Noise Impact Assessment

Land E. Beechlands Road, Medstead

Bargate Homes Limited

Prepared by:

SLR Consulting Limited

Mountbatten House, 1 Grosvenor Square,
Southampton SO15 2JU

SLR Project No.: 433.000068.00004

Client Reference No: 118040

29 April 2024

Revision: 02

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
1	12 March 2024	C. Bye	J Munns	V Taylor
2	29 April 2024	C. Bye	J Munns	V Taylor

Basis of Report

This document has been prepared by SLR Consulting Limited (SLR) with reasonable skill, care and diligence, and taking account of the timescales and resources devoted to it by agreement with Bargate Homes Limited (the Client) as part or all of the services it has been appointed by the Client to carry out. It is subject to the terms and conditions of that appointment.

SLR shall not be liable for the use of or reliance on any information, advice, recommendations and opinions in this document for any purpose by any person other than the Client. Reliance may be granted to a third party only in the event that SLR and the third party have executed a reliance agreement or collateral warranty.

Information reported herein may be based on the interpretation of public domain data collected by SLR, and/or information supplied by the Client and/or its other advisors and associates. These data have been accepted in good faith as being accurate and valid.

The copyright and intellectual property in all drawings, reports, specifications, bills of quantities, calculations and other information set out in this report remain vested in SLR unless the terms of appointment state otherwise.

This document may contain information of a specialised and/or highly technical nature and the Client is advised to seek clarification on any elements which may be unclear to it.

Information, advice, recommendations and opinions in this document should only be relied upon in the context of the whole document and any documents referenced explicitly herein and should then only be used within the context of the appointment.

Table of Contents

Tables in Text

Figures in Text

Appendices

Appendix A Glossary of Terminology

Appendix B Survey Graphical Summary Results

Appendix C Overheating Control Additional Guidance

1.0 Introduction

Bargate Homes Limited has appointed SLR Consulting Limited to undertake a noise assessment to support the development of a residential development east of Beechlands Road, Medstead.

The development site currently comprises open grassed fields. An existing roadway (Five Ash Road) is indicated immediately north of the site, whilst Stoney Lane is located immediately west of the site.

Medium-density residential dwellings and residential roads such as Beechlands Road are located to the east of the site. Grassland and agricultural fields surround the site, to the North, West and South.

This report has been prepared to assess the existing noise climate at the Proposed Development Site to determine the suitability of the Site with regard to the proposed uses in relation to the outline application with scope as below:

"Outline application with all matters reserved except for access for up to 70 dwellings with vehicular and pedestrian accesses, public open space, landscaping, drainage and associated works."

Suitability of the Site will be determined through the use of Local and National Policy and Guidance relevant to the development proposals.

Whilst reasonable effort has been made to ensure that this report is easy to understand, it is technical in nature. To assist the reader, a glossary of terminology has been included in **Appendix A**.

A statement of the competence of the consultants associated with this assessment constituting an SQA (Suitability Qualified Acoustician) is enclosed in **Section 12.0.**

2.0 Site Description

To the east, the site is bounded by residential dwellings on Beechlands Road and to the North South and West the site is bounded by fields and county lanes such as Boyneswood Lane and Stoney Lane.

2.1 Proposed Development

Figure 2-1 below details the indicative site plan and shows the Proposed Development Site location and surrounding area context.

Figure 2-1: Site Plan and Context

3.0 Planning and Noise Guidance

3.1 National Planning and Policy Framework

The National Planning Policy Framework (NPPF) was introduced by The Department for Communities and Local Government in March 2012, and most recently updated in December 2023.

The NPPF defines the Government's planning policies for England and sets out the framework, within which local authorities must prepare their local and neighbourhood plans, reflecting the needs and priorities of their communities. The Government's stated purpose in producing the NPPF was to streamline policy, so the planning process is less restrictive, to give a more easily understood framework for delivering sustainable development. Under the heading of conserving and enhancing the natural environment and Paragraph 180 e), one aim of the NPPF is *"preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of… noise pollution…".*

Paragraph 191 requires planning policies and decision to ensure that new development is appropriate for its location. It stipulates a need to account for the likely effects of pollution on health and other matters, requiring the planning process to:

"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".

