

Acoustic Design Statement

Land at Watermill Bridge

For Bewley Homes



Quality Management

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1 Introduction

- 1.1 The Acoustics Team of RPS has been appointed by Bewley Homes to provide a noise assessment to accompany a part outline, part detailed planning application for a new residential development on land at Common Farm, to the east of Andover Road, Wash Water. The site is located within the administrative area of Basingstoke and Deane District Council (BDDC). The detailed application site area is located towards the north-eastern part of the overall site adjacent with Andover Road.
- 1.2 The structure and content of this report is based upon the requirements of the Professional Practice Guidance on Planning and Noise (ProPG) [1] and provides the Acoustic Design Statement (ADS) for the development. The purpose of the ADS is to consider any constraints that the existing noise environment may have on the development and whether any specific mitigation measures are required to provide satisfactory internal and external environments for future residents.
- 1.3 The assessment has been undertaken based upon appropriate information on the proposed development provided by the project team. RPS is a member of the Association of Noise Consultants (ANC), the representative body for acoustics consultancies, having demonstrated the necessary professional and technical competence. The assessment has been undertaken with integrity, objectivity and honesty in accordance with the Code of Conduct of the Institute of Acoustics (IOA) and ethically, professionally and lawfully in accordance with the Code of Ethics of the ANC.
- 1.4 The technical content of this assessment has been provided by RPS personnel, all of whom are corporate (MIOA) members of the IOA (the UK's professional body for those working in acoustics, noise and vibration). This report has been peer reviewed within the RPS team to ensure that it is technically robust and meets the requirements of our Integrated Management System.

2 National & Local Policy, Standards and Guidance

- 2.1 The assessment within this ADS has been carried out on the basis of the guidance in the ProPG. A Stage 1 risk assessment has been carried out based upon the results of a baseline noise survey. The risk assessment determines the level of detail required for the subsequent Stage 2 assessment, which has been carried out in accordance with the guidance, as required for this application.
- 2.2 In accordance with Stage 2: Element 4 of the ProPG, the development has been designed to comply with relevant national guidance in the Noise Policy Statement for England (NPSE) [2], National Planning Policy Framework (NPPF) [3], Planning Practice Guidance on Noise (PPGN) [4] and local noise planning policy. Further policy details are provided in Appendix A.

National Planning Policy

- 2.3 Appendix A provides a complete summary of the relevant guidance contained within national planning policy in the NPSE, the NPPF and the PPGN. These documents do not contain guidance in terms of numerical noise levels. Guidance is provided descriptively, which may be transposed to numerical noise levels for site-specific situations, using the methods contained within BSs.
- 2.4 Relevant experience and professional judgment are fundamental to all stages of the assessment that leads to the determination of the significance of a noise effect. The non-numeric guidance contained within the PPGN, based upon the initial advice in the NPSE, is summarised in Table 2.1 below.
- 2.5 The PPGN states that there are many factors which should be considered when determining if a noise is of concern; one factor is the number of noise events and the frequency and pattern of occurrence of the noise.
- 2.6 The PPGN provides further information on the adverse effects of noise and how it can be mitigated. For noise sensitive development, mitigation measures can include avoiding noisy locations; designing the development to reduce the impact of noise from the local environment, including noise barriers; and optimising the sound insulation provided by the building envelope including through noise insulation

Table 2.1 Summary of Guidance from NPSE and PPGN

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not present	No Effect	No Observed Effect	No specific measures required
Present and not intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level (LOAEL)			
Present and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level (SOAEL)			
Present and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

Local Planning Policy

2.7 The Basingstoke and Deane Local Plan (BDLP) 2016 [5] forms part of the statutory development plan for the borough. It sets out the council’s vision and strategy for the area until 2029 and will provide the basis for decisions on planning applications.

2.8 Policy EM12 ‘Pollution’ relates to new development and noise, stating:

Policy EM12 – Pollution

Development will be permitted provided that it does not result in pollution which is detrimental to quality of life, or poses unacceptable risks to health or the natural environment. Development that would result in unavoidable pollution will only be permitted where measures to adequately mitigate these polluting effects can be implemented. Development which is sensitive to pollution will only be permitted where:

- A) *There would be no detrimental impact on quality of life as a result of existing, historic, or nearby land uses and activities; and*

b) It would not lead to unacceptable risks to human health or the natural environment, as a result of existing, historic, or nearby land uses and activities; or

c) Adequate remedial or mitigation measures are proposed and can be implemented.

2.9 Section 6.101 of the BDLP states:

“Noise sources that are often relevant to development proposals and subsequent impact may include, traffic (road, rail and air), the use of mechanical (fixed or mobile) plant associated with industrial, commercial activities and premises, or other miscellaneous noise sources e.g. associated with an industrial activity. Should development give rise to, or be sensitive to, noise from one or more of the examples noted above, its impact must be assessed in line with current recognised methods and guidance.”

Consultation

2.10 Prior to undertaking this assessment, RPS contacted the Environmental Health department at BDDC, via email, to confirm the proposed assessment methodology.

2.11 It was confirmed that two long-term noise monitors would be left on the site to quantify the acoustic environment, with additional short-term measurements of nearby sources carried out as required. A copy of the correspondence is provided in Appendix A.

2.12 In addition, during the consultation undertaken, reference to the BDDC ‘Noise assessments and reports for planning applications Guidance note for developers and consultants’ document [6] was made, which outlines BDDC’s expectations with regard to new noise sensitive development.

2.13 Appendix 3 of the document provides ‘target noise criteria’, which are based upon guidance in British Standard 8233:2014: ‘Guidance on sound insulation and noise reduction for buildings’ [7] (further details provided in Table 2.3 below)¹.

2.14 With regard to internal noise levels the document states that:

“3.1 It is often necessary to open windows during the warmer months of the year to achieve comfortable internal temperatures. Windows might remain open for extended periods to cool the internal habitable rooms including bedrooms. This is often referred to as summer cooling and essentially means an increased flow of air through habitable rooms to cool these spaces. This is not discussed in BS8233 or Approved Documents E or F of the Building Regulations. However the requirements related to “purge ventilation” and the purpose of purge ventilation are

¹ Internal ambient noise levels of 35 and 30 dB L_{Aeq,T} during the daytime or night-time period respectively, and maximum noise levels not exceeding 45 dB L_{AFmax} during the night time period more than 15 times.

comparable to the purpose of opening windows for reasons of cooling i.e. the internal environment is not comfortable and rapid air changes should serve to improve that comfort.

3.2 Where the internal noise levels referred to in table 1 cannot be achieved with windows open, alternative mechanical ventilation such as mechanical heat recovery system (with cool air bypass) should be provided. This ventilation must:

i) Be capable of providing air changes at volumes equivalent to an open window for the purposes of rapid cooling and ventilation.

ii) Not compromise the façade insulation or the resulting internal noise level.

iii) Operate at a level to comply with noise rating curve NR25 or lower.”

2.15 With regard to the above reference to “open windows”, further clarification was sought to confirm the degree of open window expected to provide a sufficient level of summer cooling ventilation, i.e. partially open windows (providing around 15 dB of attenuation of external noise), or fully open windows (which effectively would provide no attenuation of external noise).

2.16 It was confirmed that reference to ‘open windows’ in this instance refers to partially open windows, therefore, paragraph 3.2 of the document can be re-written as:

“Where the internal noise levels referred to in table 1 cannot be achieved with windows partially open, alternative mechanical ventilation such as mechanical heat recovery system (with cool air bypass) should be provided”

2.17 In summary, it is the expectation of BDDC that alternative mechanical ventilation should be provided for all new dwellings where internal ambient noise levels, with windows partially open, of 35 or 30 dB $L_{Aeq,T}$ during the daytime or night-time period respectively, or maximum noise levels not normally exceeding 45 dB L_{AFmax} during the night time period cannot be achieved.

2.18 Consequently (on the basis that a partially open window provides 15 dB of attenuation), alternative mechanical ventilation would be required for all new dwellings where the external ambient noise level is above either 50 or 45 dB $L_{Aeq,T}$ during the daytime or night-time period respectively, or the external maximum noise level normally exceeds 60 dB L_{AFmax} during the night-time period.

2.19 It is noted that the BDDC expectation would require mechanical ventilation to be installed for all new dwellings wherever external ambient noise levels are above 50 or 45 dB $L_{Aeq,T}$ during the day or night-time period respectively or night-time maximum noise levels normally above 60 dBA. Such levels are not particularly high, or indicative of ‘noisy’ areas. With reference to the ProPG ‘Initial Site Noise Risk Assessment’ guidance, levels of these magnitudes are considered to be of ‘negligible’ to ‘low’ risk, and it is considered likely that this would apply for a significant proportion of new residential development.

Comment

- 2.20 With reference to the 'Acoustics Ventilation and Overheating Residential Design Guide' (AVO) [8], published by the ANC and the IOA in January 2020², i.e. subsequent to the publication of the BDDC guidance note:

"3.9 It is suggested here that the desirable internal noise standards within Table 4 of BS 8233:2014 should be achieved when providing adequate ventilation as defined by ADF whole dwelling ventilation. However, it is considered reasonable to allow higher levels of internal ambient noise from transport sources when higher rates of ventilation are required in relation to the overheating condition.

3.10 The basis for this is that the overheating condition occurs for only part of the time. During this period, occupants may accept a trade-off between acoustic and thermal conditions, given that they have some control over their environment. In other words, occupants may, at their own discretion, be more willing to accept higher short-term noise levels in order to achieve better thermal comfort. The importance of control is relevant to daytime exposure, but not to night time exposure where the consideration is sleep disturbance.

3.11 It is important to note that there is no specific research available to support this view regarding human response to combined exposure to heat and noise. However, the notion that control over one's environment moderates the response to exposure is well established in the field of thermal comfort, and underpins the adaptive thermal comfort model."

- 2.21 In summary, the AVO guidance considers that higher internal noise levels than those detailed in Table 4 of BS 8233:2014 (which the BDDC guidance refers to) are reasonable when higher rates of ventilation are required in relation to overheating.

- 2.22 It is also noted in the AVO guide that:

"The potential for adverse effect will also depend on how frequently and for what duration the overheating condition occurs."

- 2.23 It is outwith the scope of this assessment to provide a detailed overheating analysis (based on orientation, thermal mass, solar gain, external ambient temperature, overshadowing etc.), however, it is considered that the risk for overheating would be significantly lower during the night-time period when the external ambient temperature is lower and there is zero solar gain, which is a primary

² The AVO Guide provides an approach as to how the competing aspects of thermal and acoustic comfort can be managed. It recommends an approach to acoustic assessments for new residential development that take due regard of the interdependence of provisions for acoustics, ventilation, and overheating. Application of the AVO Guide is intended to demonstrate good acoustic design as described in the ProPG, when considering internal noise level guidelines.

cause of overheating. On this basis, the risk for overheating would be limited to summer daytime periods only.

- 2.24 As such, when taking into account the competing aspects of thermal and acoustic comfort, it is considered that whilst internal noise levels would, at times, be above the BDDC guidance during the short and limited periods of time windows are open during the day (in relation to the overheating condition), overall, there would be no detrimental impact on the quality of life, or an unacceptable risk to human health³, when assessed with reference to current recognised methods and guidance.
- 2.25 Consequently, whilst internal noise levels would, at times, be above the BDDC guidance during the short and limited periods of time windows are open during the day (in relation to the overheating condition), that overall an appropriate level of residential amenity would be provided with significant effects avoided, compliant with Local and National planning policy, when assessed with reference to current recognised methods and guidance.

