Suite 24
Doncaster Business Innovation Centre
Ten Pound Walk
Doncaster
DN4 5HX

Proposed Residential Development

Land at Hemingfield Road, Hemingfield, Barnsley, S73 0PZ

Technical Note

For:
Hargreaves Land Limited

28th January 2025

Ref: NIA-11810-24-11988-v5 Hemingfield Technical Note (Final jan 25).docx
Author: R.Whitaker BSc (Hons) MIOA

Contents

1 Introduction

1.1.1 Environmental Noise Solutions Ltd (ENS) has been commissioned by Hargreaves Land Limited to provide a technical note relating to the proposed residential development on land at Hemingfield Road, Hemingfield, Barnsley, S73 0PZ (hereafter referred to as 'the site').

1.1.2 Outline planning permission for the development was sought under Planning Application ref: 2024/0122, submitted to Barnsley Metropolitan Borough Council (BMBC) and validated on 9th February 2024.

1.1.3 Planning permission was refused by way of a decision notice dated 11 December 2024. The reasons for refusal relate to the status of the site as Safeguarded Land and the potential impact on comprehensive development of the wider area of Safeguarded Land. None of the reasons for refusal relate to noise impacts.

1.1.4 Environmental Noise Solutions Ltd (ENS) undertook a noise impact assessment to support the appellant's application for outline planning permission (ref: NIA-11108-24-11392-v4, dated February 2024).

1.1.5 The objectives of the noise impact assessment were to:

- Assess external noise levels at the site;
- Assess the potential impact of the external noise climate on the proposed residential development with reference to relevant guidelines; and,
- Outline recommendations for noise mitigation measures to provide suitable residential amenity.

1.1.6 This report detailed the methodology and results of the assessment and provided outline recommendations as appropriate.

1.1.7 The author of the report is a Member of the Institute of Acoustics (MIOA) and ENS is a specialist acoustic consultancy and a corporate member of the Association of Noise Consultants (organisation number 144).

2 Noise Survey

2.1 Overview

2.1.1 A noise survey was undertaken at the site on Tuesday 7th November and the early hours of Wednesday 8th November 2023. Additional monitoring was undertaken on 17th November to further quantify noise from the A6195.

2.1.2 The noise survey and measurements were undertaken in accordance with British Standard 7445-1 '*Description and Measurement of Environmental Noise - Part 1: Guide to Quantities and Procedures*'. The noise survey procedure is summarised below and conforms with the guidance within BS 7445-1.

- Noise measurements were undertaken in free field conditions at 4 metres above ground level using Bruel & Kjaer 2250 and NTI XL3 Type 1 integrating sound level meters. The meters were connected to a windshield covered microphone positioned at the locations detailed above.
- The measurement system calibration was verified immediately before and after the survey period using a Bruel & Kjaer Type 4231 calibrator. No drift in calibration levels greater than 0.5 dB was noted.
- Measurements consisted of A–weighted broadband parameters including L_{Aeq}, L_{A10} $L_{A90,}$ and L_{AFmax} together with linear octave band data.
- The noted weather conditions during the surveys were dry with wind speeds < 5 m/s. Weather conditions were therefore appropriate for noise monitoring in accordance with BS 7445-1.

2.1.3 The adopted noise monitoring positions were as follows (the noise monitoring positions are shown in Appendix 3)

- Position 1 – Along the western boundary at circa 5 metres from Hemingfield Road at 4 metres above ground level (AGL); and,
- Position 2 – approximately 10 metres from the A6195 (20 metres to centre) to the east of the site.

2.1.4 Noise measurement position 2 was chosen as representative of noise from the A6195 (the Dearne Valley Parkway, a dual-carriageway which is located to the north of the site) as a measurement position located closer to the road was inaccessible in the area immediately adjacent to the site due to the steep embankment, undergrowth and mature trees which separate the site from the road. The noise monitoring positions are consistent with the British Standard 7445-1 guidance.

2.1.5 The surveys conducted including the timing and location at which they confirmed is therefore representative of normal site conditions.

2.2 Summary

2.2.1 Table 2.1 presents a summary of the noise data for each measurement session, at each measurement position, rounded to the nearest decibel.

Table 2.1: Summary of Noise Measurement Data

Position	Date	Time	L_{Aeq} (dB)	L_{A90} (dB)	L_{A10} (dB)	Comment
1	07/11/2023	12:15–13:00	66	53	72	Road traffic on Hemingfield Road (typically 73 dB L_{AFMax} during the night-time due to vehicle passes)
		13:00–14:00	66	53	73	
		14:00–15:00	66	53	73	
	08/11/2023	06:00-07:00	61	49	64	
2	17/11/2023	12:34-15:34	79	71	83	Road traffic from A6195 dominant

2.2.2 The noise climate at the site is principally driven by road traffic noise from both the A6195 (the Dearne Valley Park Way) and Hemingfield Road.

2.2.3 The noise survey and subsequent assessment was undertaken with refence to the following national and local guidance.

2.3 Barnsley Local Plan

2.3.1 The Barnsley Local Plan was adopted in January 2019. Section 23.3 states the following with regard to noise:

2.3.2 *'Policy Poll1 Pollution Control and Protection: We will not allow development of new housing or other environmentally sensitive development where existing air pollution, noise, smell, dust, vibration, light or other pollution levels are unacceptable and there is no reasonable prospect that these can be mitigated against.*

Developers will be expected to minimise the effects of any possible pollution and provide mitigation measures where appropriate.'