The NPPF acknowledges that there is a host of existing sources of national and international guidance which can be used, in conjunction with the Framework, to inform the production of Local Plans and decision making.

3.2 Noise Policy Statement for England

The Noise Policy Statement for England (NPSE) was published in March 2010. It sets out the long-term vision of government noise policy, which is fundamentally to: *"Promote good health and good quality of life through the effective management and control of noise within the context of Government policy on sustainable development".* The vision is supported by three key aims:

- Avoid significant adverse impacts on health and quality of life;
- Mitigate and reduce to a minimum, other adverse impacts on health; and
- Where possible, contribute to the improvement of health and quality of life.

The NPSE should apply to all forms of noise including environmental noise, neighbour noise and neighbourhood noise but does not apply to noise in the workplace. The NPSE has adopted the following concepts, to help consider whether noise is likely to have "significant adverse" or "adverse" effects on health and quality of life:

SOAEL – Significant Observed Adverse Effect Level. This is the level above which significant adverse effects on health and quality of life occur.

LOAEL – Lowest Observed Adverse Effect Level. This is the level above which adverse effects on health and quality of life can be detected.

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.

"It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available (Defra, 2010)."

3.3 National Planning Practice Guidance

Revised Planning Practice Guidance was released in March 2014 to support the NPPF and last updated in July 2019. The Guidance stipulates that Local Planning Authorities' plan making and decision making should take account of the acoustic environment and in doing so consider:

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

The guidance has also provided the following noise exposure hierarchy table *"when noise could be a concern".*

Table 3-1: Planning Practice Guidance Noise Exposure Hierarchy Table

Response	Example of Outcomes	Increasing Effect Level	Action
NOEL – No observed effect level			
Not present	No effect	NOEL	No specific measures required
No observed adverse effect level			
Present and not intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
LOAEL – Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for sleep disturbance. Affects acoustic character of the area and creates a perceived change in quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
SOAEL – Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no	Significant Observed Adverse Effect	Avoid

Response	Example of Outcomes	Increasing Effect Level	Action
	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.		
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

3.4 ProPG: Planning & Noise (2017)

ProPG: Planning & Noise – Professional Practice Guidance on Planning & Noise, New Residential Development was developed by a working group consisting of representatives from the Association of Noise Consultants (ANC), Institute of Acoustics (IOA), Chartered Institute of Environmental Health (CIEH) and practitioners from a planning and local authority background.

This guidance was made effective in May 2017 to provide a recommended approach to the management of noise within the planning system in England. It has drawn upon legislation, guidance and standards available at the time of publication to reflect the Noise Policy Statement for England (NPSE), the National Planning Policy Framework (NPPF) and Planning Practice Guidance (PPG-Noise) and other authoritative sources of guidance.

ProPG has been noted to advocate two sequential stages covering an 'initial noise risk assessment' at Stage 1 then a 'full assessment' at Stage 2 considering four key elements.

- Element 1 – Good acoustic design process.
- Element 2 – Internal noise level guidelines.
- Element 3 – External amenity area noise assessment.
- Element 4 – Assessment of other relevant issues.

The scope of ProPG considers new residential development that will be predominantly exposed to airborne noise from transportation sources. In cases where the site is exposed to noise of an industrial and/or commercial nature, this shall be considered at Stage 1 of the ProPG approach.

ProPG has provided a summary of internal noise level guidelines as part of Stage 2 assessment requirements. These guidelines values have been derived from British Standard BS 8233:2014 *Guidance on Sound Insulation and Noise Reduction for Buildings* and *The World Health Organisation Guidelines for Community Noise* (1999) and are provided below in **Table 3-2**.

Table 3-2: ProPG Internal Ambient Noise Levels, dB

Activity	Location	07:00 to 23:00 dB $L_{Aeq,16h}$	23:00 to 07:00 dB $L_{Aeq,8h}$
Resting	Living room	35	-
Dining	Dining room/area	40	-
Sleeping (daytime resting)	Bedroom	35	30 45 dB $L_{Amax(F)*}$
*Not normally exceeded more than 10 times per night.			