³ In this regard it should be noted that the BS 8233:2014 states that the internal noise “...levels are based on annual average data and do not have to be achieved in all circumstances”.

Professional Practice Guidance on Planning & Noise

- 2.26 This ProPG provides practitioners with guidance on a recommended approach to the management of noise within the planning system in England for new residential development. The guidance has been produced by the ANC, IOA and Chartered Institute of Environmental Health (CIEH) and is expected to be widely adopted by planning authorities as best practice when considering noise affecting new residential development.
- 2.27 This ProPG advocates a systematic, proportionate, risk based, two stage, approach, namely:
- Stage 1: an initial noise risk assessment of the proposed development site; and
 - Stage 2: a systematic consideration of four key elements.
- 2.28 The four key elements to be undertaken in parallel during Stage 2 are listed below, with further details in the following sections:
- Element 1: Good Acoustic Design Process;
 - Element 2: Internal Noise Level Guidelines;
 - Element 3: External Amenity Area Noise Assessment; and
 - Element 4: Other Relevant Issues.
- 2.29 The approach is underpinned by the preparation and delivery of an ADS. An ADS for a site assessed as high risk should be more detailed than for a site assessed as low risk. An ADS should not be necessary for a site assessed as negligible risk.
- 2.30 Figure 1 of ProPG summarises the 'Stage 1 Initial Site Noise Risk Assessment', which is based on indicative noise levels derived from current guidance and experience, this is copied below for reference.

Table 2.2 ProPG Stage 1 Initial Site Noise Risk Assessment

NOISE RISK ASSESSMENT	POTENTIAL EFFECT WITHOUT NOISE MITIGATION	PRE-PLANNING APPLICATION ADVICE
<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;"> <p>Indicative Daytime Noise Levels $L_{Aeq,16hr}$</p> <p>70 dB</p> <p>65 dB</p> <p>60 dB</p> <p>55 dB</p> <p>50 dB</p> </div> <div style="text-align: center;"> <p>Indicative Night-time Noise Levels $L_{Aeq,8hr}$</p> <p>60 dB</p> <p>55 dB</p> <p>50 dB</p> <p>45 dB</p> <p>40 dB</p> </div> </div>	<p style="text-align: center;">Increasing risk of adverse effect</p>	<p>High noise levels indicate that there is an increased risk that development may be refused on noise grounds. This risk may be reduced by following a good acoustic design process that is demonstrated in a detailed ADS. Applicants are strongly advised to seek expert advice.</p> <p>As noise levels increase, the site is likely to be less suitable from a noise perspective and any subsequent application may be refused unless a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised, and which clearly demonstrate that a significant adverse noise impact will be avoided in the finished development.</p> <p>At low noise levels, the site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised in the finished development.</p>
	<p style="text-align: center;">No adverse effect</p>	<p>These noise levels indicate that the development site is likely to be acceptable from a noise perspective, and the application need not normally be delayed on noise grounds.</p>

Figure 1 Notes:

- Indicative noise levels should be assessed without inclusion of the acoustic effect of any scheme specific noise mitigation measures.
- Indicative noise levels are the combined free-field noise level from all sources of transport noise and may also include industrial/commercial noise where this is present but is "not dominant".
- $L_{Aeq,16hr}$ is for daytime 0700 – 2300, $L_{Aeq,8hr}$ is for night-time 2300 – 0700.
- An indication that there may be more than 10 noise events at night (2300 – 0700) with $L_{Amax,F} > 60$ dB means the site should not be regarded as negligible risk.

Stage 2 Element 1: Good Acoustic Design Process

2.31 The ProPG states that planning applications for new residential development should include evidence that the following have been properly considered:

- The feasibility of relocating or reducing noise levels from relevant sources.
- Options for planning the site or building layout.
- Orientation of proposed building(s).
- Select construction types and methods for meeting building performance requirements.
- Examine the effects of noise control measures on ventilation, fire regulation, health and safety, cost, ‘construction, design and management’ (CDM) etc.
- The viability of alternative solutions.
- External amenity area noise.

Stage 2 Element 2: Internal Noise Level Guidelines

2.32 The internal noise level guidelines provided under within Figure 2 of ProPG are provided in Table 2.3 below. These are based upon the guidance in BS 8233:2014: ‘Guidance on sound insulation and noise reduction for buildings’ [9].

Table 2.3 ProPG Internal Noise Level Guidelines

Activity	Location	07:00 – 23:00 hrs	23:00 – 07:00 hrs
Resting	Living room	35 dB LAeq,16r	-
Dining	Dining room / area	40 dB LAeq,16r	-
Sleeping (daytime resting)	Bedroom	35 dB LAeq,16r	30 dB LAeq,16r 45 dB LAmax,F ^(Note 4)

^{NOTE 4} 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 LAmax,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 45 dB LAmax,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 (see Appendix A).

Stage 2 Element 3: External Amenity Area Noise Assessment

2.33 The ProPG refers to the design ranges in BS 8233:2014 with respect to the assessment of external amenity, as well as guidance in the PPGN. Based on these two documents the following guidance is provided with respect to the assessment of noise in external amenity areas:

“The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$.”

2.34 The ProPG goes on to acknowledge that:

“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.”

2.35 Further guidance is provided regarding design stating that the need to provide access to a quiet or relatively quiet external amenity space forms part of a good acoustic design process and hierarchy is provided for when external noise levels within private external amenity areas are potentially significant. This ranges from providing a relatively quiet façade, relatively quiet, protected, publicly accessible, external amenity space (e.g. a public park or a local green space).

Stage 2 Element 4: Other Relevant Issues

2.36 The ProPG states that the following other relevant issues, should be considered, where appropriate, including:

- compliance with relevant national and local policy;
- the magnitude and extent of compliance with the ProPG criteria;
- the likely occupants of the development;
- the acoustic design compared to unintended adverse consequences; and
- acoustic design against wider planning considerations.

Planning Recommendations

2.37 Having followed this approach, it is envisaged that noise practitioners will then have a choice of one of four possible recommendations to present to the decision maker. In simple terms, the choice of recommendations are as follows:

- grant without conditions;
- grant with conditions;
- “avoid” significant adverse effects (corresponding to SOAEL within national planning policy); or
- “prevent” unacceptable adverse effects (corresponding to the UAEL within national planning policy).

2.38 Full details of where/when the above recommendations apply are provided in Section 3 of the ProPG.

3 Stage 1: Initial Noise Risk Assessment

Site Description

- 3.1 The proposed development site is location on land approximately 750 m south of Wash Common. The A34 is located to the west of the site, and the A343 to the east, meeting to form the southern corner of the site. It is bounded to the north by the River Enborne. Wash Common is located about 750 m to the north east and Broad Laying is approximately 1 km to the south east.
- 3.2 The area is generally rural with no significant environmental noise sources near the site. It is considered that local road traffic movements on the A34 and the A343 would be the dominant source of noise affecting the site.

Establishing Baseline Conditions

- 3.3 Baseline conditions were established via the deployment of two long-term noise monitors, left on site for a week (LT1 and LT2), as well as short-term attended sound level surveys carried out near to the site.
- 3.4 Survey location LT1 was located on the western edge of the site, adjacent to the A34. Approximately x m to the east of the A34. At the time of setting up and collection, the main source of noise was observed to be road traffic movements on the A34. Other sound sources noted were distant road traffic movements on surrounding roads, bird song and the sound of wind in the trees.
- 3.5 It should be noted that a substantial earth bund (up to 4 m in height) with a 2 m high noise barrier on top, forms the western boundary of the site with the adjacent A34. As such environmental sound levels on the site associated with road traffic movements are significantly lower than would be the case if the noise bund/barrier was not in-situ.
- 3.6 Survey location LT2 was located on the eastern edge of the site approximately 10 m west of the A343 (Andover Road). At the time of setting up and collection the main source of noise was observed to be road traffic movements on the A343. Other sound sources noted were distant road traffic movements on surrounding roads, bird song and the sound of wind in the trees.
- 3.7 Both sound level surveys were carried out using a 'Class 1' Rion NL-52 sound level meter (SLM), in accordance with BS 7445-2:1991 [10]. Each SLM was calibrated before use and the calibration checked after use and it was observed that no significant drift occurred during the survey period. Data were logged of the broadband A-weighted sound pressure level in 100 ms samples with the required periods extracted in post-processing.
- 3.8 A wind monitor and rain gauge were also set up alongside the noise monitor at LT2, so as to properly quantify the weather conditions throughout the survey. Overall, the wind speed was within

acceptable levels such that their impact on the results would be negligible. There was some rain over the measurement period, mainly on the day of set up, however, sound data collected in these periods has been discounted due to the effect of precipitation on the measurements, so there is no adverse effect on the accuracy of results.

3.9 A summary of the long term measured data is provided in Table 3.1 below. Data are rounded to the nearest whole number. Graphical survey details are provided in Appendix B.

Table 3.1 Summary of Baseline Sound Level Data

Location	Daytime (07:00 - 23:00)			Night-time (23:00 - 07:00)			
	L _{Aeq,16h} (dB)	L _{A90,16h} (dB)	L _{AFmax} (dB)	L _{Aeq,8h} (dB)	L _{A90,8h} (dB)	L _{AFmax} (dB)	Highest L _{AFmax} not exceeded more than 10 times (dB)
LT1	55	53	69	52	48	60	64
LT2	64	50	83	54	43	75	79

- 3.10 On the basis of the survey results, a 3D sound model has been completed to indicate the noise levels across the whole site associated with road traffic movements on the A34 and A343 roads.
- 3.11 The model has a line sources at 1 m above ground level for the two roads which have been calibrated such that modelled levels match the results of the survey. A spectrum has been applied to the line source based on data within BS EN 1793-3:1997 ‘Normalized traffic noise spectrum’ [11].
- 3.12 Note that high resolution Ordnance Survey (OS) 5 m spot height data has been used to accurately recreate the terrain on and surrounding the site, i.e. the earth bund adjacent with the A34.
- 3.13 Figures 2, 3 and 4 at the end of the report provide the daytime ambient, night-time ambient, and night-time maximum noise levels⁴ respectively across the site as is, i.e. with no proposed buildings etc. Note that night-time noise are calculated at a height of 4 m AGL.
- 3.14 A comparison has been undertaken between the noise levels shown on Figures 2 and 3 of this report, i.e. based on surveyed noise levels, and the ‘Strategic Noise Mapping’ data published by Defra [12] in order to comply with the Environmental Noise Directive (END) (Directive 2002/49/EC), transposed into English law by the Environmental Noise (England) Regulations 2006 (as amended).
- 3.15 With the earth bund adjacent with the A34 included, noise levels are very similar between the two data sets are very similar providing a high degree of confidence that modelled noise levels are a

⁴ The maximum noise levels have been based on the number exceed for more than 10 times.

reliable and robust representation of actual noise levels across the site, appropriate for informing the assessment.

