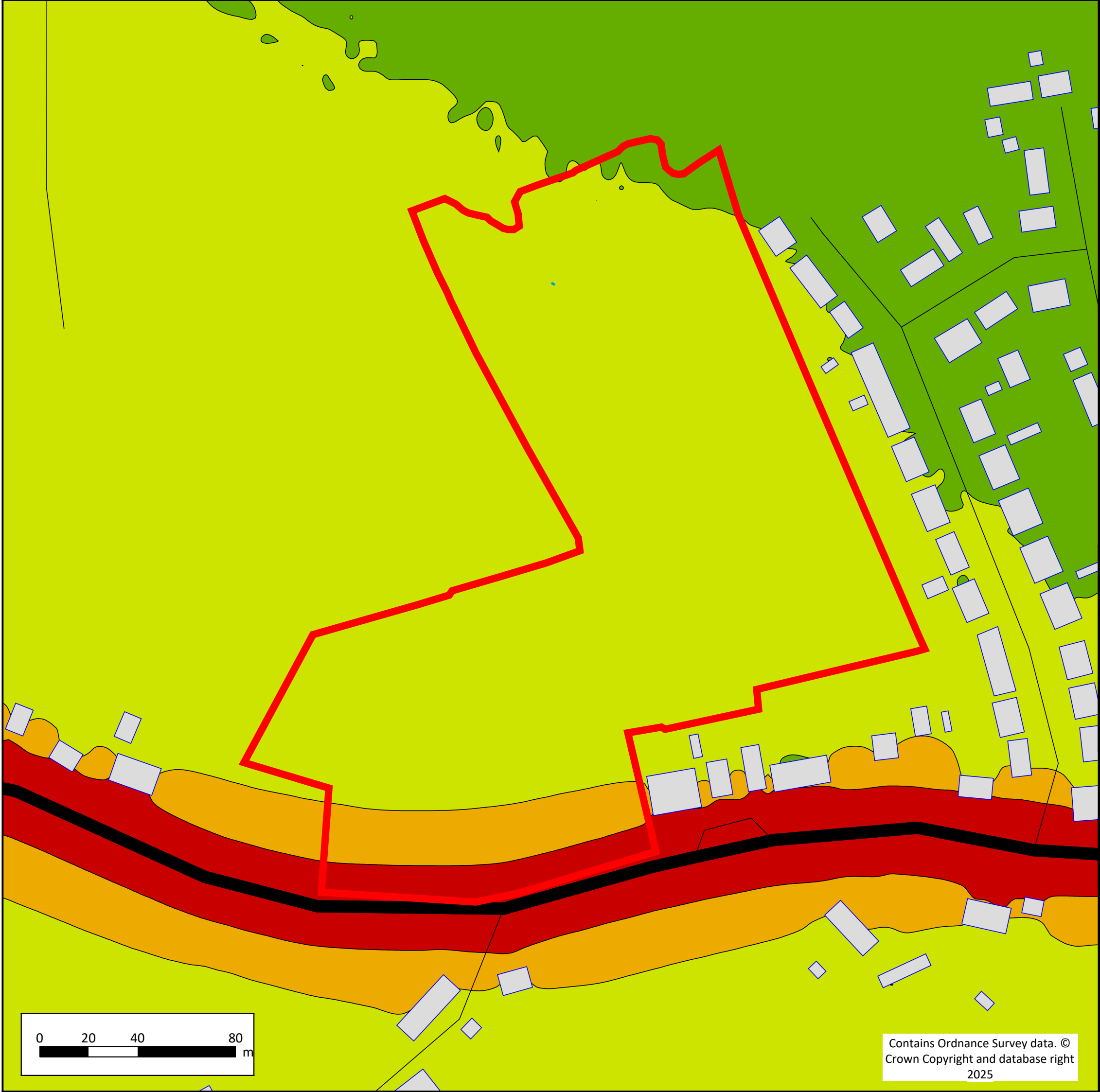
Land off Cronton Road, Widnes

Bellway Homes Limited (North West)

SLR Project No.: 440.021314.00001

12 December 2025





Key

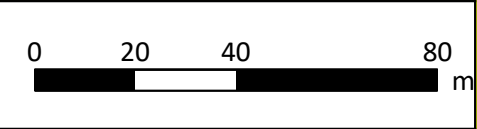
- Site Boundary
- Existing Building
- Road

Glazing and Ventilation Requirements

- Open Windows
- 4(6-16)4 + Greenwoods 4000/5000EAV
- 8(6-16)4 & Greenwoods 2500EAW.AC1
- 6(6-16)6 & Greenwoods AAB4000

CLIENT	Bellway Homes Ltd (North West)	
PROJECT	Land off Cronton Road, Widnes	
TITLE	ProPG Stage 2 - Indicative Ground Floor Daytime Facade Mitigation Strategies	
DRG NO	440.02314.0001/004	REV A
DRG SIZE A3	SCALE 1:1500	DATE 09/12/2025
DRAWN BY CG	CHECKED BY CSG	APPROVED BY PB