2.4 National Planning Policy Framework

2.4.1 The National Planning Policy Framework (NPPF)[1] was updated in December 2024 and sets out the Government's planning policies for England and how these are expected to be applied.

2.4.2 Where issues of noise impact are concerned the NPPF provides brief guidance in paragraph 187 where it states that planning policies and decisions should contribute to and enhance the natural and local environment by:

2.4.3 *'preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of… noise pollution'.*

2.4.4 Paragraph 198 advises that:

2.4.5 *'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:*

1 National Planning Policy Framework. Ministry of Housing, Communities and Local Government (2023)

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

2.4.7 *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'*

2.4.8 The NPPF also refers to the 2010 DEFRA publication, the Noise Policy Statement for England (NPSE) which reinforces and supplements the NPPF.

2.5 Noise Policy Statement for England

2.5.1 The Noise Policy Statement for England[2] (NPSE) sets out the long-term vision of promoting good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development. This long-term vision is supported by the following aims:

- 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.

2.5.2 The NPSE describes the following levels at which noise impacts may be identified:

- NOEL – No Observed Effect Level. 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;
- LOAEL – Lowest Observed Adverse Effect Level. This is the level above which adverse effects on health and quality of life can be detected; and,
- SOAEL – Significant Observed Adverse Effect Level. This is the level above which significant adverse effects on health and quality of life occur.

2.5.3 According to the explanatory notes in the statement, where a noise level falls between the lowest observable adverse effect level (LOAEL) and a level which represents a significant observable adverse effect level (SOAEL):

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

2.6 Planning Practice Guidance on Noise

2.6.1 The national Planning Practice Guidance[3] (PPG) is an online resource which provides additional guidance and elaboration on the NPPF. It advises that the Local Planning Authority should consider the acoustic environment in relation to:

- 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 Government Department for Environment, Food and Rural Affairs. Noise Policy Statement for England. March 2010.
3 Planning Practice Guidance on Noise: http://planningguidance.planningportal.gov.uk/blog/guidance/noise/

2.6.2 In line with the Explanatory Note of the NPSE, the PPG references the LOAEL and SOAEL in relation to noise impact. It also provides examples of outcomes that could be expected for a given perception level of noise, plus actions that may be required to bring about a desired outcome. However, in line with the NPSE, no objective noise levels are provided for LOAEL or SOAEL although the PPG acknowledges that:

2.6.3 *'...the subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation'.*

2.6.4 The PPG also provides general advice on the typical options available for mitigating noise, suggesting that Local Plans may include noise standards applicable to proposed developments within the Local Authority's administrative boundary, although it states that:

2.6.5 *'Care should be taken, however, to avoid these being implemented as fixed thresholds as specific circumstances may justify some variation being allowed'.*

2.6.6 With regard to the mitigation of extant environmental noise at a proposed residential development, the guidance states that:

2.6.7 *'... consideration should also be given to whether adverse internal effects can be completely removed by closing windows and, in the case of new residential development, if the proposed mitigation relies on windows being kept closed most of the time. In both cases a suitable alternative means of ventilation is likely to be necessary. Further information on ventilation can be found in the Building Regulations'.*

2.6.8 The subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation. The following guidance documents provide some meaningful context.

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

2.7.1 British Standard 8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings' (BS8233)[4] provides recommendations for the control of noise both in and around buildings and suggests criteria and limits appropriate to their function. For residential dwellings, the main considerations are:

- Bedrooms - the effect of noise upon sleep; and,
- Other habitable rooms - the effect of noise upon resting, listening and communicating.

2.7.2 It is desirable that the internal ambient noise level does not exceed the guideline values as replicated in Table 2.2.

Table 2.2: Indoor Ambient Noise Levels for Dwellings - BS8233:2014

Activity	Location	07:00 – 23:00	23:00 – 07:00
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 $L_{Aeq,8hour}$

[4] British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings. BSI

2.7.3 BS8233 states:

'If relying on closed windows to meet the guide values, there needs to be appropriate alternative ventilation that does not compromise the façade insulation or the resulting noise level. If applicable, any room should have adequate ventilation (e.g. trickle ventilators should be open) during assessment.'

2.7.4 Whilst BS 8233 is primarily concerned with noise within dwellings, the following guidance is also provided for external amenity areas:

2.7.5 *"For traditional external areas that are used for amenity space, such as gardens or patios it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognised that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited".*

2.8 ProPG Planning and Noise: New Residential Development

2.8.1 The Professional Practice Guidance (ProPG) on Planning and Noise: New Residential Development[5] was published in May 2017 by the Association of Noise Consultants (ANC), Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH). The ProPG provides practitioners with guidance on the recommended approach to the management of noise within the planning system in England. The document recommends compliance with indoor noise level targets in residential dwellings based on the guidance contained in BS8233 (see Table 2.2). Additionally, with regard to individual noise events, ProPG states:

2.8.2 '*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 factors such as the source, number, distribution, predictability and regularity of the noise events."*

2.8.3 ProPG acknowledges that the internal target noise levels may only be practically achieved with windows closed in certain areas (e.g. in urban areas or sites adjacent to transportation noise sources) and states that:

2.8.4 *'In such circumstances, internal noise levels can be assessed with windows closed but with any façade openings used to provide 'whole dwelling ventilation' in accordance with Building Regulations Approved Document F (e.g. trickle ventilators in the open position).*

2.8.5 It should also be noted that the internal noise level guidelines are generally not applicable under 'purge ventilation' conditions as defined by Building Regulations Approved Document F, as this should only occur occasionally (e.g. to remove odour from painting and decorating or from burnt food).'