Risk Assessment of External Levels

- 3.16 With reference to Figure 2 and Figure 3, highest daytime and night-time sound levels on the proposed site closest to the roads are 65 and 60 dB $L_{Aeq,T}$ respectively, albeit for the majority of the site away from the roads daytime and night-time levels are below 55 and 50 dB $L_{Aeq,T}$ respectively.
- 3.17 On this basis, and with reference to Table 2.2, the site falls into the ProPG low to medium risk category.
- 3.18 With reference to Figure 4, maximum night-time sound levels not exceeded more than ten times per night on the proposed site are 75 dB L_{AFmax} ; therefore, the site should not be considered as being of negligible risk.

Risk Assessment of Internal Levels

- 3.19 With reference to paragraph G.1 of BS 8233:2014, an estimate of the internal sound levels within typical dwellings may be determined based on the sound reduction provided by the windows. Research contained within Report NANR 116 [13] determines that a window partially open to provide background ventilation provides approximately 15 dB $D_{A,road}$ of attenuation to road traffic noise.
- 3.20 On this basis, and with reference to the design targets contained within the ProPG that are reproduced in Table 2.3 of this report, satisfactory internal acoustic environments with windows partially open are likely to be achievable where the external environmental ambient sound level is no greater than 50 dB $L_{Aeq,16h}$ and 45 dB $L_{Aeq,8h}$ during the daytime and night-time periods, respectively and there are no more than 10 instantaneous events exceeding 60 dBA.

4 Stage 2: Acoustic Design Statement

4.1 With reference to the ProPG, if a Stage 2 assessment is required, planning applications for new residential development should include evidence that the following have been properly considered:

1. check the feasibility of relocating, or reducing noise levels from relevant sources;
2. consider options for planning the site or building layout;
3. consider the orientation of proposed building(s);
4. select construction types and methods for meeting building performance requirements;
5. examine the effects of noise control measures on ventilation, fire regulation, health and safety, cost, CDM (construction, design and management) etc;
6. assess the viability of alternative solutions; and
7. assess external amenity area noise.

4.2 The above points are considered in the following sections below.

Mitigating Existing Noise Levels and Design Considerations (Items 1 to 3 above)

4.3 With regards to the feasibility of relocating or reducing noise levels from existing noise sources affecting the proposed site, as the dominant noise source on site are road traffic movements on the A34 and the A343, it would not be possible to reduce noise levels at source.

4.4 However, it should be noted that it is likely that dwellings would be located away from the immediate boundaries with both roads; as such, noise levels at the location of proposed dwellings would be appropriately lower. Indeed, with regard to the detailed application area proposed dwellings are located x m from the boundary with Andover Road (the A343).

4.5 Furthermore, the development has been designed, as far as reasonably practicable, such that external amenity areas are located with proposed dwellings between these areas and the roads, with the dwellings providing screening effects minimising noise levels in external amenity areas

4.6 In addition, as noted in paragraph 3.5, a substantial earth bund/barrier forms the western boundary of the site with the adjacent A34. As such environmental sound levels on the site associated with road traffic movements are significantly lower than would be the case if the noise bund/barrier was not in-situ.

Internal Noise Levels (Item 4 above)

- 4.7 In addition to the overall site baseline daytime ambient, night-time ambient, and night-time maximum noise levels presented in Figures 2 to 4 respectively, Figures 5 to 7 provide the daytime ambient, night-time ambient, and night-time maximum facade noise levels for the proposed Phase 1 detailed application area, including proposed dwellings, based on the Planning Layout drawing⁵.
- 4.8 With reference to Table 2.3, the guidance in BS 8233:2014 proposes that the external building fabric for residential dwellings be designed such that a minimum steady-state internal daytime noise level of 35 dB $L_{Aeq,16hr}$ and a night-time level of 30 dB $L_{Aeq,8hr}$ can be achieved within habitable rooms, i.e. desirable levels.
- 4.9 Furthermore, with reference to the ProPG it is recommended that that individual internal noise events do not normally exceed 45 dB L_{AFmax} more than ten times a night.
- 4.10 The specific acoustic performance requirements of the glazing and ventilation system are dependent on the layout of the building, room size, wall and roof design. However, for a typical residential dwelling, a standard type façade provides an overall attenuation of 25 dB of external noise⁶. A calculation undertaken in accordance with the method outlined in section G.2 of BS 8233:2014 for this standard façade type is provided in Appendix C.
- 4.11 On the basis of the above, desirable internal noise levels would be achieved for areas where external noise levels are below 60 and 55 dB $L_{Aeq,T}$ during the daytime and night-time periods, respectively. In addition, internal night-time maximum noise levels would not normally exceed 45 dB L_{AFmax} for areas where external maximum noise levels are normally 70 dB L_{AFmax} or below.
- 4.12 With reference to Figures 2 to 7, the Masterplan Drawing and the Phase 1 detailed application Planning Layout drawing, for areas allocated for residential development, daytime and night-time noise levels are below the levels stated above and therefore, desirable internal noise levels would be achieved through standard design practices, and no specific acoustic mitigation measures would be required.
- 4.13 Specifically, with regard to the Phase 1 detailed application dwellings, highest daytime ambient, night-time ambient, and night-time maximum noise levels at the facades of proposed dwellings are 56 dB $L_{Aeq,16h}$, 49 dB $L_{Aeq,8h}$ and 64 dB L_{AFmax} respectively, which is for Plot 1, located closest to the A343.

⁵ Ref: 1559 100-1 09/21 P5

⁶ Based on typical habitable room sizes and a façade comprising of a standard cavity wall construction (47 dB R_w based on BS 8233:2014); standard 6-6-4 thermal double-glazed window unit (achieving 28 dB $R_w + C_{tr}$); and standard non-acoustic trickle ventilators (achieving 32 dB D_{new}).

- 4.14 Consequently, the minimum façade attenuation required for Phase 1 detailed application dwellings would be 21 dB⁷, which would be achieved through standard design practices.
- 4.15 It should be noted that during the short and limited periods of time windows are open during the daytime period (in relation to the overheating), internal noise levels would be above the guidance level in BS 8233:2014 for a number of dwellings. However, with reference to the AVO guide, *“it is considered reasonable to allow higher levels of internal ambient noise from transport sources when higher rates of ventilation are required in relation to the overheating condition.”*
- 4.16 In regard of the above it should be noted that external noise levels are not significantly higher than the level at which internal noise levels, with windows open, would be above the guideline criteria. As such, with windows open, internal noise levels would only be marginally above the guidance level in BS 8233:2014, considered as reasonable in the AVO guidance.
- 4.17 Furthermore, as open windows would only be required to for short periods of time in the summer and during the daytime period only, it is considered that when taking into account the competing aspects of thermal and acoustic comfort, that overall, there would be no detrimental impact on the quality of life, or an unacceptable risk to human health, when assessed with reference to current recognised methods and guidance.

Effects of Noise Control and Noise from Mechanical Services (Item 5 above)

- 4.18 At this stage no Mechanical Services are proposed. However, as per the BDDC guidance note, if mechanical ventilation is installed it must:
- be capable of providing air changes at volumes equivalent to an open window for the purposes of rapid cooling and ventilation;
 - not compromise the façade insulation or the resulting internal noise level; and
 - operate at a level to comply with noise rating curve NR25 or lower

External Noise Levels in Amenity Areas (Item 7 above)

- 4.19 The ProPG refers to the design ranges in BS 8233:2014 with respect to the assessment of external amenity. The ProPG also refers to guidance in the PPGN. Based on these two documents, the following guidance is provided with respect to the assessment of noise in external amenity areas:

⁷ Resultant daytime ambient level of 35 dBA, night-time ambient level 28 dBA and night-time maximum level 43 dBA.

“The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$.”

- 4.20 In addition to the baseline daytime ambient noise levels across the whole site, as presented in Figure 2, Figure 8 provides the daytime ambient noise levels across the proposed Phase 1 detailed application area, with the inclusion of proposed dwellings.
- 4.21 With reference to Figures 2 and 8, baseline daytime noise levels are below 55 dB $L_{Aeq,16h}$ for most of the site allocated for residential development, with the majority below 50 dB $L_{Aeq,16h}$. Consequently, daytime noise levels would very likely be below 55 dB $L_{Aeq,16h}$ for all provided external amenity areas and the vast majority below 50 dB $L_{Aeq,16h}$.
- 4.22 Specifically, with regard to the Phase 1 detailed application area, daytime noise levels are below 55 dB $L_{Aeq,16h}$ for all of the proposed external amenity areas, with the vast majority below 50 dB $L_{Aeq,16h}$ (only for Plot #2 is the level above 50 dB $L_{Aeq,16h}$).
- 4.23 With reference to the BDDC guidance document external levels would be below the target ‘upper limit’ of 55 dB $L_{Aeq,T}$ and for the majority of the site below the target ‘preferred’ level of 50 dB $L_{Aeq,T}$. For all of the Phase 1 detailed application dwellings, all bar one (Plot #2) would be below the ‘preferred’ level (plot below the upper limit level).

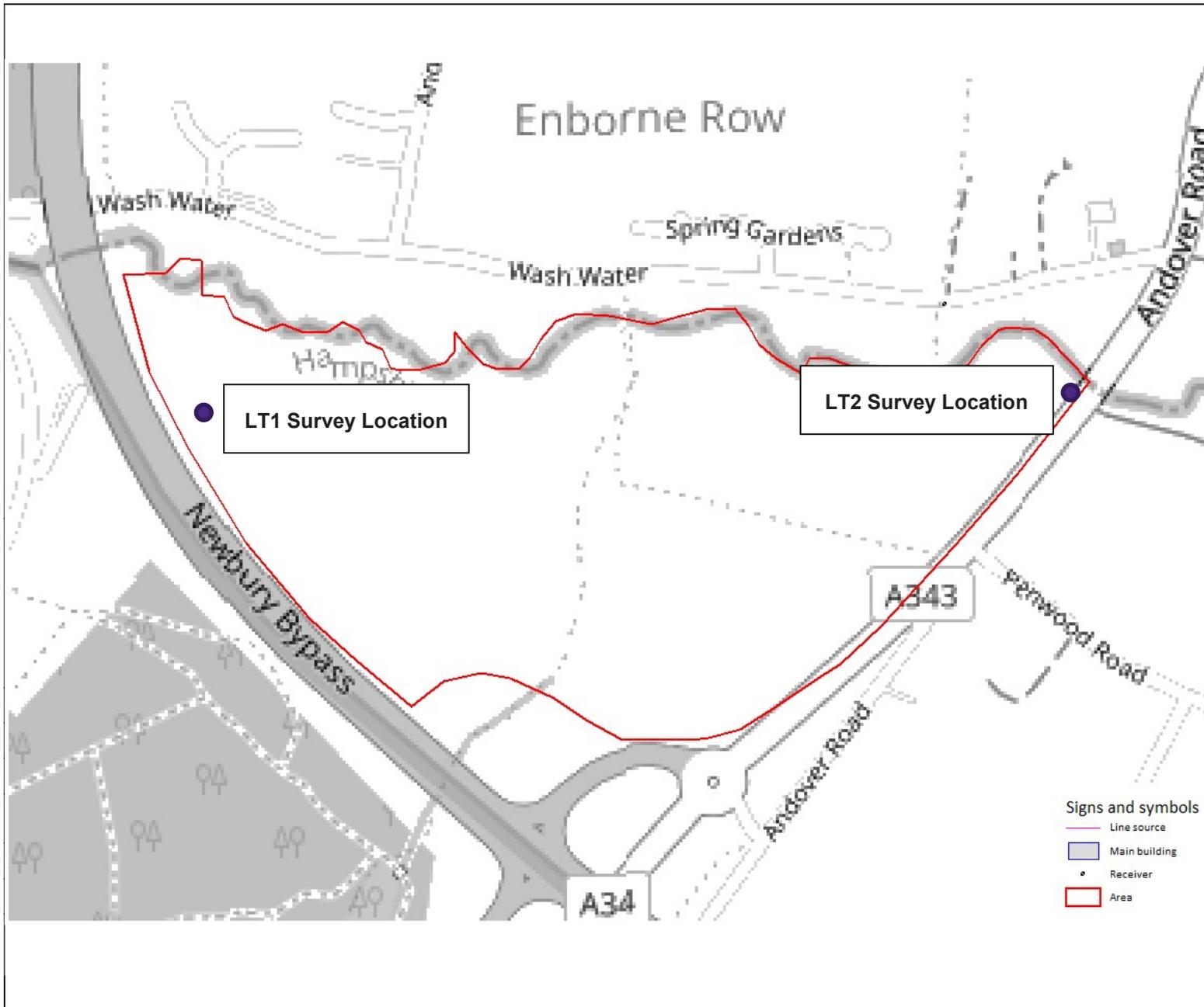
Compliance with National and Local Policy

