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Land North of Orton Road, Warton

Richborough

Noise Assessment
March 2025

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Executive Summary

Rappor Consultants Limited was appointed by Richborough to undertake a noise impact assessment (NIA) for a proposed residential development at Land North of Orton Road, Warton. The proposed development Site is located within the administrative area of North Warwickshire Borough Council (NWBC).

A baseline noise survey has been undertaken in February 2025 to establish baseline noise levels across the site due to road traffic. The results of the survey, and subsequent assessment work, have been assessed in accordance with current standards and guidance, following consultation with NWBC.

At this stage, the exact layout of the dwellings within the Proposed Development has yet to be determined. Therefore, this noise assessment demonstrates the feasibility of the Site for residential use, by assuming proposed dwellings would be located at a reasonable notional setback distance within the proposed developable area as noted on the development framework plan.

For proposed properties situated closest to Orton Road the model has predicted a minor exceedance of up to 2 dB during the daytime period. However, it is considered that external noise levels, as outlined within BS 8233, can be achieved through careful consideration of the development layout (i.e placing gardens on the screened side of dwellings). Where this is not possible, alternative forms of mitigation have been recommended where appropriate to reduce external noise levels as much as practicable.

It is considered likely that the majority of dwellings will achieve acceptable internal noise levels with open windows however for properties situated closest to Orton Road, it is considered that through the use of standard double glazing and trickle vents, acceptable internal noise levels can be achieved.



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1 Introduction

General

- 1.1 Rappor Consultants Limited was instructed by Richborough on behalf of Richborough, Michael Ensor Caton and Andrew Norman Caton ('The Applicant') to undertake a noise assessment for a proposed residential development at land off Orton Road, Warton ('the Site').
- 1.2 This report sets out the results of a baseline noise survey undertaken at the Site following consultation with North Warwickshire Borough Council (NWBC) and considers the potential impact of nearby existing noise sources on the Proposed Development. The results have been assessed in accordance with ProPG and BS 8233, to determine the suitability of the Site for the Proposed Development.
- 1.3 Where applicable, recommendations for mitigation measures, to reduce identified adverse impact have been presented.
- 1.4 The assessment takes account of relevant local and national policy and guidance. A glossary of terms utilised in this report is provided in **Appendix A - Acoustic Terminology**.

Site Location

- 1.5 The Site is located to the north of Orton Road and south of Church Road and currently comprises open agricultural land. To the east is a new build residential estate with agricultural land to the south beyond Orton Road.
- 1.6 **Figure 1.1** shows the site location with **Figure 1.2** demonstrating the current development framework plan. The proposals include for the construction of up to 110 dwellings, with access, landscaping, sustainable drainage features, and associated infrastructure. All matters are reserved except for primary vehicular access from Church Road.



Figure 1.1: Site Location





Figure 1.2: Development Framework Plan





2 Relevant Policy and Guidance

Consultation

- 2.1 In the first instance, consultation was undertaken via email with Environmental Health at NWBC to agree the assessment methodology.
- 2.2 A summary of the proposed methodology is provided below:
- Undertake a baseline noise survey to determine the existing noise levels at locations considered representative of the proposed noise sensitive receptors.
 - Assess the existing noise levels at proposed noise sensitive receptors, namely road traffic on Church Road and Orton Road.
 - Where appropriate, mitigation measures will be considered to afford protection to future occupiers.
- 2.3 A response was received on 20th February from Amelia Bow, agreeing the approach was acceptable.
- 2.4 Details of applicable guidance to the assessment are set out below.

National Planning Policy Framework (December 2024)

- 2.5 This version of the National Planning Policy Framework was amended on 7 February 2025 to correct cross-references from footnotes 7 and 8, and amend the end of the first sentence of paragraph 155 to make its intent clear. For the avoidance of doubt the amendment to paragraph 155 is not intended to constitute a change to the policy set out in the Framework as published on 12 December 2024.
- 2.6 The National Planning Policy Framework (NPPF) sets out the government's planning policies for England and how these are expected to be applied. It states that 'The purpose of the planning system is to contribute to the achievement of sustainable development' and in relation to the natural environment it states at Paragraph 187:

"Planning policies and decisions should contribute to and enhance the natural and 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".