5 'ProPG Planning and Noise: New Residential Development (ProPG)', 2017. Association of Noise Consultants (ANC), Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH)

3 Noise Assessment

3.1.1 Noise levels across the site were predicted using a three-dimensional Cadna-A noise model based on the measured noise levels across the site summarised in Table 2.1. The model was constructed using topographical survey data and mapping from Ordnance Survey, in conjunction with drawings and information supplied by the appellant. Noise propagation is calculated in spectral terms according to BS EN ISO 1963: 1996, with 2nd order reflections considered.

3.1.2 The noise contour maps are provided in Appendix 2

3.2 Scheme of Mitigation

3.2.1 Calculations were performed to determine the configuration of glazing and ventilation required to satisfy the internal noise criteria with closed windows for the most noise affected areas of the site. The calculations incorporate the measured external noise level data summarised in Section 2 in conjunction with the results of the noise model discussed in Section 3 and are based on the noise ingress calculation methodology outlined in Annex G.2 of BS8233:2014 with building footprints based on the indicative masterplan. The scheme of mitigation which follows is sufficient to ensure a satisfactory level of residential amenity. Layout is a detailed matter which would be considered in detail at reserved matters stage and would address detailed mitigation based on positioning and massing of buildings. The detailed scheme can be secured at reserved matters stage via an appropriately worded condition imposed on the outline planning permission.

3.2.2 In addition to satisfying the requirements of BS 8233, the scheme of sound insulation presented below is expected to control individual noise events in line with the ProPG requirement to not exceed 45 dB $L_{Amax,F}$ internally more than 10 to 15 times per night, as set out in Section 2.

3.2.3 Minimum sound reduction values for the glazing and ventilation elements are presented in Table 3.1, based on commonly available ventilation and glazing products. The calculations assume one ventilator per bedroom, and two for all other habitable rooms.

3.2.4 Table 3.1 should be read in conjunction with the site wide mark-up, indicating the distribution of glazing and mitigation measures required, presented in Appendix 2.

Table 3.1: Required Sound Reduction of Façade Elements

Element	Required Sound Reduction (dB)						Indicative Specification
	125 Hz	250 Hz	500 Hz	1kHz	2kHz	Weighted R_w ($R_w + C_{tr}$) / $D_{n,e,w}$ ($D_{n,e,w} + C_{tr}$)	
Specification 1							
Glazing	20	20	30	39	35	**33 (28)**	6/16/6 Thermal double glazing
Ventilation	42	37	37	43	57	**43 (41)** *(open position)*	Ryton AAC125HP wall ventilator
Specification 2							
Glazing	20	20	30	39	35	**33 (28)**	6/16/6 Thermal double glazing
Ventilation	40	37	35	37	44	**39 (38)**	Invisivent EVO AK High acoustic trickle vent
Specification 3							
Glazing	20	20	30	39	35	**33 (28)**	6/16/6 Thermal double glazing
Ventilation	37	35	32	33	37	**34 (33)**	Standard Trickle Ventilator Invisivent EVO AK Basic acoustic trickle vent

3.2.5 The scheme of mitigation set out above is typical for a residential development of this type which is subject to road traffic noise and complies with the guideline values given within Table 2.2 in accordance with BS 8233.

3.3 External noise levels (Gardens)

3.3.1 With reference to the noise survey results summarised in Table 2.1and the daytime noise contour plot presented as in Appendix 2, external noise levels across the site are predicted to be ≥ 55 dB $L_{Aeq,16hr}$, excepting a small area to the south-eastern corner of the site where noise levels are <55 dB $L_{Aeq,16hr}$.

3.3.2 With reference to the BS 8233 guidance summarised in Section 2, where external noise levels are predicted to exceed 50 dB $L_{Aeq,16hr}$, mitigation is recommended to reduce noise levels as far as practicably possible. On this basis, all gardens should be provided with solid garden fences to a minimum height of 1.8m above ground level. Fences should be imperforate with a minimum superficial mass per unit area of 10 kg/m².

3.3.3 An effective barrier can be composed of a solid masonry wall, close boarded fencing or a combination of types. Where timber fencing is used, a concrete gravel board is recommended to ensure that there are no gaps underneath the barrier. Alternatively, a proprietary specialist barrier may be used. Provision of localised screening is a typical and effective means of reducing noise levels in gardens and can be considered to represent good acoustic design for mitigation. Furthermore, noise within gardens can be reduced through the orientation of the development with properties facing onto the Dearne Valley Parkway, therefore screening gardens from the road by the development itself.

4 Local Authority Consultation Response

4.1.1 Following the submission of the Noise Impact Assessment, the following comments were made by Barnsley Metropolitan Borough Council Pollution Control.

'BMBC Pollution Control

The associated documentation has been reviewed and the location and risks have been assessed and my comments are as follows:

This development has the potential to have an adverse impact on health and the quality of life of those living and/or working in the locality, so approval with conditions is recommended.

Recommended Conditions

Before use of the development commences, the noise mitigation measures described in report 'Noise Impact Assessment' produced by Environmental Noise Solutions Ltd dated 7 February 2024, ref: NIA-11108-24-11392-v4 Hemmingfield [sic] Road, shall be implemented so that environmental noise does not cause significant adverse impacts on health or the quality of life as required by noise planning policy, to those living and working in the development. This includes:

- *All glazing and ventilation installed shall meet the criteria detailed within the Noise Impact Assessment above*
- *Acoustic trickle ventilators or through wall ventilation shall be installed in every habitable room (one per bedroom and two for other habitable rooms)*
- *Close boarded timber fencing of at least 1.8m height shall be used in every garden*

Once the final layout is submitted and agreed by the Local Planning Authority an updated noise mitigation plan shall be submitted and agreed by the Local Planning Authority. The scheme shall be maintained and not altered without the prior permission of the Local Planning Authority.