- 4.24 Based on the above, internal and external sound levels will meet the guideline values contained within BS 8233:2014 and the ProPG through standard design practices, with glazing achieving an attenuation value of at least 28 dB $R_w + C_{tr}$ and standard, non-acoustic, trickle ventilators achieving an attenuation value of at least 32 dB $D_{n,e,w}$.
- 4.25 Whilst Internal noise levels would, at times, during the limited periods windows are open in relation to overheating, be above the BS 8233:2014 guideline criteria, this is considered a reasonable scenario with reference to the AVO guidance.
- 4.26 As such, when assessed with reference to current recognised methods and guidance and when taking into account the competing aspects of thermal and acoustic comfort, there would be no detrimental impact on the quality of life, or an unacceptable risk to human health.
- 4.27 Consequently, the proposed development accords with national and local planning policy, the NPSE and the NPPF and, the BDLP.

5 Summary & Conclusions

- 5.1 The Acoustics Team of RPS has been appointed by Bewley Homes to provide a noise assessment to accompany an outline planning application for circa 350 dwellings, on land at Common Farm, to the east of Andover Road, Wash Water. The site is located within the administrative area of Basingstoke and Deane District Council (BDDC).
- 5.2 Environmental sound levels were determined from two unattended long-term surveys. The dominant sound source affecting the site are road traffic movements on the adjacent A34 and A343 roads.
- 5.3 With respect to the 'Professional Practice Guidance on Planning and Noise' (ProPG) document, the proposed residential development site ranges from low to medium risk.
- 5.4 Through appropriate design outlined in this report, the proposed development would be subject to satisfactory internal and external acoustic environments with respect to the ProPG and British Standard (BS) 8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings'.
- 5.5 Specifically, with regard to the Phase 1 detailed application dwellings, highest daytime ambient, night-time ambient, and night-time maximum noise levels at the facades of proposed dwellings are 56 dB $L_{Aeq,16h}$, 49 dB $L_{Aeq,8h}$ and 64 dB L_{AFmax} respectively. As such, a typical/standard residential façade type (25 dB), would provide a sufficient level of attenuation to achieve guideline internal noise levels detailed in BS 8233:2014 and the ProPG.
- 5.6 Whilst Internal noise levels would, at times, during the limited periods windows are open in relation to overheating, be above the BS 8233:2014 guideline criteria, this is considered a 'reasonable' scenario with reference to the Acoustics Ventilation and Overheating Residential Design Guide (AVO).
- 5.7 As such, when assessed with reference to current recognised methods and guidance and when taking into account the competing aspects of thermal and acoustic comfort, there would be no detrimental impact on the quality of life, or an unacceptable risk to human health.
- 5.8 Consequently, the proposed development, when assessed with reference to current recognised methods and guidance, accords with national and local planning policy (Noise Policy Statement for England, National Planning Policy Framework and the Basingstoke and Deane Local Plan).
- 5.9 Therefore, there are no reasons, with regards to noise, why planning permission should not be granted for the proposed development.

Figures



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Client: Bewley Homes

Project: Land at Washwater, Newbury

Job Ref: JAE11607-REPT01-R1

File location:

Date: 10/21

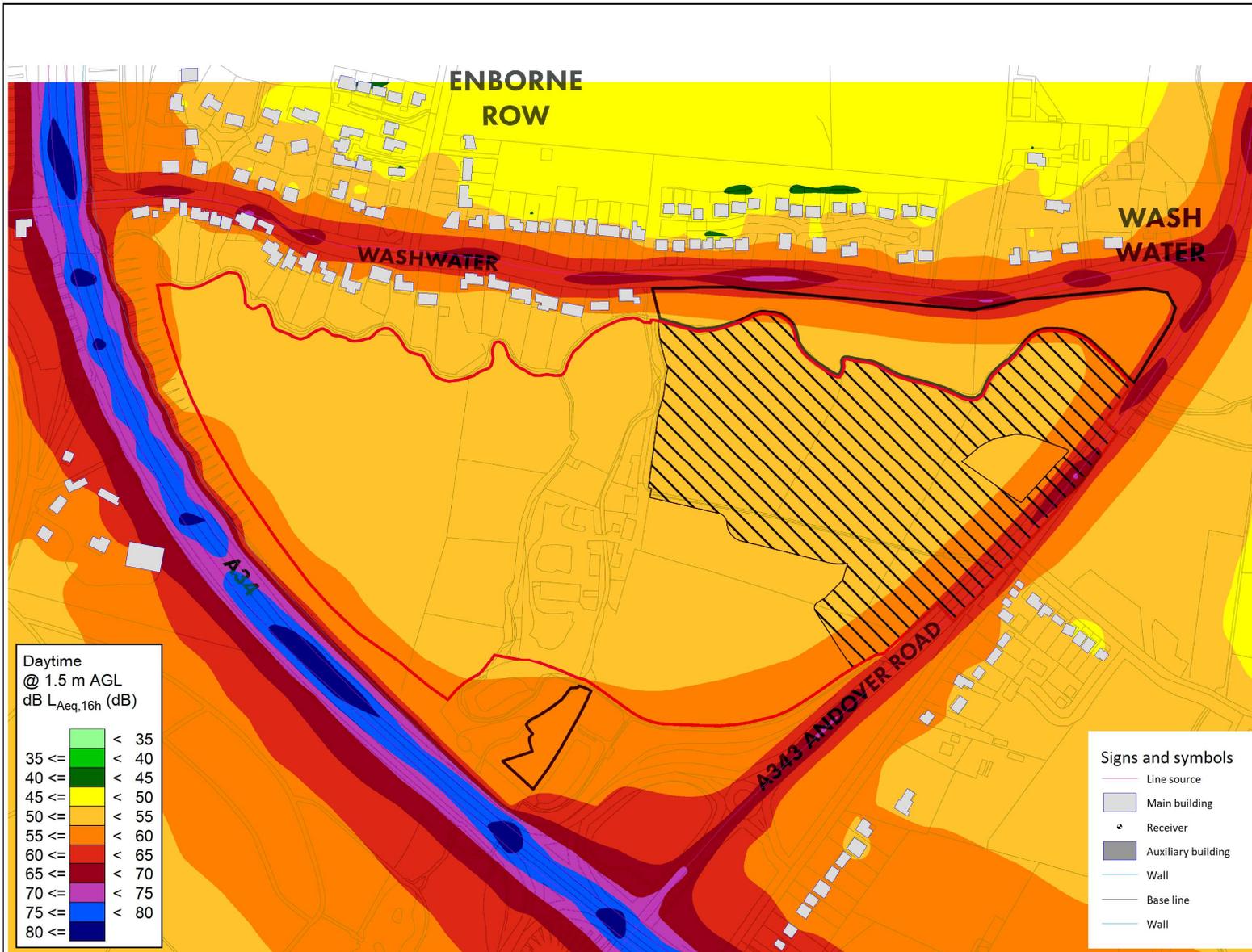
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Figure 1: Site and Survey Locations

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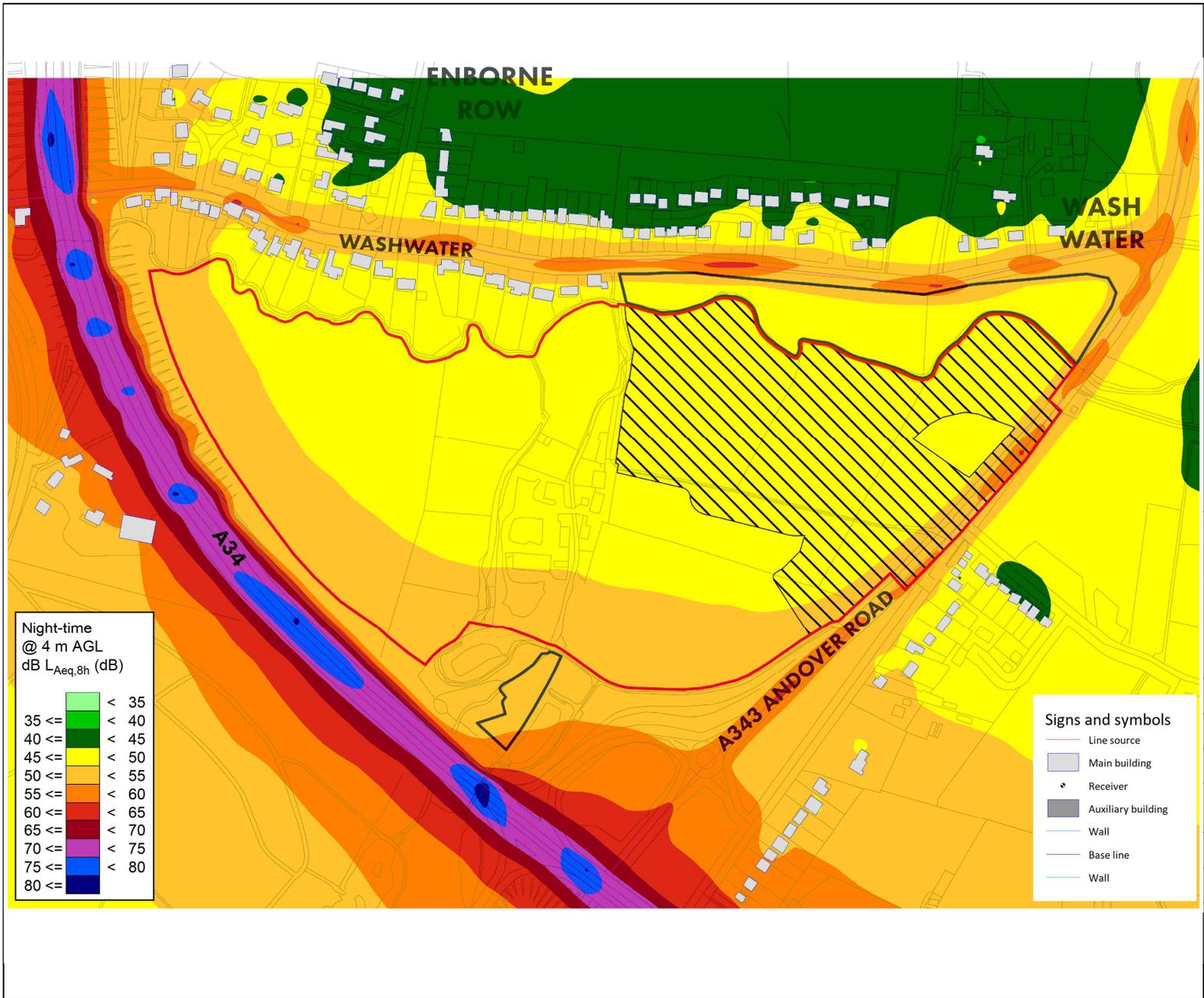
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Figure 2: Daytime Noise Levels