- 2.7 Paragraph 198 goes on to state:



“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:

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

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason...”

2.8 Finally, Paragraph 201 states:

“The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities.”

2.9 Where considering adverse impacts, the NPPF makes reference to the Noise Policy Statement for England (NPSE).

Noise Policy Statement for England (NPSE)

2.10 The aim of the NPSE states:

“Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

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

2.11 With reference to Significant Observed Adverse Effect Level (SOAEL), the document notes that:



“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.”

Planning Practice Guidance (PPG) – Noise

2.12 The latest version of the PPG – Noise was published in July 2019 and provides advice on how planning can manage potential noise impacts in new developments.

2.13 It states:

“Plan-making and decision making need to take account of the acoustic environment and in doing so consider:

- *whether or not a significant adverse effect is occurring or likely to occur;*
- *whether or not an adverse effect is occurring or likely to occur; and*
- *whether or not a good standard of amenity can be achieved.”*

2.14 **Table 2.1** presents the noise exposure hierarchy based on the average response of those affected.

Table 2.1: Noise Exposure Hierarchy Table

Response	Example of outcomes	Increase effect level	Action
No Observed Effect Level			
Not present	No Effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level (NOAEL)			
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 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 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 definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

ProPG: Planning & Noise

2.15 ProPG was prepared by a working group consisting of representatives of the Association of Noise Consultants (ANC), the Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH) and was published in June 2017. It was produced “to provide practitioners with guidance on the management of noise within the planning system in England”, though it does not constitute an official government code of practice and neither replaces nor provides an authoritative interpretation of the law or government policy.