3.5 Acoustics, Ventilation and Overheating Guide (AVO)

The AVO Guide has been published for application by practitioners when following Stage 2 Element 1 of good acoustic design within ProPG. This extended guidance document has aimed to assist designers to adopt an integrated approach to the acoustic design within the context of the ventilation and thermal comfort requirements.

It has been acknowledged from the AVO Guide that there is a need to address how the ventilation strategy and overheating mitigation impacts of the impacts on the acoustic conditions and whether a more-informed strategy is required in the mitigation of overheating. The Building Regulations 2010 Overheating: Approved Document O has since regulated the requirements for overheating ventilation and noise at night, as detailed further below.

3.6 Approved Document O

The Building Regulations 2010 Overheating: Approved Document O (ADO) was published on the 15th December 2021. This is an entirely new Approved Document which provides the normal means of complying with Part O to the Building Regulations 2010.

The simple way to comply with Part O is to provide adequate window openings such that comfortable internal temperatures can be maintained during the hottest times of the year. However, the document precludes the use of open windows for overheating control at night if this would result in internal noise levels above 40 dB $L_{Aeq,T}$ or 55 dB $L_{Amax(F)}$.

Unlike the AVO Guide, ADO does not appear to offer any flexibility with respect to how often windows might be required to be opened. Therefore, the noise limits are absolute. I.e., if they will be exceeded with windows open then an alternative overheating ventilation strategy would be required, even if windows would only need to be opened on a few nights of the year.

Note: Part O is a now legal requirement and component of the Building Regulations in the UK applicable to all new residential buildings in the UK (noting the above exceptions) and therefore these criteria do not need to be further considered by the Local Planning Authority or imposed by way of a planning condition.

It should however be noted that Part O took effect on 15th June 2022. It does not apply to work subject to a building notice, full plans application or initial notice submitted before that date, provided the work is started on site before 15th June 2023. On this basis as of June 15th, 2023, all new residential development in the UK needs to comply with the acoustic and thermal requirement of the legislation, as such design decisions made at planning stage should consider the implications of the performance standards thoroughly and accommodate any acoustic design requirements resulting at the earliest possible stage.

3.7 BS 4142:2014 +A1:2019

The British Standard BS 4142:2014 +A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound (BS 4142) notably describes methods for rating and assessing sound of an industrial or commercial nature. It has been referenced where required in policy and guidance documents to assess the potential impact of sound of an industrial and/or commercial nature, at existing and proposed noise-sensitive receptor locations within the context of the existing sound environment.

Certain acoustic features can increase the significance of impact from a comparison of the specific sound level to the background sound level where these features are likely to affect perception and response. Where such features are present at the assessment location, a character correction (or penalty) to the specific sound level is made to obtain the rating level. This can be approached from subjective, objective and reference methods.

- Tonality: A correction of 0 dB to + 6 dB for sound ranging from not tonal to prominently tonal.

- Impulsivity: A correction of up to + 9 dB can be applied for sound that is impulsive.
- Intermittency: A penalty of + 3 dB can be applied if on/off conditions are readily distinctive within the reference time interval over the period of the greatest amount of on-time.
- Other characteristics: A penalty of + 3 dB can be applied in the absence of all other defined characteristics, where the specific sound contains a distinctive feature in the residual acoustic environment.

The rating sound level is equal to the specific sound level if there are no acoustic features present or expected to be present.

The significance of sound depends upon both the margin by which the rating level exceeds the background sound level and the context in which the sound occurs. An initial estimate of the impact of the specific sound is made by subtracting the measured background sound level from the rating level.

- Typically, the greater the difference, the greater the magnitude of the impact;
- A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context;
- A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context; and
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background level, this is an indication that the specific sound source will have a low impact, depending on the context.