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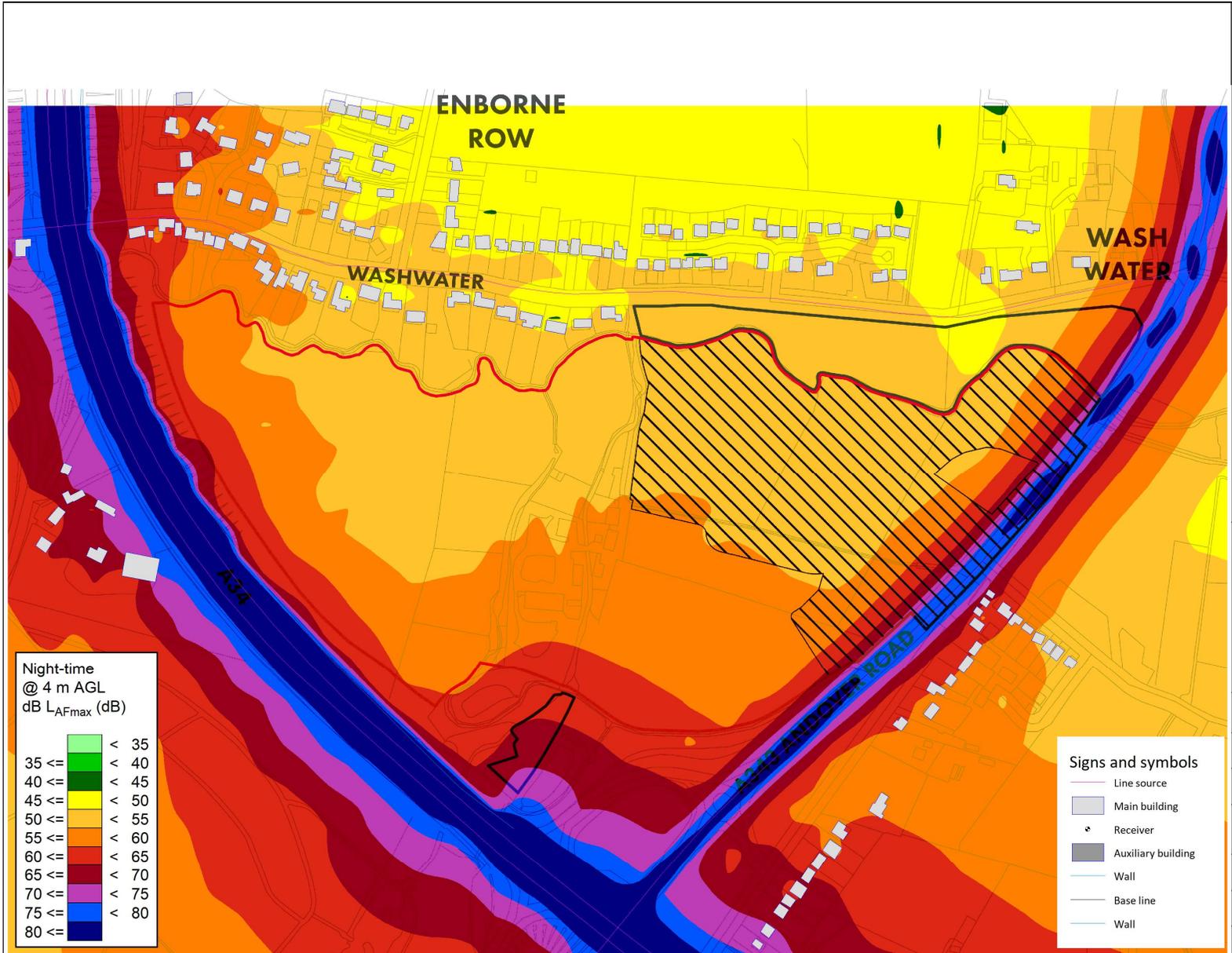
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Figure 3: Night-time Noise Levels



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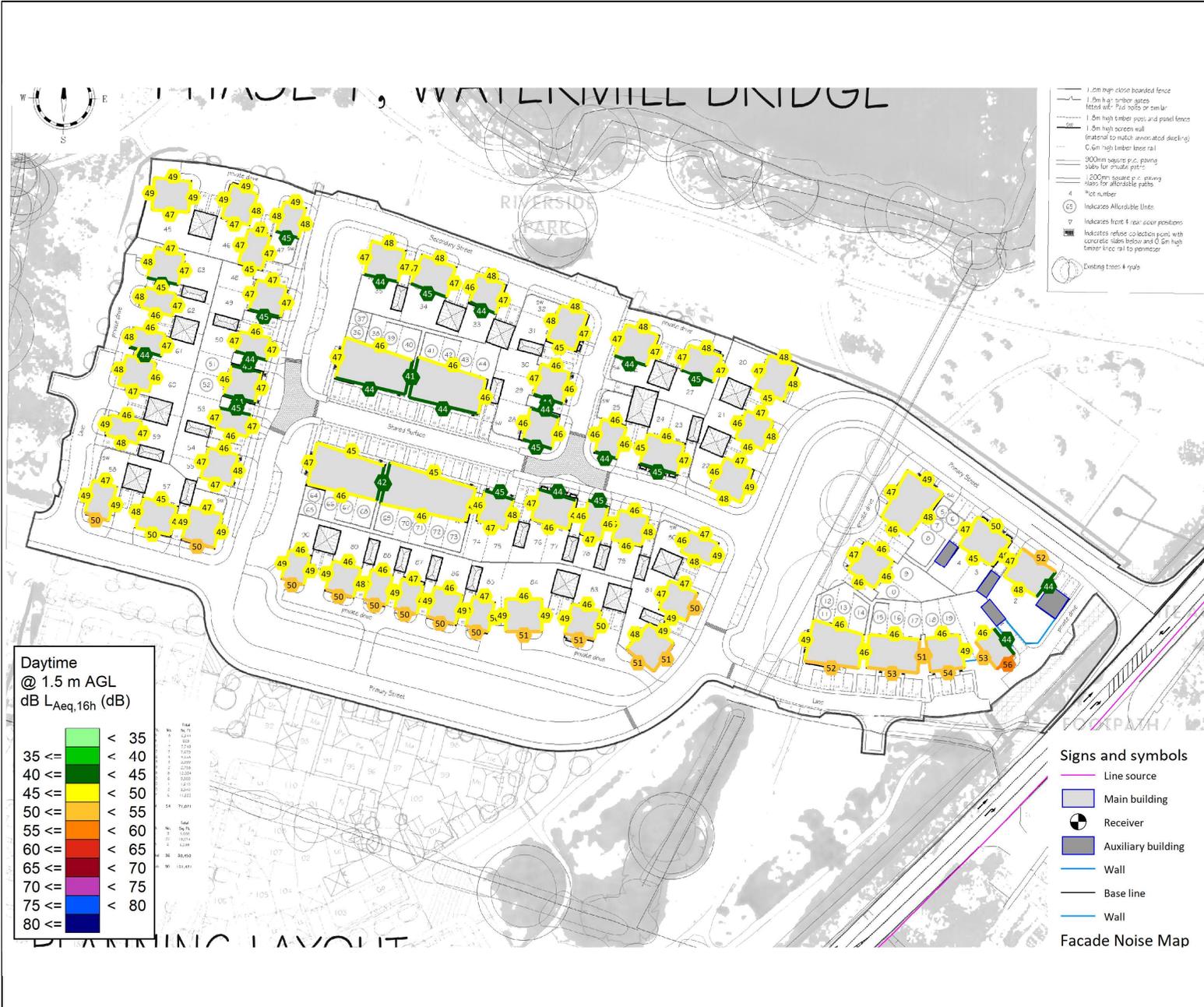
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Figure 4: Night-time Maximum Noise Levels



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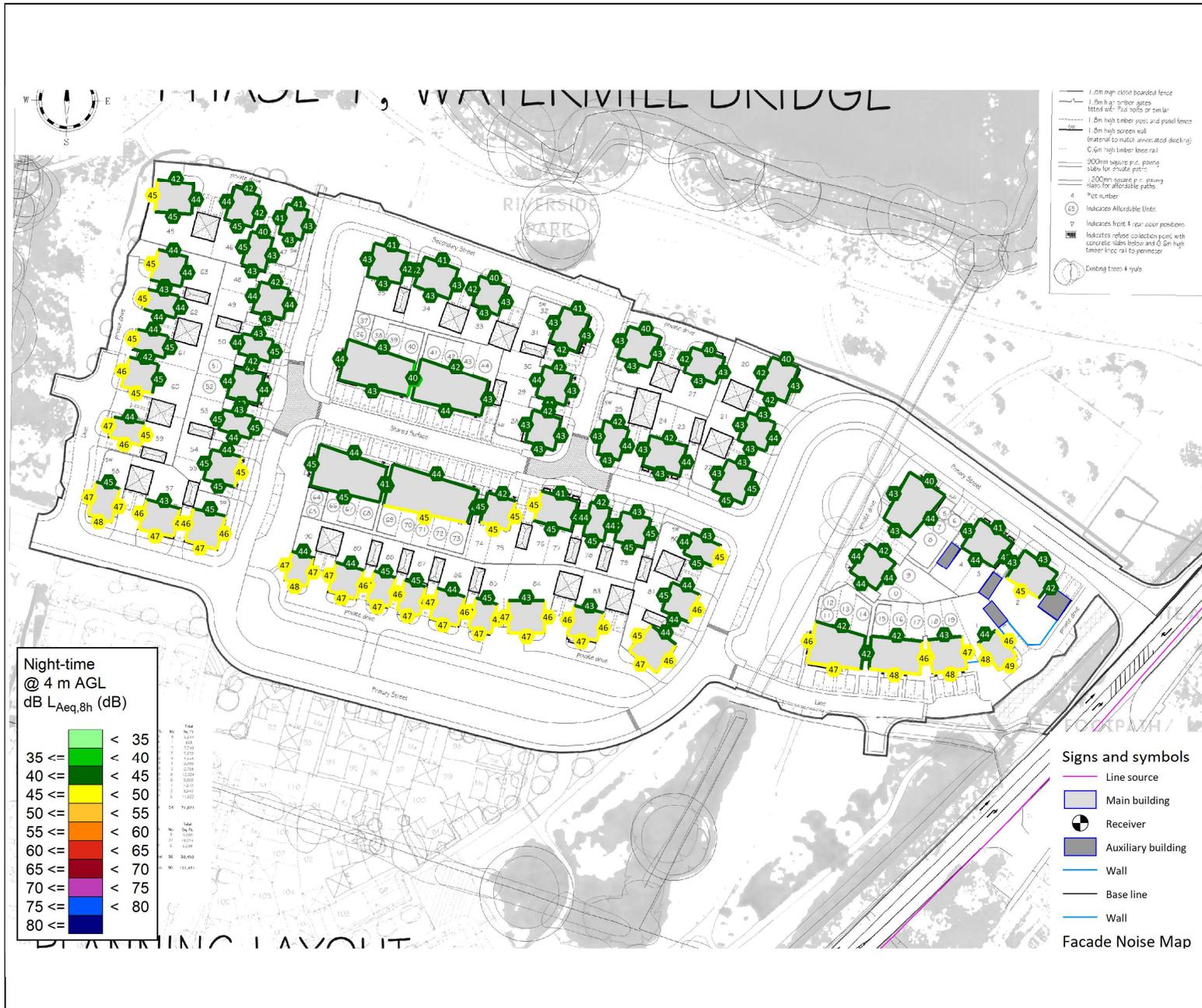
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Figure 5: Phase 1 Daytime Façade Levels