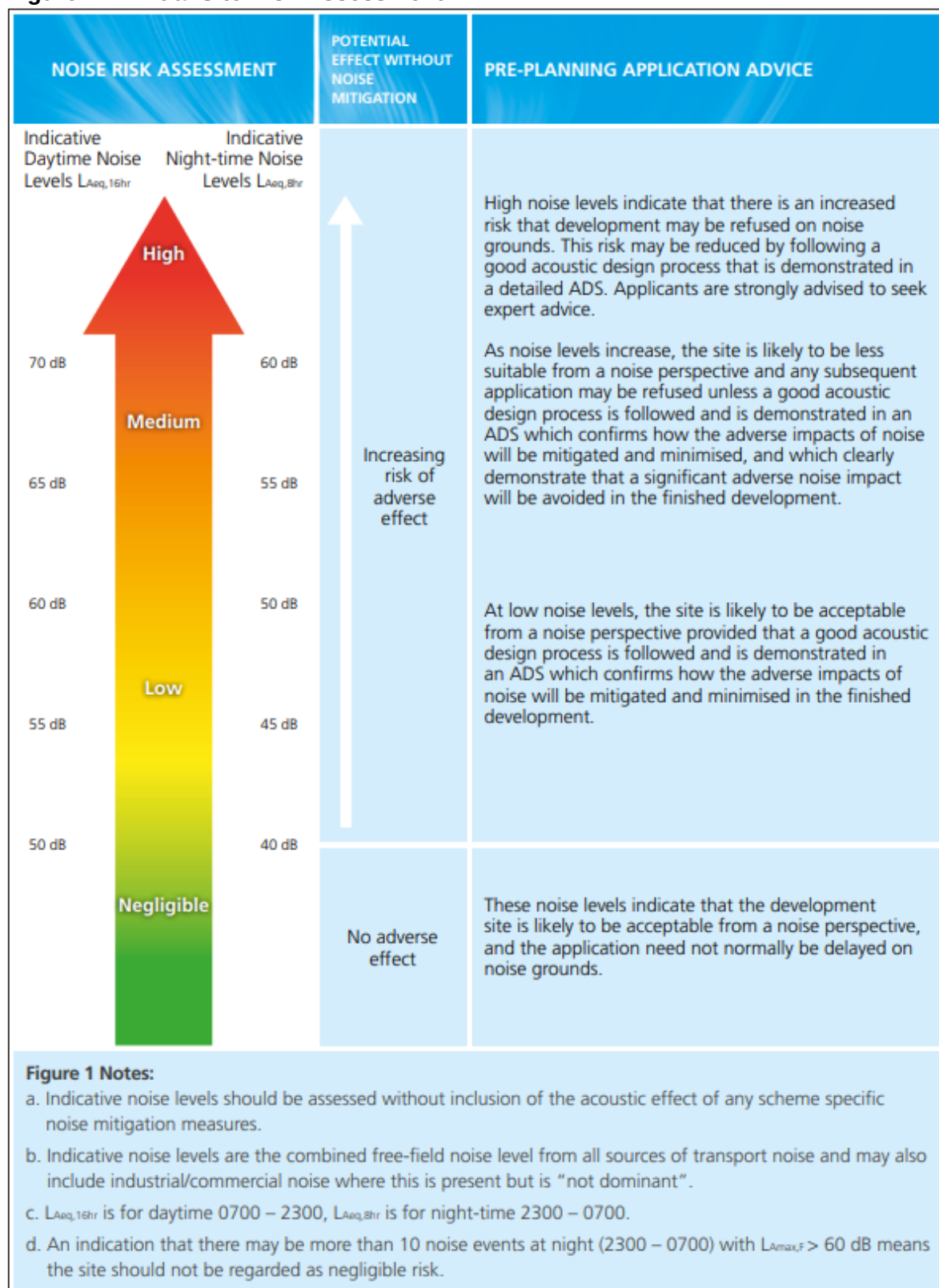


- 2.16 ProPG bases much of its guidance on the numerical targets within BS 8233:2014 and the interpretation of NPPF and NPSE guidelines, providing new and extended recommendations where these standards are considered to fall short.

Initial Site Noise Risk Assessment

- 2.17 ProPG recommends that an initial site noise risk assessment to identify likely adverse effects from noise without accounting for any mitigation measures that may subsequently be included in development proposals. **Figure 2.1** is taken from ProPG which shows the increasing risk of adverse effect based on daytime noise levels ($L_{Aeq,16hr}$) and night-time noise levels ($L_{Aeq,8hr}$) without noise mitigation.

Figure 2.1: Initial Site Risk Assessment



Internal Ambient Noise Levels

2.18 ProPG provides internal ambient noise level targets based upon BS 8233:2014, with the addition of maximum noise events. ProPG suggests that the development layout should be designed such that internal noise level targets can be achieved with open windows in as



many areas as possible, on the basis that residents will value the ability to open windows at will. However, an assessment can be made with closed windows and open ventilators (i.e. trickle vents) which provide “whole dwelling ventilation” (as defined by Building Regulations Approved Document F).

2.19 The recommended indoor noise levels for dwellings are presented in **Table 2.2**.

Table 2.2: Indoor Noise Levels for Dwellings

Activity	Location	07:00 to 23:00	23:00 to 07:00
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} 45 dB L _{Amax, F} *
* Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or L _{Amax, F} , depending on the character and number of events per night. Sporadic noise events could require separate values. 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 45dB 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 the source, number, distribution, predictability and regularity of noise events.			

External Amenity Noise Levels

2.20 ProPG provides guidance for external amenity noise levels based upon BS 8233:2014 and PPG-N guidelines. In summary, it recommends the following as part of an external amenity area noise assessment:

- If external amenity spaces are an intrinsic part of the overall design, the acoustic environment of those spaces should be considered so that they can be enjoyed as intended. Noise levels should ideally not be above the range 50 – 55 dB L_{Aeq, 16hr}.
- These guideline values may not be achievable in all circumstances where development might be desirable. In such a situation, development should be designed to achieve the lowest practicable noise levels in these external amenity spaces.
- Even if external amenity spaces are not an intrinsic part of the overall design, consideration of the need to provide access to a quiet or relatively quiet external amenity space forms part of a good acoustic design process.
- Where, despite following a good acoustic design process, significant adverse noise impacts remain on any private external amenity space (e.g. garden or balcony) then the impact may be partially offset if the residents are provided, through the design of the development or the planning process, with access to:



- a relatively quiet facade (containing openable windows to habitable rooms) or a relatively quiet externally ventilated space (i.e. an enclosed balcony) as part of their dwelling; and/or
- relatively quiet alternative or additional external amenity space for sole use by a household, (e.g. a garden, roof garden or large open balcony in a different, protected, location); 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, publicly accessible, external amenity space (e.g. a public park or a local green space designated because of its tranquillity) that is nearby (e.g. within a 5 minutes walking distance). The local planning authority could link such provision to the definition and management of Quiet Areas under the Environmental Noise Regulations.