BS 4142 has stipulated that context is important when assessing the impact of sound of a commercial and/or industrial nature. Amongst a range of advocated considerations, this can include mitigation, residual sound levels, location and absolute sound levels in the consideration of context.

The scope of BS 4142 recognises that human response to sound can be subjective as affected by many factors, both acoustic and non-acoustic. The significance of its impact can depend on various factors such as the exceedance to the background level, its absolute level, time of day and change in environment, as well as local attitudes to the source of sound and character of the neighbourhood.

3.8 Local Planning Policy

3.8.1 East Hampshire Local Plan (Adopted 2014)

The East Hampshire District Local Plan states the following with regards to noise;

3.8.1.1 Section: Nature and Built Environment Objectives

Paragraph: 21

'To prevent development resulting in unacceptable levels of air, noise, land, light or other pollution and to ensure that new development is adequately protected against such pollution'

3.8.1.2 Section: CP27 Pollution

Paragraph: 7.55

'Pollution has an impact upon human health and amenity. Specific areas for concern are unpleasant emissions such as smoke, gases, odour, heat, radon and vibration; noise; land contamination; air quality on European sites; light pollution; and privacy and daylight. Research has shown that levels of land contamination, air quality and excessive noise for example, can impact upon human health but may also impact upon the natural environment. In addition, evidence shows that significant community dissatisfaction can result where developments fail to consider localised impacts that can seriously affect the amenity of an area and the general wellbeing of residents.'

3.8.1.3 Section: CP27 Pollution

Paragraph: 7.59

'Within East Hampshire, developments resulting in the generation of significant outdoor noise or evening and late-night entertainment noise pose the most significant challenge to protecting neighbour amenity, wildlife and the character of the countryside. The Council's environmental health strategies are focused on the control of noise at source. An assessment of the impact of noisy developments and locating sensitive developments close to existing sources of noise will be required.'

3.8.1.4 Section: CP27 Pollution

Paragraph: 7.60

'East Hampshire has significant areas of highly-valued open land with exceptionally low levels of ambient noise and the Council seeks to protect the tranquillity of such areas, especially those within the South Downs National Park.'

3.8.1.5 Section: CP27 Pollution

Paragraph: 7.61

'DEFRA, the Department for the Environment, Food and Rural Affairs, has commissioned noise mapping around Rowlands Castle and the Clanfield/Horndean area. It is expected that action plans to reduce environmental noise will be developed. Development will need to support and be compatible with these plans. CPRE have tranquillity maps covering the South East of England and set out the value of, and threats to, tranquillity.'

3.9 Consutloation

SLR contacted the Environmental Health Department at East Hampshire on 13th March 2024 to agree the suitability of the scope of the baseline noise surveys undertaken. At the tme of writing no formal response has been received by SLR>

4.0 Environmental Sound Survey

4.1 Measurement Conditions

To establish the prevailing sound climate at the Site, a baseline survey was undertaken over a weekday and weekend period between Wednesday 20th March and Monday 25th March 2024.

Weather conditions have been reviewed from a local weather station installed with the noise survey equipment.

4.2 Equipment and Measurements

Sound pressure level and vibration measurements were carried out using the following equipment listed in Table 4-1, confirming to Class 1 acoustic accuracy for sound level meters and matched calibrators.

The sound level meters were calibrated before the measurements using the handheld acoustic calibrator and the calibration was checked upon completion of the survey. No significant drift was observed with calibration offsets of ≤ 0.4 dB. The calibration chain of equipment has been maintained to traceably to national standards, no greater than one year for sound calibrators and two years for sound level meters.

Table 4-1: Sound Monitoring Equipment

Location	Equipment	Serial Number
Location NMP1	Rion NL-52 Class 1 Sound Level Meter	1009668
	Rion NC-74 Acoustic Calibrator	34713324
Location NMP2	Cirrus CR:171B Class 1 Sound Level Meter	G303390
	Cirrus CR:515 Acoustic Calibrator	97661
Location NMP3	Rion NL-52 Class 1 Sound Level Meter	809411
	Rion NC-74 Acoustic Calibrator	34713324
Location NMP4	Cirrus CR:171B Class 1 Sound Level Meter	G301839
	Cirrus CR:515 Acoustic Calibrator	93674
Weather Station	Davis Instruments – Vantage Vue Weather Station: 6250UK	MT220531011

Sound level measurements NMP, NMP2 and NMP3 were viewed to be a directly representative of proposed site boundaries to key road traffic noise sources.