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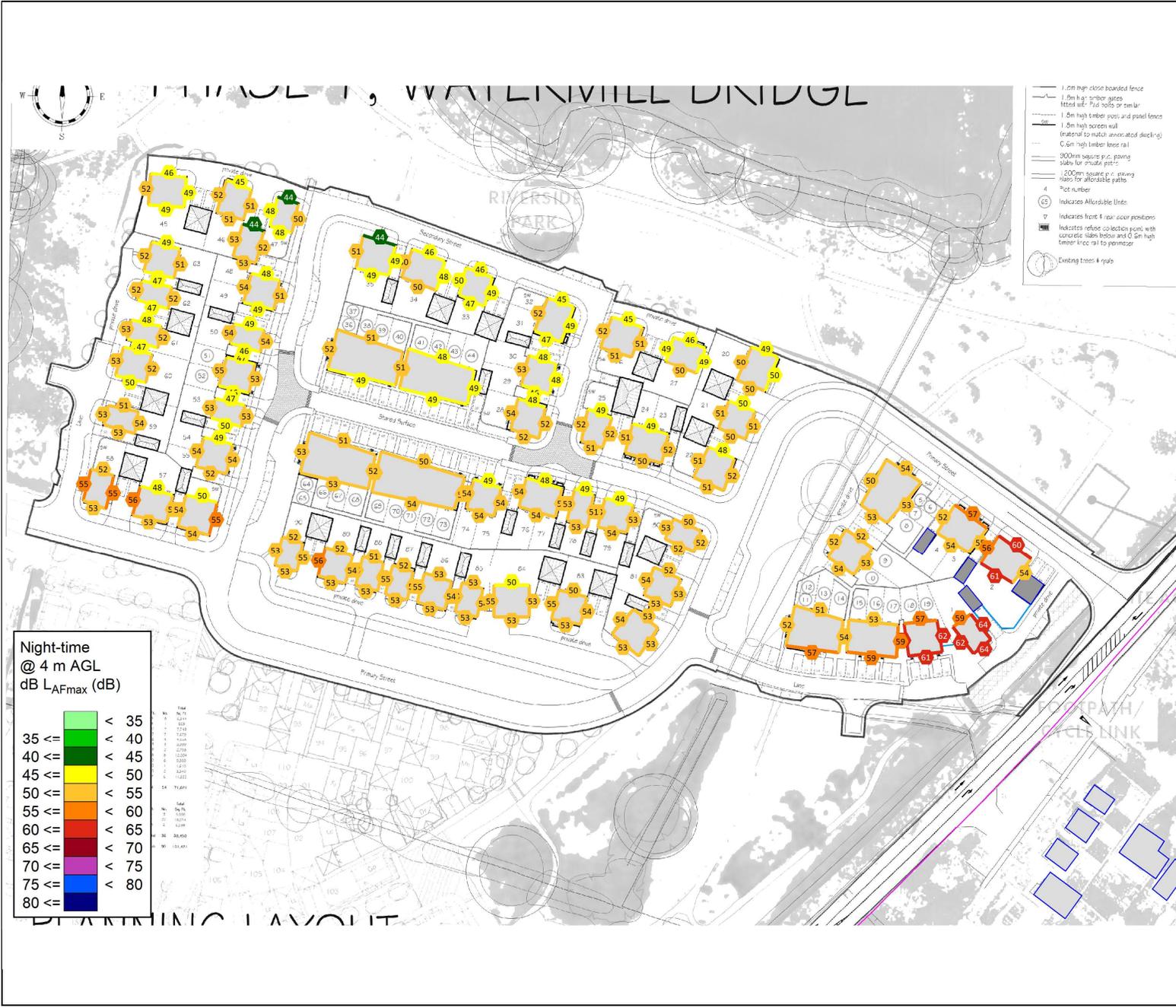
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Figure 6: Phase 1 Night-time Façade Levels

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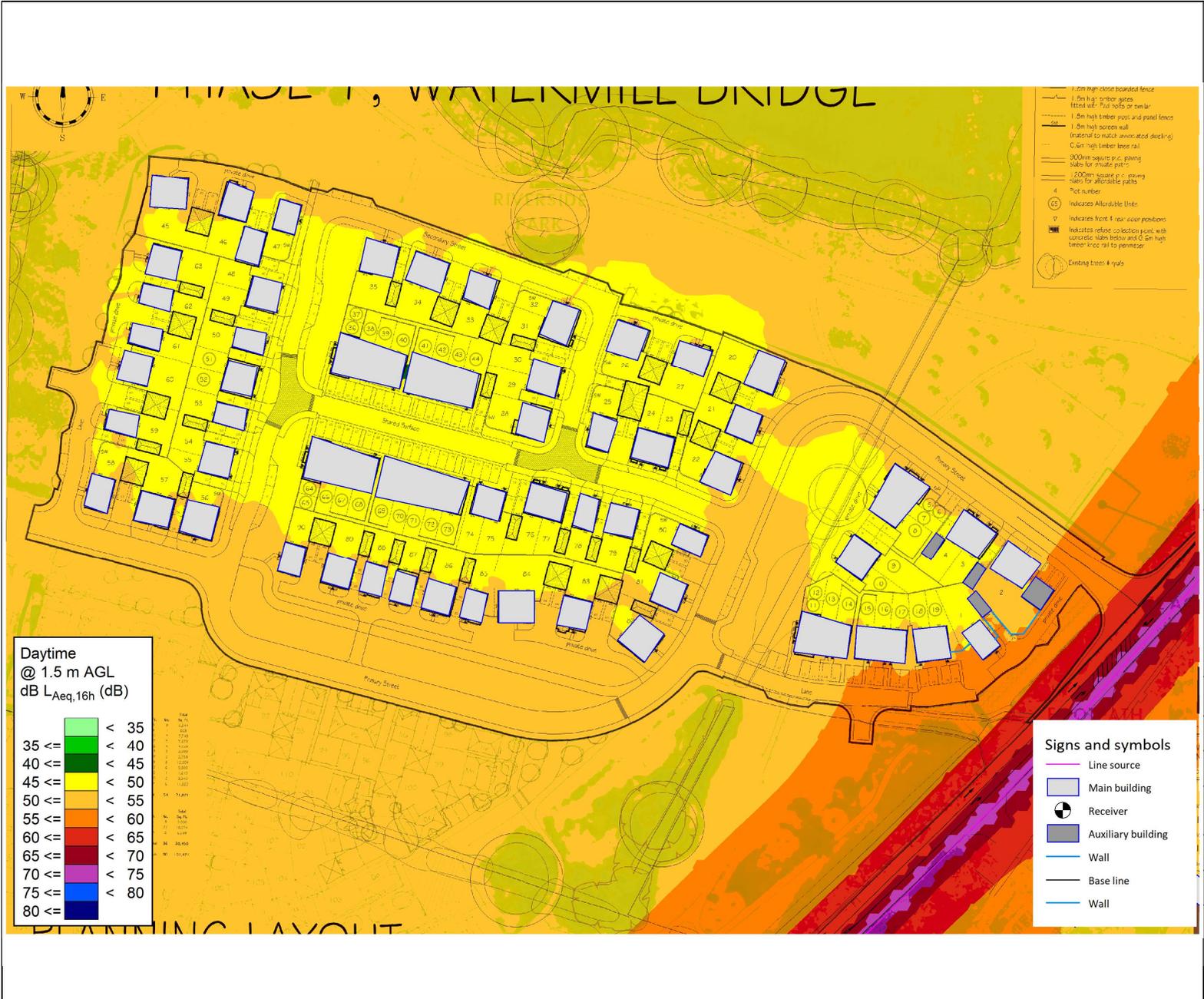
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Figure 7: Phase 1 Night-time Max Façade Levels



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Figure 8: Phase 1 Daytime Ambient Levels

Appendices

Appendix A: Policy, Guidance & Consultation

Noise Policy Statement for England

- A.1 The Noise Policy Statement for England (NPSE) sets out the long-term overarching vision of Government noise policy, which is to promote good health and a good quality of life through the management of noise within the context of Government policy on sustainable development. Whilst the NPSE does not seek to change pre-existing policy, the document is intended to aid decision makers by making explicit the implicit underlying principles and aims regarding noise management and control that are to be found in existing policy documents, legislation and guidance.
- A.2 The NPSE describes a Noise Policy Vision and three Noise Policy Aims and states that these visions and aims provide:
- “the necessary clarity and direction to enable decisions to be made regarding what is an acceptable noise burden to place on society.”*
- A.3 In other words, the purpose of the document is to provide guidance for the decision maker on whether or not the noise impact is an acceptable burden to bear in order to receive the economic and other benefits of the proposal.
- A.4 Where existing policy and guidance does not provide adequate guidance then decision makers can go back to the aims of the policy statement to provide overriding guidance. The “Noise Policy Vision” is to “promote good health and 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, through effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:
- i. avoid significant adverse impacts of health and quality of life;
 - ii. mitigate and minimise adverse impacts on health and quality of life; and
 - iii. where possible, contribute to the improvement of health and quality of life.
- A.5 The aims of the policy differentiate between noise impacts on health (e.g. sleep disturbance, hypertension, stress etc.) and noise impacts on quality of life (e.g. amenity, enjoyment of property etc.). The aims also differentiate between ‘significant adverse impacts’ and ‘adverse impacts’. The explanatory note to the NPSE clarifies that a significant adverse impact is deemed to have occurred if the ‘Significant Observed Adverse Effect Level’ (SOAEL) is exceeded. An adverse effect, on the other hand, lies between the ‘Lowest Observed Adverse Effect Level’ (LOAEL) and the SOAEL.