British Standard 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings

- 2.21 BS 8233 provides guidance for the control of noise in and around buildings. The scope of the document is applicable for new and refurbished buildings undergoing a change of use.
- 2.22 The guidance includes appropriate internal noise level criteria which are applicable to dwellings for steady external noise sources. It is recommended that the internal ambient noise level does not exceed the criteria presented in **Table 2.3** below, as per the guidance contained within ProPG:

Table 2.3: Indoor Ambient Noise Levels for Dwellings

Activity	Location	Period	
		0700 – 2300 Hours, i.e Daytime	2300 – 0700 Hours, i.e Night-time
Resting	Living Room	35 dB L _{Aeq,16hour}	-
Dining	Dining Room/area	40 dB L _{Aeq,16hour}	-
Sleeping (daytime resting)	Bedroom	35 dB L _{Aeq,16hour}	30 dB L _{Aeq,16hour}

3 Noise Survey

Survey Details

- 3.1 A baseline noise survey has been undertaken between 11th and 12th February 2025 to capture the prevailing noise climate on the Site, namely due to road traffic.
- 3.2 Noise meters were installed at the measurement locations as shown in **Figure 3.1** and a brief summary of the noise environment at each measurement location is presented below.

Figure 3.1: Measurement Locations



- 3.3 The meters were installed at a height of approximately 1.5m, in free-field conditions, i.e. at least 3.5m from a reflective surface.



3.4 Details of the measurement equipment can be found in **Appendix B – Measurement Equipment**.

3.5 On-site calibration was undertaken before and after measurements at each location with no significant drift observed.

Weather Conditions

3.6 Weather conditions during the survey were conducive to environmental noise monitoring, it being dry with winds less than 5m/s.

Noise Climate

3.7 During the installation and collection of the noise meters, the noise climate was dominated by road traffic on both Orton Road and Church Road. Other sources of note were natural sounds including birdsong.

Monitoring Results

3.8 A summary of the measured noise levels is presented in **Table 3.1**.

Table 3.1: Summary of Measured Noise Levels, dB

Location	Start Date	Start Time	L _{Aeq, T}	L _{A10, T}	L _{A90, T}	L _{Amax}
ML1	11/02/2025	08:30 – 23:00	60	60	40	-
		23:00 – 07:00	53	42	33	79
	12/02/2025	07:00 – 08:30	63	66	43	-
ML2	11/02/2025	08:50 – 23:00	57	58	36	-
		23:00 – 07:00	49	38	31	74
	12/02/2025	07:00 – 08:50	59	64	40	-



4 Assessment

Initial Risk Assessment

- 4.1 The results of the noise survey when compared to the initial risk assessment as presented in **Figure 2.1** indicate that the majority of the Site is a low risk, rising to between low to medium risk at the southern boundary.
- 4.2 For medium risk, ProPG states:

“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 (acoustic design statement) 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.”

- 4.3 Based on the above, the results of the noise survey have been used to develop a noise model of the development to predict the noise levels at facades and outdoor amenity areas of the Proposed Development.

Noise Model

- 4.4 The intention of noise modelling/mapping for this assessment is to accurately determine the noise levels at each façade and each floor of the building(s) associated with the Proposed Development. This avoids relying on using the highest measured noise levels from the baseline noise survey as a worst case, avoiding a blanket, over-specified strategy being applied across the entire façade.
- 4.5 The noise predictions detailed within this assessment have been undertaken using the proprietary software IMMI, a 3-D noise mapping package which implements a wide range of national and international standards, guidelines and calculation algorithms, including those set out in ISO9613-2.
- 4.6 The noise map model has assumed:
- Downwind propagation, i.e. a wind direction that assists the propagation of sound from source to receptor;
 - A maximum reflection factor of three where buildings and barriers are assumed to have a ‘smooth’ reflective façade, as a worst case;
 - That noise sources do not have strong radiation patterns and therefore radiate equally in all directions; and
 - A grid height of 1.5m when plotting noise across external amenity areas such as gardens.