Reason: To reduce or remove adverse impacts on health and the quality of life, especially for people living and/or working nearby, in accordance with Local Plan Policy POLL1

No works shall take place, until a Construction Method Statement has been submitted to, and approved in writing by, the Local Planning Authority. The approved Statement shall be adhered to throughout the period of engineering operations and construction.

The Statement shall provide for:

i The parking of vehicles of site operatives and visitors;

ii means of access for construction traffic

iii. Loading and unloading of plant and materials;

iv. Storage of plant and materials used in constructing the development;

v. The erection and maintenance of security hoarding including decorative displays and facilities for public viewing, where appropriate;

vi. Wheel washing facilities;

vii. Details of the provision of an on-site water supply or water storage facility;

ix Measures to control the emission of dust and dirt during earthworks or cut/fill; viii Measures to control noise emissions during earthworks or cut/fill;

x. A scheme for recycling/disposing of waste resulting from earthworks or cut/fill

Reason: To reduce or remove adverse impacts on health and the quality of life, especially for people living and/or working nearby, in accordance with Local Plan Policy POLL1

During construction or demolition works, activity shall only take place onsite between the hours of 0800 to 1800 Monday to Friday and 0900 to 1400 on Saturdays and at no time on Sundays or Bank Holidays

Reason: To reduce or remove adverse impacts on health and the quality of life, especially for people living and/or working nearby, in accordance with Local Plan Policy POLL1'

'Before use of the development commences, the noise mitigation measures described in report 'Noise Impact Assessment' produced by Environmental Noise Solutions Ltd dated 7 February 2024, ref: NIA-11108-24-11392-v4 Hemingfield Road, shall be implemented so that environmental noise does not cause significant adverse impacts on health or the quality of life as required by noise planning policy, to those living and working in the development. This includes:

All glazing and ventilation installed shall meet the criteria detailed within the Noise Impact Assessment above

Acoustic trickle ventilators or through wall ventilation shall be installed in every habitable room (one per bedroom and two for other habitable rooms)

Close boarded timber fencing of at least 1.8m height shall be used in every garden

Once the final layout is submitted and agreed by the Local Planning Authority an updated noise mitigation plan shall be submitted and agreed by the Local Planning Authority. The scheme shall be maintained and not altered without the prior permission of the Local Planning Authority.'

4.1.3 The Council's consultee therefore did not object to the development and considers that with conditions issues relating to noise can be addressed to ensure that residents have a satisfactory level of residential amenity.

5 Public Consultation

5.1.1 While Pollution Control at BMBC were in agreement with the recommendations of the NIA, it is understood that concerns have been raised by members of the public in relation to development-led traffic and noise associated with air source heat pumps (ASHPs) for the proposed dwellings.

5.1.2 A glossary of acoustic terms used in the main body of the text is contained in Appendix 1.

5.2 Development-Led Traffic

5.2.1 Assessment Guidance

5.2.2 The Design Manual for Roads and Bridges: LA 111 Noise and Vibration (DMRB) provides guidance on the assessment of the impacts that road projects may have on levels of noise and vibration. The document sets out operational road traffic noise guidelines, based on magnitude of changes in road traffic noise levels with the completion of a road upgrade and/or construction of a new road.

5.2.3 In undertaking a DMRB assessment, the calculation of traffic noise levels uses the methodology contained within the Calculation of Road Traffic Noise (CRTN).

5.2.4 DMRB requires comparisons of the following sets of data:

- Do-Minimum scenario in the opening year (DMOY) against Do-Something scenario in the future assessment year (DSFY)
- Do-Minimum scenario in the opening year (DMOY) against Do-Minimum scenario in the future year (DMFY)

5.2.5 The DMRB assessment suggests that the magnitude of noise changes from a project should be classified into levels of impact, and gives detailed consideration to how impact magnitude will be affected by whether a noise level change will occur in the short term (e.g. as a result of a sudden opening of a scheme), or whether the noise level change would occur in the long term (e.g. gradually over time, such as that associated with natural traffic growth).

5.2.6 The DMRB classification scale for determining the impact at a receptor is set out in Table 5.1 for the short term and Table 5.2 for the long term.

Table 5.1 – Classification of Magnitude of Road Traffic Noise Impacts in the Short Term

Magnitude of Impact	Noise Change, $L_{A10,18hr}$ (dB)
Negligible	Less than 1.0
Minor	1.0 – 2.9
Moderate	3.0 – 4.9
Major	5.0+

Table 5.2 – Classification of Magnitude of Road Traffic Noise Impacts in the Long Term

Magnitude of Impact	Noise Change, $L_{A10,18hr}$ (dB)
Negligible	Less than 3.0
Minor	3.0 – 4.9
Moderate	5.0 – 9.9
Major	10.0+

5.2.7 Although the scope of the DMRB is limited to new road schemes, the assessment methodology contained within the document can also be applied to the assessment of noise from road traffic in general. As traffic levels are expected to increase due to the proposed development, there is the potential to affect road traffic noise levels along existing roads, hence the need for an assessment.