- A.6 In assessing whether a development should be permitted, there are therefore four questions that should be answered, with reference to the principles of sustainable development, viz. will the development result in:
- a) a significant adverse impact to health;
 - b) a significant adverse impact to quality of life;
 - c) an adverse impact to health; or
 - d) an adverse impact to quality of life?
- A.7 If the answer to question a) or b) is yes, then the NPSE provides a clear guidance that the development should be viewed as being unacceptable (item i. above). If the answer to question c) or d) is yes, then the NPSE provides a clear steer that the impact should be mitigated and minimised (item ii. above).

National Planning Policy Framework

- A.8 The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these are expected to be applied. The emphasis of the Framework is to allow development to proceed where it can be demonstrated to be sustainable.
- A.9 In relation to noise, Paragraph 185 of the Framework states:
- “Planning policies and decisions should 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 impacts resulting from noise from the 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; and*
 - c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.”*

A.10 The point 'a)' refers to SOAEL in the NPSE, although the term 'effect' is used instead of the term 'impact'. However, these have been deemed to be interchangeable in this context. Therefore, given the comments above on the NPSE with regard to assessment methods and criteria, the current content of the NPPF does not require any change in previously adopted approaches.

Planning Practice Guidance – Noise

A.11 Planning Practice Guidance on Noise (PPG-N) provides guidance to local planning authorities to ensure effective implementation of the planning policy set out in the NPPF. The PPG suggests that planning authorities should ensure that unavoidable noise emissions are controlled, mitigated or removed at source and establish appropriate noise limits for extraction in proximity to noise sensitive properties.

A.12 The PPG-N reiterates general guidance on noise policy and assessment methods provided in the NPPF, NPSE and British Standards and contains examples of acoustic environments commensurate with various effect levels. Paragraph 006 of the PPG-N explains that:

“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.”

A.13 According to the PPG-N, factors that can influence whether noise could be of concern include:

- the source and absolute level of the noise together with the time of day it occurs;
- for non-continuous sources of noise, the number of noise events, and the frequency and pattern of occurrence of the noise;
- the spectral content and the general character of the noise;
- the local topology and topography along with the existing and, where appropriate, the planned character of the area;
- where applicable, the cumulative impacts of more than one source should be taken into account along with the extent to which the source of noise is intermittent and of limited duration;
- 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 cases where existing noise sensitive locations already experience high noise levels, a development that is expected to cause even a small increase in the overall noise level may result in a significant adverse effect occurring even though little to no change in behaviour would be likely to occur;
 - where relevant, Noise Action Plans, and, in particular the Important Areas identified through the process associated with the Environmental Noise Directive and corresponding regulations;
 - the effect of noise on wildlife;
 - if external amenity spaces are an intrinsic part of the overall design, the acoustic environment of those spaces; and
 - the potential effect of a new residential development being located close to an existing business that gives rise to noise should be carefully considered. This is because existing noise levels from the business even if intermittent (for example, a live music venue) may be regarded as unacceptable by the new residents and subject to enforcement action. To help avoid such instances, appropriate mitigation should be considered, including optimising the sound insulation provided by the new development's building envelope. In the case of an established business, the policy set out in paragraph 182 of the NPPF should be followed.
- A.14 The PPG-N provides a relationship between various perceptions of noise, effect level and required action in accordance with the NPPF. This is reproduced in Table B1 below.
- A.15 The PPG-N describes sound that is not noticeable to be at levels below the 'No Observed Effect Level' (NOEL). It describes exposures that are noticeable but not to the extent there is a perceived change in quality of life as below the LOAEL and need no mitigation. The audibility of sound from a development is not, in itself, a criterion to judge noise effects that is commensurate with national planning policy.
- A.16 The PPG-N suggests that noise exposures above the LOAEL cause small changes in behaviour. Examples of noise exposures above the LOAEL provided in the PPG-N include:
- having to turn up the volume on the television;
 - needing to speak more loudly to be heard;
 - where there is no alternative ventilation, closing windows for some of the time because of the noise; or a potential for some reported sleep disturbance.

Table B1: Noise Exposure Hierarchy based on the Likely Average Response

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not present	No Effect	No Observed Effect	No specific measures required
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

A.17 In line with the NPPF and NPSE, the PPG-N states that consideration needs to be given to mitigating and minimising effects above the LOAEL but taking account of the economic and social benefits being derived from the activity causing the noise.

A.18 The PPG-N suggests that noise exposures above the SOAEL cause material changes in behaviour. Examples of noise exposures above the SOAEL provided in the PPG-N are:

- where there is no alternative ventilation, keeping windows closed for most of the time or avoiding certain activities during periods when the noise is present; and/or
- there is a potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep.

- A.19 In line with the NPPF and NPSE, the PPG-N states that effects above the SOAEL should be avoided and that, whilst the economic and social benefits being derived from the activity causing the noise must be taken into account, such exposures are undesirable.
- A.20 The PPG-N suggests that a noise impact may be partially offset if the residents of affected dwellings have access to a relatively quiet part of their dwelling, private external amenity area and/or external public or private amenity space nearby.

Consultation

From: Peter Barling
Sent: 01 April 2021 15:03
To: Rhys Gilbert
Subject: RE: Noise survey proposal

Hi Rhys,

Thanks for your email and further clarification, that's useful to understand

Have a good Easter weekend!

Thanks

Peter

Peter Barling
Senior Acoustic Consultant
RPS | Consulting UK & Ireland

From: Rhys Gilbert
Sent: 01 April 2021 13:13
To: Peter Barling
Subject: RE: Noise survey proposal

Hi Peter,

Open windows we would assume and accept to attenuate to 15dB – day or night. If the target levels can't be achieved where this is the case, then that is when we would stipulate alternative ventilation options. The metrics are 16hr and 8hr for day and night respectively, and as such this is what we would evaluate against for windows closed/windows open.

If your suggestion is that the absence of solar radiation by night, and lower ambient temperatures should lead to a scenario where any occupant should have no expectation or need to open windows for comfort and ventilation, then I have to disagree. We would not accept this argument and would not accept passive vents as an alternative to the ventilation rates offered by an open window.

If new development is in a noisy location, which if above these target levels would indicate to be the case, it is expected the developer mitigate as far as is reasonable, those noise impacts.

Constraints related to noise, for example, are no reason to compromise design and quality of amenity without good reason or because it necessitates the developer do more to mitigate it.

I trust this answers your query.

Kind regards

Rhys

Rhys Gilbert

Environmental Health Team Leader (Environmental Protection)

Basingstoke and Deane Borough Council

www.basingstoke.gov.uk

From: Peter Barling

Sent: 23 March 2021 12:18

To: Rhys Gilbert

Subject: RE: Noise survey proposal

Hi Rhys,

Thank you for your reply and sorry for not coming back to you sooner.

I have been looking at the 'Guidance note for developers and consultants' document you referenced and I would just like to confirm one aspect of this, with regard to the below:

3.0 Internal levels

- 3.1 It is often necessary to open windows during the warmer months of the year to achieve comfortable internal temperatures. Windows might remain open for extended periods to cool the internal habitable rooms including bedrooms. This is often referred to as summer cooling and essentially means an increased flow of air through habitable rooms to cool these spaces. This is not discussed in BS8233 or Approved Documents E or F of the Building Regulations. However the requirements related to "purge ventilation" and the purpose of purge ventilation are comparable to the purpose of opening windows for reasons of cooling i.e. the internal environment is not comfortable and rapid air changes should serve to improve that comfort.
- 3.2 Where the internal noise levels referred to in table 1 cannot be achieved with windows open, alternative mechanical ventilation such as mechanical heat recovery system (with cool air bypass) should be provided. This ventilation must:
- i) Be capable of providing air changes at volumes equivalent to an open window for the purposes of rapid cooling and ventilation.
 - ii) Not compromise the façade insulation or the resulting internal noise level.
 - iii) Operate at a level to comply with noise rating curve NR25 or lower.

With regard to the statement that:

“Where the internal noise levels referred to in table 1 cannot be achieved with windows open, alternative mechanical ventilation such as mechanical heat recovery system (with cool air bypass) should be provided.”

What level of open windows is ‘open’, i.e. partially open windows that provide around 15 dB of attenuation or fully open windows that would provide effectively no attenuation? Also should this be based on open windows for the entire day and night period, or just for a short-time for purge ventilation. This would have an impact as the criteria is the energetical average over 16- or 8-hours.

I just want to check to confirm this as it could be the case that wherever external ambient noise levels are above 35 or 30 dBA during the day or night, or night-time maximum noise levels normal are above 45 dBA, mechanical ventilation is required. This would effectively mean the vast majority of new residential dwellings require mechanical ventilation to be installed.

If partially open windows are appropriate then mechanical ventilation would be required wherever external ambient noise levels are above 50 or 45 dBA during the day or night-time period respectively or night-time maximum noise levels normally are above 60 dBA. This would still apply for a very large proportion of new residential development.

Also would this overheating requirement apply during the night-time period when there is no solar radiation and lower external ambient temperatures? If so what level of open windows (fully or partially) would be appropriate in this instance, presumably this would be dependent on the required level of air change which would be much lower at night?

Just to confirm passive through frame or wall ventilation is not acceptable?

Kind Regards

Peter Barling

Peter Barling

Senior Acoustic Consultant
RPS | Consulting UK & Ireland

From: Rhys Gilbert

Sent: 08 March 2021 13:51

To: Peter Barling

Subject: Noise survey proposal

Dear Peter,

Thank you for your email.

Your proposal for assessing the noise climate sounds fine. The only additional thing I would draw your attention to is our guide to developers that sets out what our target criteria are, and approach to any mitigation that might be needed. This document can be found on our website.

Many thanks

Rhys Gilbert

Environmental Health Team Leader (Environmental Protection)

Basingstoke and Deane Borough Council

From:

Sent: 05 March 2021 14:30

To: Env Health Team

Subject: Environmental health enquiry form (136870)

Please tick to confirm that you have read and understood our privacy statement: Yes

Title: Mr

First name: Peter

Last name: Barling

Please provide details of your enquiry: Dear Sir/Madam,

We have been appointed by our client to undertake a noise assessment for a proposed new residential development (circa 350 dwellings) on land to the east of Common Farm (land west of A343 Andover Road, east of the A34 and south of River Enborne, RG20 0LS).

To complete the assessment, we are proposing to undertake two long term unattended baseline surveys, one close to the A343 Andover Road, and one close to the A34. These will be supplemented with short-term surveys close to Washwater road.

Due to potentially reduced traffic movements at this stage we also will reference publicly available data and a desktop based approach to inform the assessment. This would be based on UK Government data, which is “the product of the strategic noise mapping analysis undertaken in 2017 to meet the requirements of the Environmental Noise Directive (Directive 2002/49/EC) and the Environmental Noise (England) Regulations 2006 (as amended)”, i.e. the following:

<https://www.gov.uk/government/publications/strategic-noise-mapping-2019>

On the basis of the baseline noise levels we would then compete our assessment based on guidance from the Institute of Acoustics’ Professional Practice Guidance on Planning and Noise, document and BS 8233:2014 ‘Guidance on sound insulation and noise reduction for buildings’.