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Drawing 005 - ProPG Stage 2 First Floor Nighttime Façade Mitigation Strategies

Noise Impact Assessment

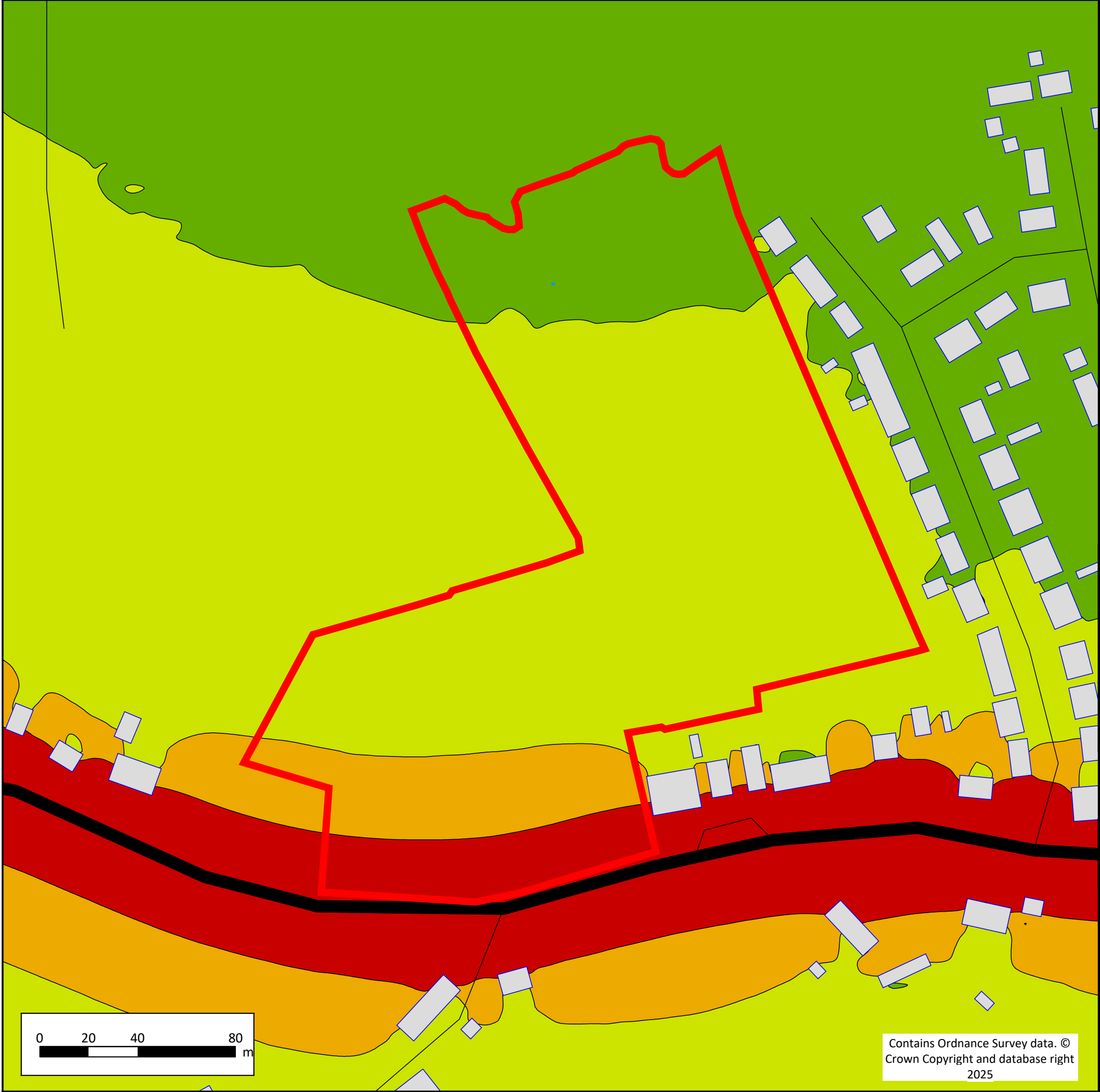
Land off Cronton Road, Widnes

Bellway Homes Limited (North West)

SLR Project No.: 440.021314.00001

12 December 2025





Key

- Site Boundary
- Existing Building
- Road

Glazing and Ventilation Requirements

- Open Windows
- 4(6-16)4 & Greenwoods 4000/5000EAV
- 8(6-16)4 & Greenwoods 2500EAW.AC1
- 6(6-16)6 & Greenwoods AAB4000

CLIENT	Bellway Homes Ltd (North West)	
PROJECT	Land off Cronton Road, Widnes	
TITLE	ProPG Stage 2 - Indicative First Floor Night-time Facade Mitigation Strategies	
DRG NO	440.02314.0001/005	REV A
DRG SIZE A3	SCALE 1:1500	DATE 09/12/2025
DRAWN BY CG	CHECKED BY CSG	APPROVED BY PB