5.2.8 Traffic Assessment

5.2.9 Traffic flows for the development have been provided as part of a Transport Assessment (TA) prepared by Bryan G Hall (report ref: 23-160-001.03).

5.2.10 As indicated in Appendix BGH 2 of the TA, access into the site is proposed to be taken from Hemingfield Road to the west, with site traffic travelling either north towards the A6195 or south towards Hemingfield.

Figure 5.1 – Location of Site Access

5.2.11 In terms of noise impact, it is considered that dwellings along Hemingfield Road represent the worst-case receptors, with traffic dispersing across the wider surrounding road network thereafter.

5.2.12 The estimated capacity of the application site is for circa 180 no. dwellings subject to the eventual mix of properties. The site forms part of a wider area of land which is identified in the Barnsley Local Plan as safeguarded land for future development, with the potential for circa 430 no. dwellings inclusive of the 180 dwellings that the site could accommodate.

5.2.13 On this basis, the TA considers two separate scenarios:

- 180 no. dwellings at the application site (adopted as the short-term scenario); and,
- 430 no. dwellings including the wider area of land (adopted as the long-term scenario)

5.2.14 For the purpose of the assessment, 18-hour AAWT traffic flows have been provided by Bryan G Hall for the Hemingfield Road links to the north and south of the site access road, as summarised in Table 5.3. For reference, in the absence the site access road, the opening year Do-Minimum traffic flows are the same for both sections of the road.

Table 5.3 – Existing and Forecast Traffic Numbers

Scenario	Location	Do-Something Traffic Flows (18-hour AAWT)	Do-Minimum Traffic Flows (18-hour AAWT)
Short-Term (180 no. dwellings)	Hemingfield Road North	6607	5798
	Hemingfield Road South	6003	5798
Long-Term (430 no. dwellings)	Hemingfield Road North	7596	5798
	Hemingfield Road South	6254	5798

5.2.15 The changes in noise level are then calculated using the methodology contained in the CRTN, as summarised below.

Table 5.4 – Change in Noise Level

Scenario	Location	Noise Change, $L_{A10,18hr}$ (dB)
Short-Term (180 no. dwellings)	Hemingfield Road North	+0.56 dB
	Hemingfield Road South	+0.15 dB
Long-Term (430 no. dwellings)	Hemingfield Road North	+1.17 dB
	Hemingfield Road South	+0.33 dB

5.2.16 The largest change in noise level in the short-term scenario is +0.56 dB. With reference to the short-term magnitude of change criteria set out in Table 5.1, this increase in noise level is negligible.

5.2.17 The largest change in noise level in the long-term scenario is +1.17 dB. With reference to the long-term magnitude of change criteria set out in Table 2.2, this increase in noise level is negligible.

5.2.18 On the basis of the above, the noise impact of development-led traffic is negligible at all receptors.

5.3 Noise Associated with Air Source Heat Pumps (ASHP)

5.3.1 A member of the public commented about the potential for heat pumps to be installed in new homes. This is likely to become common due to changes to the Building Regulations which seek to reduce carbon emissions. For the purposes of addressing this point, this chapter presents a worst-case scenario assuming that each dwelling would be provided with an ASHP.

5.3.2 The nearest noise sensitive receptors are existing dwellings on Hemingfield Road, located circa 30 metres to the west and south of the site, Mellwood Grove, as well as those properties located to the south east of the site on Briery Meadows. Typically, ASHPs would be installed at the rear of the dwellings so as not to have an adverse impact on the street scene and would therefore be screened from surrounding receptors by the dwelling to which they serve as well as the boundary treatment provided for each dwelling.

5.3.3 While the application was made in outline form and details of the units to be installed are unknown, noise levels are adopted from a typical domestic ASHP (Daikin EPRA18DV3, with a sound power level of 54 dB L_{wA}) in order to illustrate the negligible impact of the units.

5.3.4 The predicted plant noise level at the nearest existing dwellings is given by the following formula:

$SPL_{rec} = SWL - (20 \times \log (r)) - 8 - SA$

Where,

- SPL_{rec} = Noise level at the receptor
- SWL = Sound power level of unit
- r = Distance from source (30 metres in this case)
- –8 = Correction from sound power to sound pressure
- SA = Screening attenuation

5.3.5 With reference to screening, BS 5228:2009 Part 1 states '*In the absence of spectral data, as a working approximation, if there is a barrier or other topographic feature between the source and the receiving position, assume an approximate attenuation of 5 dB when the top of the plant is just visible to the receiver over the noise barrier, and of 10 dB when the noise screen completely hides the sources from the receiver. High topographical features and specifically designed and positioned noise barriers could provide greater attenuation.*'

5.3.6 Screening attenuation is therefore conservatively taken as 10 dB.

5.3.7 Based on the above formula, the predicted plant noise levels at the nearest existing dwellings are calculated at 6 dB L_{Aeq} per unit.

5.3.8 Assuming the nearest 10 proposed plots are all set back a similar distance from existing dwellings, the worst-case cumulative noise level would be +10 dB higher [i.e. = 10 * log (10)], which equates to **16 dB L_{Aeq}**.

5.3.9 Such levels are very low in absolute terms, significantly below ambient and background noise levels in the vicinity of the site and will be wholly inaudible at the nearest existing dwellings.

5.3.10 Remaining ASHPs would be set back progressively further from existing dwellings and would benefit from additional screening afforded by the first row of plots at the site.

5.3.11 Should ASHPs be provided, the reserved matters stage will enable control of the orientation of plots (layout) and the locations of ASHPs. The potential noise impact from ASHPs is in any event is considered to be negligible, should they be provided.