Sound level measurement at location NMP4 were viewed as representative of dwellings located close to the joinery that is located to the west of the site.

Measurements were recorded in free field conditions, as measured in-situ 1.5 m above ground.

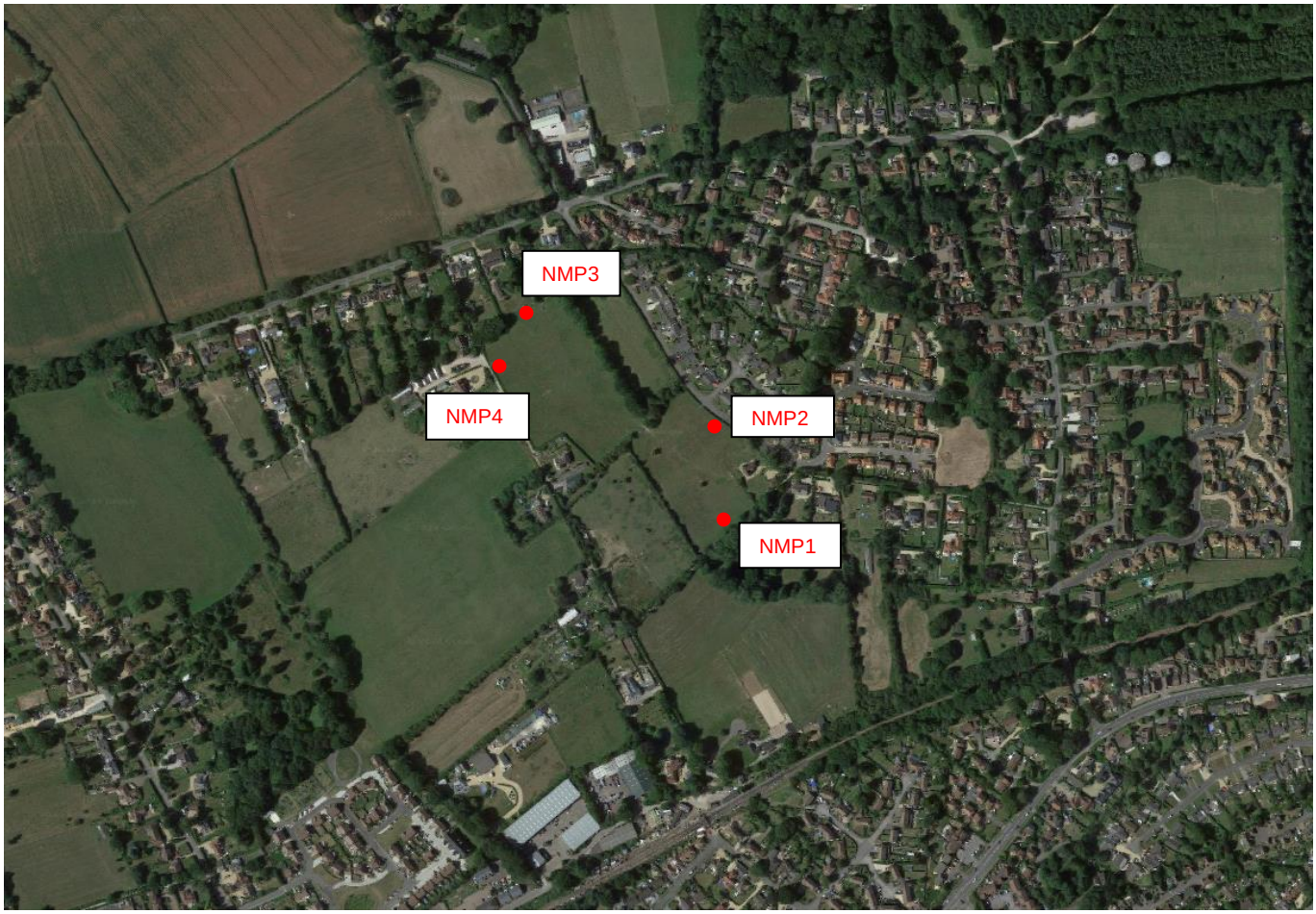
The monitoring protocol consisted of substantially unattended readings over the survey period with nominal 1-hour attendances at the start and end of the monitoring periods, covering nominally 5-days.