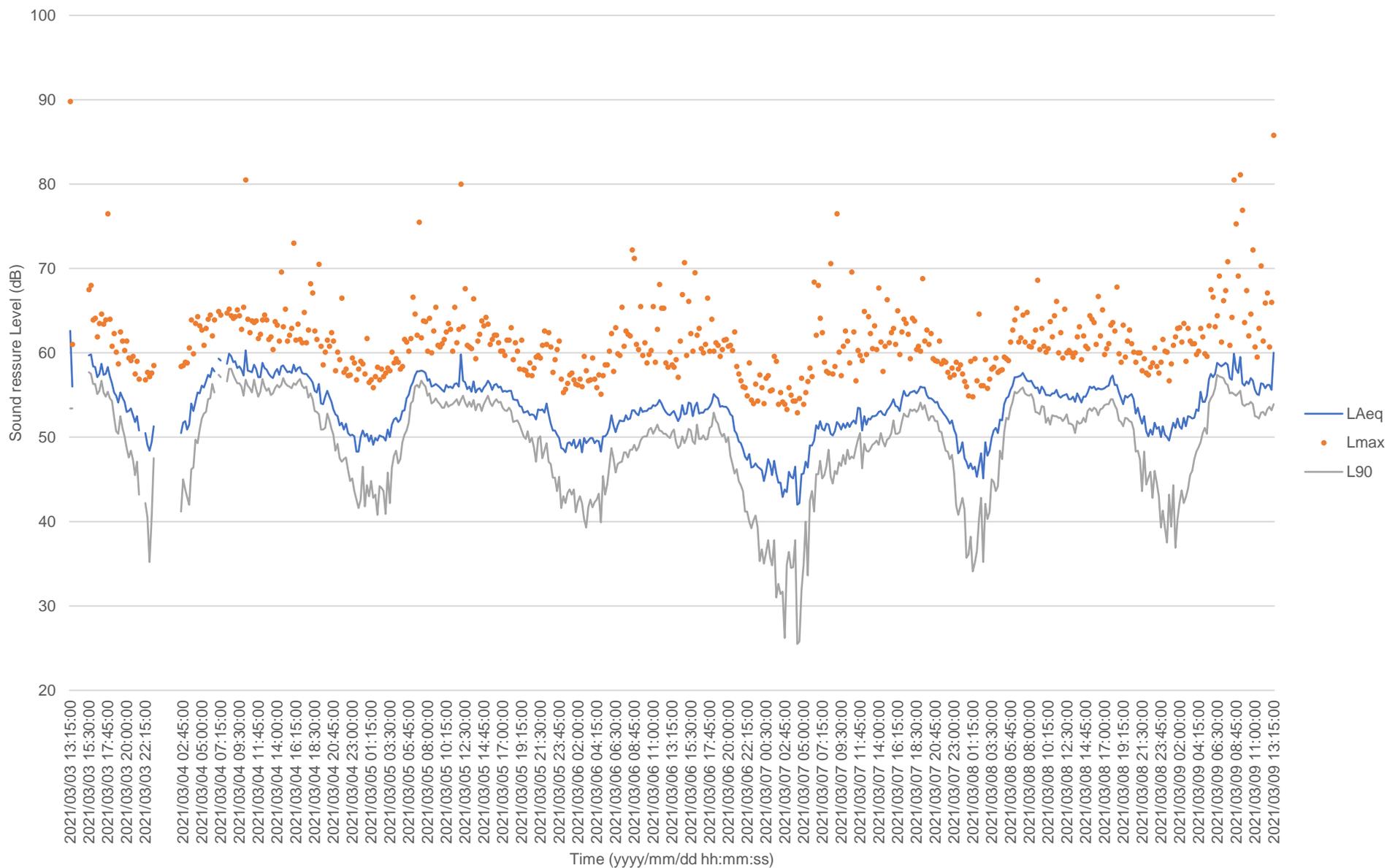
I would appreciate if someone would be able to confirm that the above approach would be considered appropriate, and with any comments you may have regarding the proposed methodology etc.

Yours Sincerely

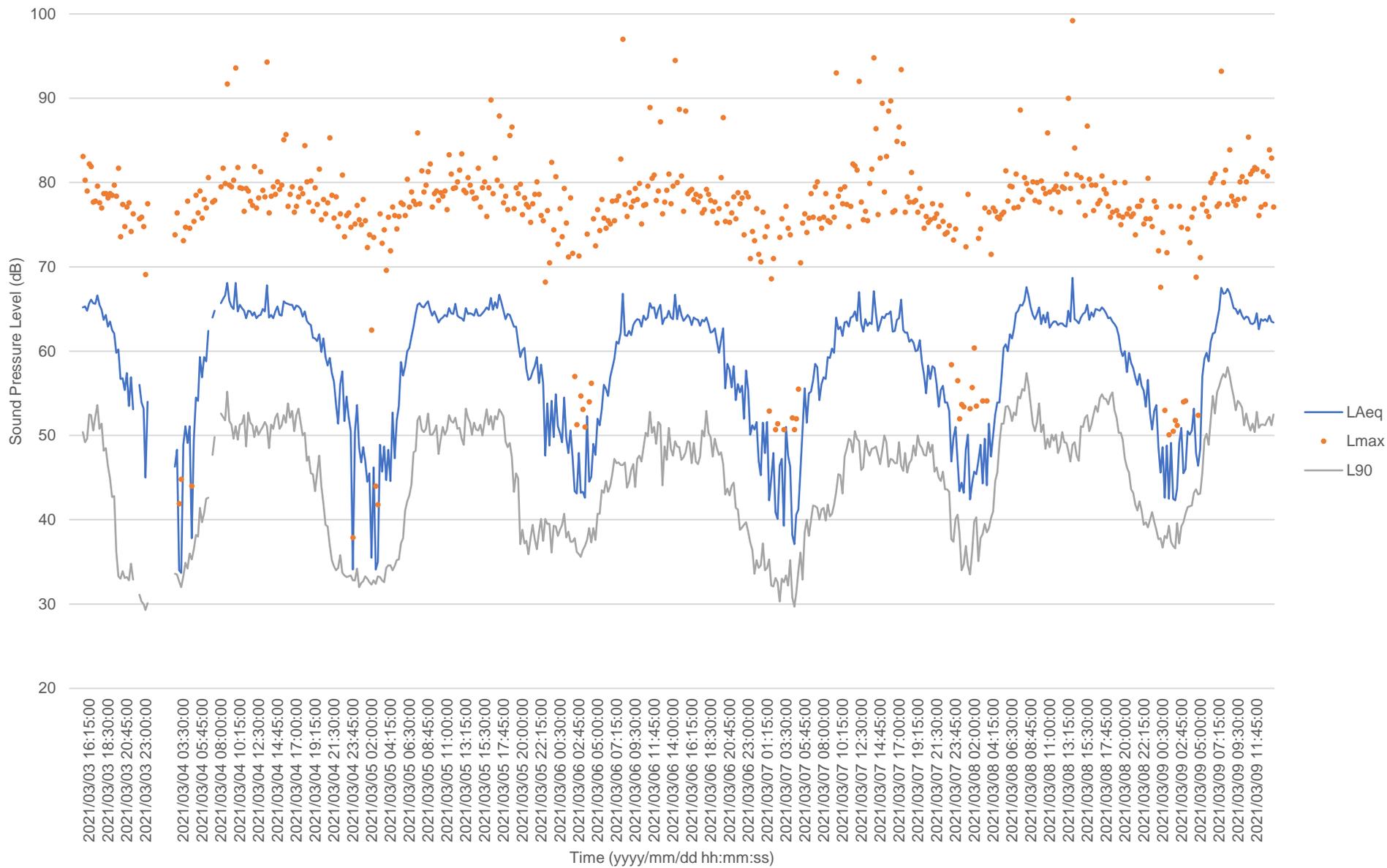
Peter Barling

Appendix B: Survey Data

LT1



LT2



Appendix C: Façade Calculation

Standard Façade Break in Calculation

Project Name	JAE11607
Project Number	Watermill Bridge
Date	05-Oct-21
Description	BS 8233:2014 Calculations Standard Facade

Calculation of Composite Façade Attenuation (in accordance with BS 8233:2014)

Typical Room Dimensions:	Volume	46.8	18 m2 x 2.6
	Façade (m²)	31.2	(6+3+3) x 2.6
	Floor Area (m²)	18.0	6 x 3 m

(approximate dimensions)

Equivalent absorption area of receiving room

Octave band centre freq. (Hz)	125	250	500	1000	2000
A*	11	14	16	16	15

*From BS 8233:1999.

Typical Façade Element dimensions:	Window (m²)	1.8	1.3 x 1.4 m
	Vent (m²)	0.008	
	Wall (m²)	29.4	
	Total Area (m²)	31.2	

Predicted broadband noise level:

L_{Aeq, free field} (dB)	63
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Predicted noise level spectrum:

Octave band centre freq. (Hz)	125	250	500	1000	2000
L_{eq, free field} (dB)	65	61	59	59	55

Specified sound reduction of façade elements:

Octave band centre freq. (Hz)	125	250	500	1000	2000
Window R_{wi} (dB)	21	20	26	38	37
Standard Blockwork Cavity Wall* R_{ew} (dB)	40	44	45	61	56
Trickle Vent D_{n,e} (dB)**	27	27	27	27	27

* From BB 93, Appendix 10, Table A10.4. ** *Italics* denote assumed values.

Apparent sound reduction per octave band

Octave band centre freq. (Hz)	125	250	500	1000	2000
Window* R_{wi}	0.00046	0.00058	0.00015	0.00001	0.00001
Standard Blockwork Cavity Wall* R_{ew}	0.00009	0.00004	0.00003	0.00000	0.00000
Trickle Vent* D_{n,e}	0.00064	0.00064	0.00064	0.00064	0.00064
Total (10*LOG(B+C+D)) (dB)	-29	-29	-31	-32	-32

Octave band centre freq. (Hz)	125	250	500	1000	2000
Predicted Internal Noise Level Spectrum (dB)	43	39	34	33	30
Predicted Internal Noise Level Spectrum (dBA)	27	30	31	33	31

Predicted Internal Broadband Noise Level in Receiving Room (dBA)	38
External to Internal Noise Level Difference (dBA)	25

References

- 1 Association of Noise Consultants. Institute of Acoustics. Chartered Institute of Environmental Health. ProPG: Planning and Noise. Professional Practice Guidance on Planning and Noise. New Residential Development. 2017.
- 2 Department for Environment, Food and Rural Affairs. Noise Policy Statement for England. Defra. 2010.
- 3 Department for Communities and Local Government. National Planning Policy Framework: HMSO. July 2021.
- 4 Department for Communities and Local Government. National Planning Practice Guidance.
- 5 Basingstoke and Deane District Council. Basingstoke and Deane Local Plan (2011 to 2029). 2016
- 6 Basingstoke and Deane District Council. Noise assessments and reports for planning applications Guidance note for developers and consultants. 2016.
- 7 British Standards Institution. British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings.
- 8 British Standards Institution. British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings.
- 9 British Standards Institution. British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings.
- 10 British Standards Institution. British Standard 7445-2:1991 Description and measurement of environmental noise - Part 2: Guide to the acquisition of data pertinent to land use.
- 11 British Standards Institution. British Standard EN 1793-3:1997. Normalized traffic noise spectrum.
- 12 Defra. Strategic noise mapping (2017). Published 2 July 2019.
- 13 Defra Report NANR116. Open/Closed Window Research – Sound Insulation through Ventilated Domestic open Windows. The Building Performance Centre, School of the Built Environment, Napier University. 2007.