6 Summary and Conclusions

6.1.1 A noise impact assessment was undertaken for the proposed residential development at land at Hemingfield Road, Hemingfield, Barnsley, S73 0PZ.

6.1.2 A noise survey was undertaken at the site on Tuesday 7th November and the early hours of Wednesday 8th November 2023. Additional monitoring was undertaken on 17th November to further quantify noise from the A6195. The survey was undertaken in accordance with a robust methodology.

6.1.3 The report sets out proposals for a scheme of sound insulation which would achieve acceptable residential amenity for the proposed new dwellings. Recommendations are also made for mitigating noise as far as practicably possible in external amenity areas. The Council have therefore raised no objection in this regard.

6.1.4 Additional noise assessments have been undertaken to address concerns highlighted by the public with regard to ASHPs and development led traffic increases. These confirm that the impacts are negligible and will not have a detrimental impact on the residential amenity of existing residents.

6.1.5 The scheme of mitigation presented is considered typical for a development of this type. A good level of residential amenity can be achieved for all dwellings within the site and noise is not considered to be an impediment to the development.

6.1.6 The development complies with local and national planning policy and guidance relating to noise.

6.1.7 Further, the development of the site would not have a negative impact on or prejudice the development of the balance of the land designated as safeguarded land. Any planning application for residential development on that land would also be required to address noise issues and provide appropriate mitigation

Appendix 1 – Abbreviations and Definitions

Sound Pressure Level (L_p)
The basic unit of sound measurement is the sound pressure level. As the pressures to which the human ear responds can range from 20 µPa to 200 Pa, a linear measurement of sound levels would involve many orders of magnitude. Consequently, the pressures are converted to a logarithmic scale and expressed in decibels (dB) as follows:

$L_p = 20 \log_{10}(p/p_o)$

Where L_p = sound pressure level in dB; p = rms sound pressure in Pa; and p_o = reference sound pressure (20 µPa).

A-weighting
A frequency filtering system in a sound level meter, which approximates under defined conditions the frequency response of the human ear. The A-weighted sound pressure level, expressed in dB(A), has been shown to correlate well with subjective response to noise.

Equivalent continuous A-weighted sound pressure level, $L_{Aeq, T}$
The value of the A-weighted sound pressure level in decibels of continuous steady sound that within a specified time interval, T, has the same mean-square sound pressure as a sound that varies with time. $L_{Aeq, 16h}$ (07:00 to 23:00 hours) and $L_{Aeq, 8h}$ (23:00 to 07:00 hours) are used to qualify daytime and night time noise levels.

$L_{A10, T}$
The A-weighted sound pressure level in decibels exceeded for 10% of the measurement period, T. $L_{A10, 18h}$ is the arithmetic mean of the 18 hourly values from 06:00 to 24:00 hours.

$L_{A90, T}$
The A-weighted sound pressure level of the residual noise in decibels exceeded 90% of a given time interval, T. L_{A90} is typically taken as representative of background noise.

$L_{AF\ max}$
The maximum A-weighted noise level recorded during the measurement period. The subscript 'F' denotes fast time weighting, slow time weighting 'S' is also used.

Single Event Level / Sound Exposure Level (SEL or L_{AE})
The energy produced by a discrete noise event averaged over one second, regardless of the event duration. This allows for comparison between different noise events which occur over different lengths of time.

Weighted Sound Reduction Index (R_W)
Single number quantity which characterises the airborne sound insulation properties of a material or building element over a defined range of frequencies (R_W is used to characterise the insulation of a material or product that has been measured in a laboratory).