The following sound level indices have been reported at 15-minute intervals in decibels (dB):

- $L_{Aeq,T}$ – The A-weighted equivalent continuous noise level over the measurement period.
- $L_{A90,T}$ – The A-weighted noise level exceeded for 90% of the measurement period.
- $L_{A10,T}$ – The A-weighted noise level exceeded for 10% of the measurement period.

- $L_{Amax(F)}$ – The maximum A-weighted noise level during the measurement period.

Figure 4-1: Monitoring Locations and Site Context



4.3 Weather Conditions

A local weather station that has been referenced within Table 4.1 was set up at the site. Data from the weather station shows that the temperatures ranged from 2 – 16 °C and there was an absence of any significant rain. Average and gust wind speeds fell below 5 m/s with the prevailing wind direction being South-West. Conditions were viewed to be generally acceptable for environmental noise monitoring.

A summary of weather during the survey period is provided in **Appendix B** to this report.

4.4 Sound Climate

A full witnessed log of events has been obtained to describe main sound sources incident on the Site during times of site attendance. Routine audio recordings were otherwise recorded to retrospectively understand the prevailing sound climate in unattended conditions.

Observations in and around the Site have included the following notes summarised below:

- Occasional road traffic noise from the nearby residential roads; Beechlands Road, Stoney Lane and Five Ash Road. Road traffic was audible and at Locations 1 to 4 with vehicles passing along at low/moderate speed.

- Sound from the natural environment included the minor rustling of foliage and trees, in addition to birdsong. Birdsong was dominant during setup and pick up.
- Distant road traffic noise from the A31, including reversing beeping.
- Overhead high-altitude aeroplane noise.
- Plant noise from the joinery located to the west of the site was slightly audible at NMP4.

4.5 Baseline Sound Survey Results

The single figure free field noise indices recorded are presented in graphical format within **Appendix B**.

The dataset is large, and therefore relevant summary results of the survey have been summarised for the key survey periods In **Table 4-2** and **Table 4-3** below.

Table 4-2: Summary of Measured Residual and Background Sound Levels

Measurement Details				Residual sound level dB $L_{Aeq,T}$		Background sound level dB $L_{A90,T}$	
Date Range	**Location**	**Period**	**Time HH:MM**	**Range**	**Typical***	**Range**	**Typical***
Wed 20/03/2024 - Mon 25/03/2024	NMP1	Day	07:00 - 19:00	40 - 58	46	34 - 48	39
		Evening	19:00 - 23:00	30 - 50	36	22 - 37	35
		Night	23:00 - 07:00	21 - 48	35	19 - 41	20
	NMP2	Day	07:00 - 19:00	42 - 59	46	32 - 45	39
		Evening	19:00 - 23:00	30 - 55	41	21 - 38	34
		Night	23:00 - 07:00	19 - 59	32	20 - 40	20
	NMP3	Day	07:00 - 19:00	40 - 56	45	34 - 48	40
		Evening	19:00 - 23:00	29 - 51	37	21 - 37	31
		Night	23:00 - 07:00	24 - 46	29	19 - 41	23
	NMP4	Day	07:00 - 19:00	39 - 70	44	33 - 47	38
		Evening	19:00 - 23:00	34 - 51	37	25 - 36	32
		Night	23:00 - 07:00	23 - 48	36	20 - 41	20
**Based on modal values occurring within each stated time period.*							