- 4.7 The results of the noise survey have been used to calibrate a 'without development' model. Once calibrated, the model is updated with the Proposed Development Framework plan for the development and noise levels have been predicted across the Site.
- 4.8 Given the outline nature of the application, the subsequent assessment uses predicted noise levels at the nearest developable areas to the noise sources as a worst-case.
- 4.9 The ProPG suggests that a 'good' acoustic design process should explore other methods of mitigating noise which doesn't wholly rely on using the building envelope.
- 4.10 As the current masterplan is illustrative, the location and orientation of proposed dwellings has not yet been finalised. Notwithstanding this, the current development framework plan includes for suitable setback distance from the roads where practicable.
- 4.11 **Figure 4.1** and **Figure 4.2** present the predicted daytime (07:00 – 23:00) and night-time (23:00 – 07:00) noise levels across the Site respectively.

Figure 4.1: Predicted Daytime Noise Levels, 1.5m Grid Height



Figure 4.2: Predicted Night-time Noise Levels, 4m Grid Height



External Ambient Noise Levels

- 4.12 The predicted daytime noise levels as shown in **Figure 4.1**, indicate that for the majority of the Proposed Development Site, outdoor noise levels will be below the lower guideline value of 50 dB $L_{Aeq, 16hr}$. For proposed dwellings situated closest to Orton Road, should gardens be placed on the screened side of the dwellings, it is considered likely that predicted noise levels will be below the upper guideline value of 55 dB $L_{Aeq, 16hr}$ as outlined in BS 8233 without additional mitigation measures.
- 4.13 Where it is not possible to place gardens on the screened side of dwellings, it is predicted that there is a minor exceedance of up to 2 dB. Therefore, additional mitigation may be required for proposed dwellings situated closest to Orton Road and this should be considered at the appropriate design stage once a fixed masterplan is available. **Section 5** discusses potential mitigation measures further.



Internal Ambient Noise Levels

- 4.14 For internal noise levels, a partially open window typically provides up to 15 dB sound reduction between outside and inside. As set out in BS 8233, internal noise levels during the day should be less than 35dB L_{Aeq} and 30dB L_{Aeq} during the night. Therefore, a level at the façade of less than 50dB during the day or 45dB during the night would achieve acceptable internal noise levels with an open window.
- 4.15 The results of the modelling, presented in **Figures 4.1** and **4.2**, indicate that the closest proposed developable area to Orton Road would be subject to noise levels in excess of the guideline values during both the day and night-time periods.
- 4.16 For plots in this area with habitable rooms overlooking the road that would be subject to noise levels in excess of the guidance, a suitable glazing unit and alternative ventilation would be required to achieve acceptable internal noise levels and consideration to this has been given in **Section 5 – Mitigation**.

5 Mitigation

- 5.1 In **Section 4**, the assessment has demonstrated that there is likely to be minor exceedances of criteria at proposed dwellings situated closest to Orton Road. Based on this, further consideration to mitigation is required.

External Ambient Noise Levels

- 5.2 To demonstrate the effects of screening that can be afforded by the development itself, in the first instance, it has been assumed that the Proposed Development would be built out as such that for properties closest to Orton Road, gardens would be placed on the screened side and properties would front the road.
- 5.3 **Figure 5.1** shows the resultant daytime noise contours with notional dwellings in place with **Figure 5.2** showing the night-time contours for completeness.

Figure 5.1: Predicted Daytime Noise Levels, 1.5m Grid Height, With Notional Dwellings



Figure 5.2: Predicted Night-time Noise Levels, 4m Grid Height, With Notional Dwellings



5.4 With dwellings orientated as above, it can be seen that noise levels in external amenity are predicted to achieve the lower guideline value of 50 dB $L_{Aeq,16h}$ in accordance with BS 8233. Should this not be possible, then alternative mitigation such as acoustic barriers could be utilised to afford protection to future occupants.