Drawing 006 - Daytime External Amenity Noise Levels @1.5m

Noise Impact Assessment

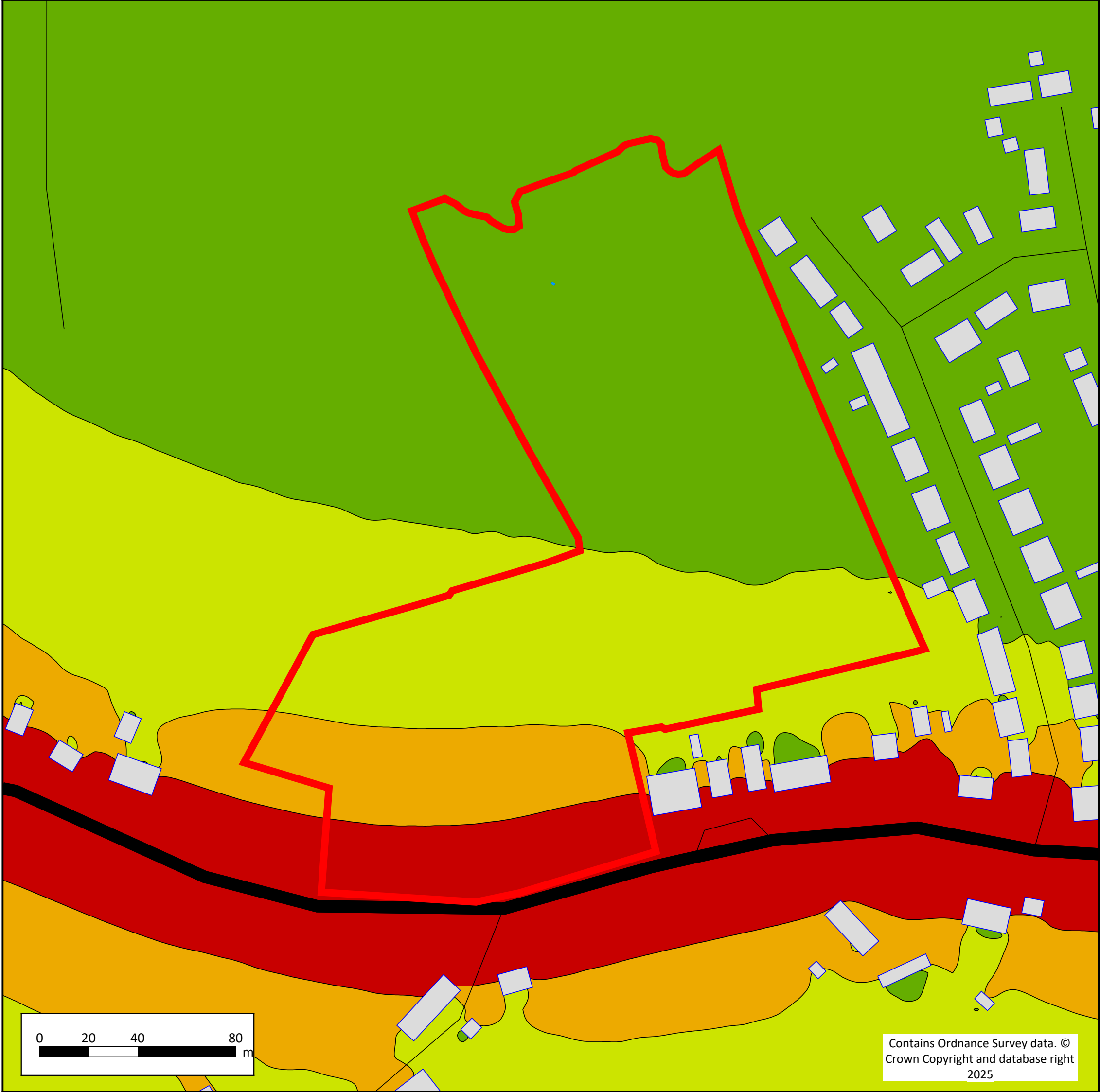
Land off Cronton Road, Widnes

Bellway Homes Limited (North West)

SLR Project No.: 440.021314.00001

12 December 2025





Key

- Site Boundary
- Existing Building
- Road

Daytime Sound Levels, L_{Aeq} 16hour dB

- ≤ 50
- ≤ 55
- ≤ 60
- > 60

CLIENT	Bellway Homes Ltd (North West)	
PROJECT	Land off Cronton Road, Widnes	
TITLE	Daytime External Amenity Noise Levels @ 1.5m Above Ground	
DRG NO	440.02314.0001/006	REV A
DRG SIZE A3	SCALE 1:1500	DATE 09/12/2025
DRAWN BY CG	CHECKED BY CSG	APPROVED BY PB



Drawing 007 – Bedroom Overheating Requirements

Noise Impact Assessment

Land off Cronton Road, Widnes

Bellway Homes Limited (North West)

SLR Project No.: 440.021314.00001

12 December 2025





Key

Site Boundary

Existing Building

Road

AD-O Requirements

Openable Windows

Alternative Overheating Strategy



Making Sustainability Happen