Appendix 2 – Noise Contour and Façade Plots

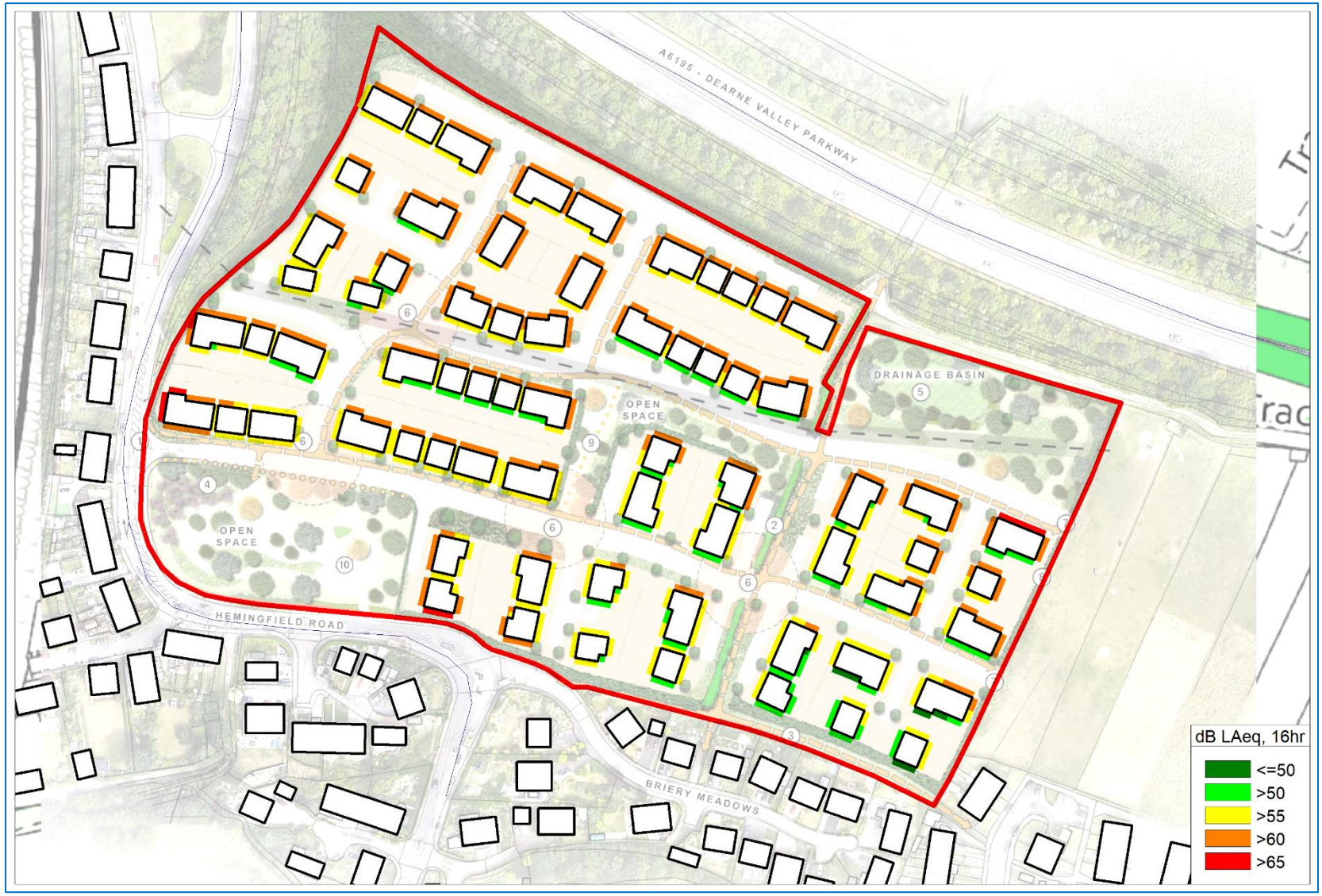


Figure a1: Daytime façade levels – First floor

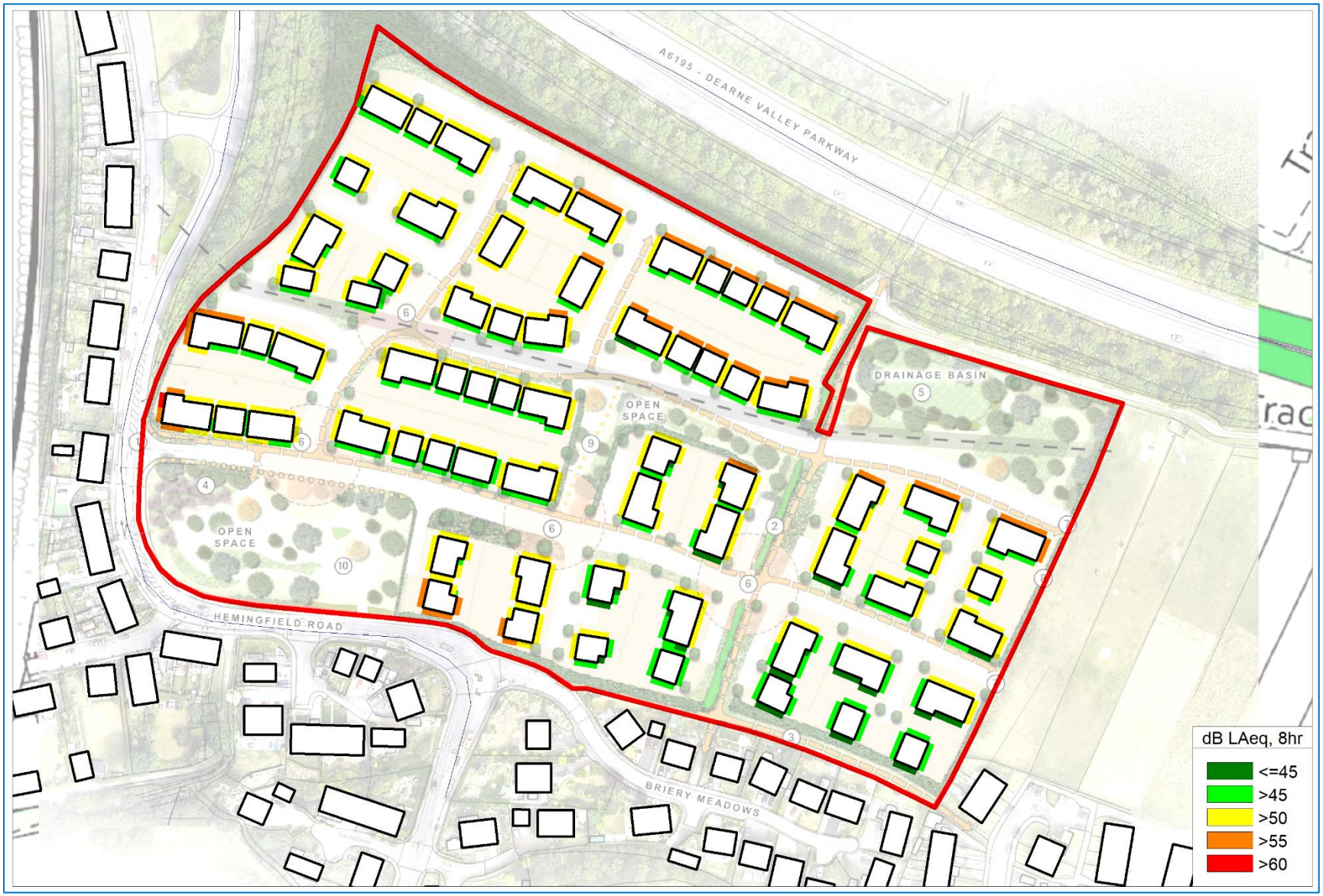
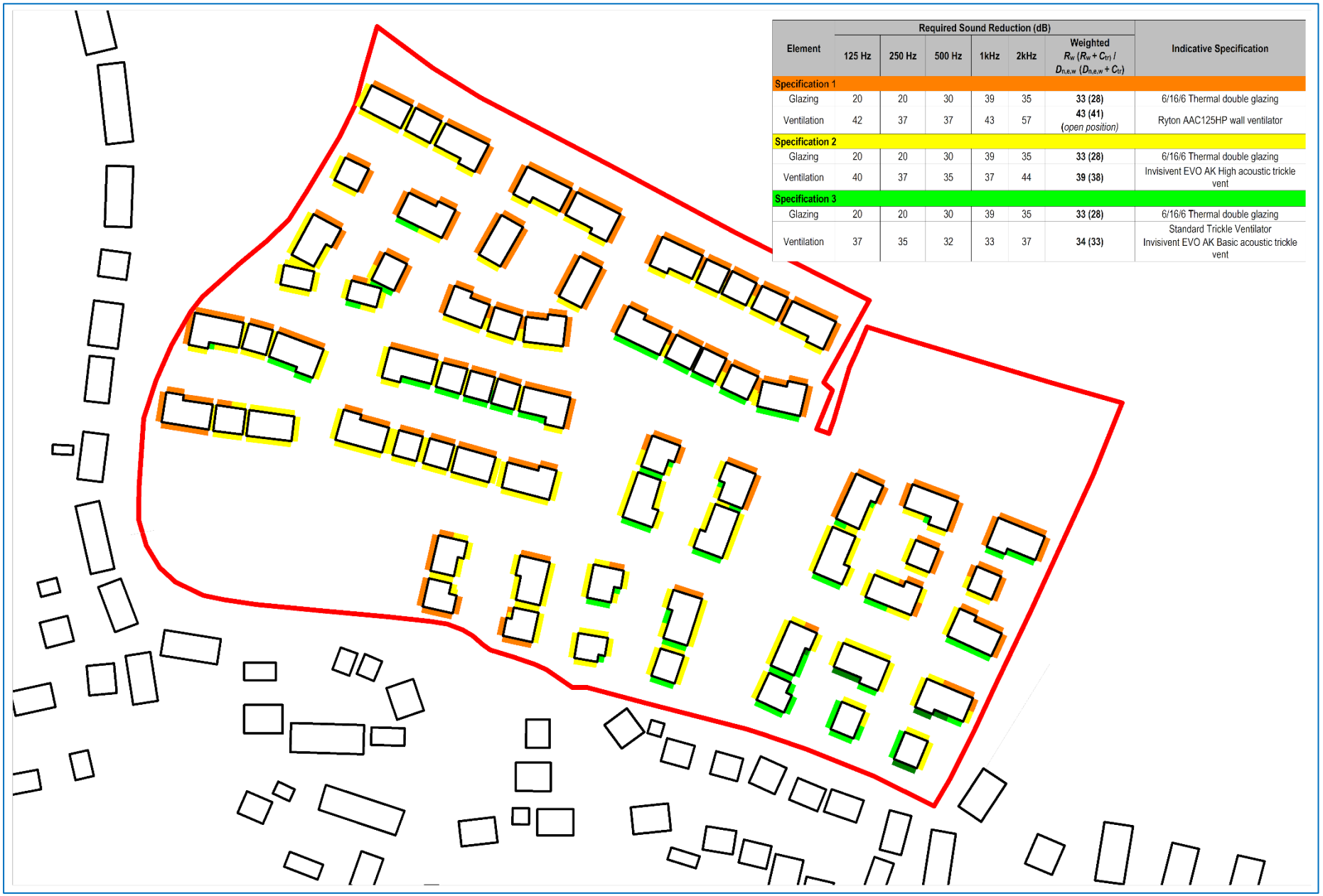


Figure C2: Night time façade levels – First floor

Figure C3: Daytime noise contour plot at 1.5m above ground level



Element	Required Sound Reduction (dB)						Indicative Specification
	125 Hz	250 Hz	500 Hz	1kHz	2kHz	Weighted R_w ($R_w + C_{tr}$) / $D_{n,e,w}$ ($D_{n,e,w} + C_{tr}$)	
Specification 1							
Glazing	20	20	30	39	35	**33 (28)**	6/16/6 Thermal double glazing
Ventilation	42	37	37	43	57	**43 (41)** *(open position)*	Ryton AAC125HP wall ventilator
Specification 2							
Glazing	20	20	30	39	35	**33 (28)**	6/16/6 Thermal double glazing
Ventilation	40	37	35	37	44	**39 (38)**	Invisivent EVO AK High acoustic trickle vent
Specification 3							
Glazing	20	20	30	39	35	**33 (28)**	6/16/6 Thermal double glazing
Ventilation	37	35	32	33	37	**34 (33)**	Standard Trickle Ventilator Invisivent EVO AK Basic acoustic trickle vent

Figure C4: Mitigation requirements

Appendix 3 – Site Layout and Noise Measurement Positions