5.5 Acoustic barriers should have a minimum surface density of 15kg/m² and from a continuous unbroken line with no gaps between the barrier and the ground.

Internal Ambient Noise Levels

5.6 Windows do not reduce noise equally across the entire frequency spectrum, so the frequency content of the sound will influence the overall sound reduction performance of a given window and by extension, the resulting noise levels within the receiving room.

5.7 However, many glazing manufacturers test their products under laboratory conditions using a typical road traffic noise frequency spectrum source. The resultant measured noise attenuation, in dB, gives a very useful guide to in-situ sound reduction performance of the



window for situations where road traffic noise dominates. This performance index is known as the $R_w + C_{tr}$ dB noise level.

- 5.8 A standard double-glazed unit suitable for thermal insulation would achieve a sound reduction of approximately 26 dB $R_w + C_{tr}$. Therefore, no enhanced performance glazing is required.
- 5.9 Where a closed window would be required for internal noise level limits to be achieved, alternative ventilation (to an open window), will be needed to comply with the requirements of the Building Regulations Approved Document F.
- 5.10 The acoustic performance of ventilators is often referred to as a $D_{n,e,w}$ figure, which is the weighted element-normalized level difference that applies to small building elements with a surface area of less than 1m^2 .
- 5.11 On average, the $D_{n,e,w}$ value is typically 6dB more than the R_w index. Therefore, a $D_{n,e,w}$ of 32 dB would be required. Final specification and ventilator type can be determined during detailed design.
- 5.12 For the remaining dwellings across the Site, it is considered likely that internal noise criteria can be achieved through an open window.
- 5.13 No further mitigation is considered necessary to achieve acceptable internal noise levels, however, final specifications should be determined on a plot-by-plot basis at the appropriate design stage once the masterplan has been finalised.



6 Summary and Conclusions

- 6.1 Rappor Consultants Limited was appointed by Richborough on behalf of The Applicant to undertake a noise impact assessment (NIA) for a proposed residential development at Land North of Orton Road, Warton. The proposed development Site is located within the administrative area of North Warwickshire Borough Council (NWBC).
- 6.2 A baseline noise survey has been undertaken in February 2025 to establish baseline noise levels across the site due to road traffic. The results of the survey, and subsequent assessment work, have been assessed in accordance with current standards and guidance, following consultation with NWBC.
- 6.3 At this stage, the exact layout of the dwellings within the Proposed Development has yet to be determined. Therefore, this noise assessment demonstrates the feasibility of the Site for residential use, by assuming proposed dwellings would be located at a reasonable notional setback distance within the proposed developable area as noted on the development framework plan.
- 6.4 For proposed properties situated closest to Orton Road the model has predicted a minor exceedance of up to 2 dB during the daytime period. However, it is considered that external noise levels, as outlined within BS 8233, can be achieved through careful consideration of the development layout (i.e placing gardens on the screened side of dwellings). Where this is not possible, alternative forms of mitigation have been recommended where appropriate to reduce external noise levels as much as practicable.
- 6.5 It is considered likely that the majority of dwellings will achieve acceptable internal noise levels with open windows however for properties situated closest to Orton Road, it is considered that through the use of standard double glazing and trickle vents, acceptable internal noise levels can be achieved.
- 6.6 Based on the results of the assessment, it has been demonstrated that the Site is suitable for the proposed use



Appendix A – Glossary of Acoustic Terminology



Glossary of Acoustic Terminology

Term	Description
Ambient Sound Level, $L_{Aeq, T}$	Equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T
Background Sound Level, $L_{A90, T}$	A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting, F, and quoted to the nearest whole number of decibels
Specific Sound Level	Equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, T_r
Rating level, $L_{Ar, Tr}$	Specific sound level plus any adjustment for the characteristic features of the sound



Appendix B – Monitoring Equipment



Details of Monitoring Equipment

Item Description	Serial Number
01dB Fusion + DMK Sound Level Meter	16066
01dB CAL31 Acoustic Calibrator	106433

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