Table 4-3: Summary of Period Sound Levels

Measurement Details				dB $L_{Aeq,}$	dB $L_{Amax(F)}$*	
Date Range	**Location**	**Period**	**Time HH:MM**	**Assessed Log Average**	**Assessed 10th Highest (15 minute)**	**Assessed 10th Highest (2 minute)**
Wednesday 20th March and Monday 25th March 2024	NMP1	Day	07:00 – 23:00	47	-	-
		Night	23:00 – 07:00	39	49 - 63	NA
	NMP2	Day	07:00 – 23:00	47	-	-
		Night	23:00 – 07:00	42	NA	57 - 60
	NMP3	Day	07:00 – 23:00	46	-	-

Measurement Details				dB $L_{Aeq,}$	dB $L_{Amax(F)}$*	
		Night	23:00 – 07:00	37	48 - 53	NA
	NMP4	Day	07:00 – 23:00	49	-	-
		Night	23:00 – 07:00	40	NA	62 - 64
* *Not normally exceeded 10 times per night.*						

Night-time maximum noise event levels have been established from the period 23:00 – 07:00, with maxima reviewed in terms of 2-minute dB $L_{Amax(F)}$ values at NMP1 and NMP3 in respect to key noise sources at the northern and western site boundaries, with the 10th highest reported per a published, statistical approach[1] .

At Locations NMP2 and NMP4 based on the same guidance[1] on the basis of 15-minute data logging a + 2 dB correction to derive the 2-minute maxima equivalency.

With regards to maximum noise level analysis during the night-time, SLR have excluded the dawn chorus (05:00 - 06:00) from nearby birds given the site location. As such where there is a clear crescendo of maximum noise level events attributable to birdsong, this has been excluded from assessment.

The sound of birds singing in the morning during spring is a not an environmental noise concern in respect to planning of residential development and would not be considered objectionable or disturbing in context. The primary interest of any acoustic design guidance provided would be relative to the control of traffic noise or other anthropogenic (man-made) noise sources.

4.6 Heritage Railway Line

During the attended portion of the site visits no rail movements on the Heritage "Watercress Line" to the south of the Proposed Development site were experienced in person.

However, based up on available published timetables, continuous noise logging measurements undertaken at NMP1 are expected to have captured this activity.

These measures have then informed the noise modelling and assessment detailed later in this report.

[1] Paxton, B. Conlan, N et al. Assessing Lmax for residential developments: the AVO guide approach. Proceedings of the Institute of Acoustics. Volume 41, Part 1, 2019.

5.0 Agent of Change and Commercial and Industrial Activity Noise Considerations

The site lies in a predominantly residential area and fields in the immediate vicinity, however, to the east there is a Joinery unit adjacent to Stoney Lane.

5.1 The “Agent of Change” Principle

The 'agent of change principle' encapsulates the position that a person or business (i.e. the agent) introducing a new land use is responsible for managing the impact of that change, in following of NPPF Paragraph 187.

The practical issue that has arisen on occasion is that in circumstances where residents move into an area where noise is emanating from a long-standing commercial operation, this may have resulted in the Local Planning Authority (LPA) imposing additional licensing restrictions on the established licensed and/or permitted business.

NPPF provides guidance on the implementation of an 'agent of change' principle’ to place the responsibility for noise management measures on the incoming 'agent of change' in this instance the developer for which this application is being made.

The guidance states that consideration should be given to additional mitigation where an existing commercial development may give risk to a **“significant adverse impact”** constituting a valid reason for complaint from future occupants of the Proposed Development.

In respect to the Joinery (Ross Langley Bespoke furniture and Joinery) unit henceforth referenced to as RLBFJ, the following is considered:

The predominant source of noise in respect to the joinery unit would hand tools being used. There may also be likely to be mechanical extract and machining plant and services noise from the joinery.

It should also be noted there are residential receptors immediately north of the joinery, and that the Proposed Development is at a greater distance east.

In addition to the above, it was noted by the surveyor that noise levels from the joinery were only just audible at the western site boundary.

Nonetheless by the requirement of “agent of change” it is reasonable to consider BS4142 assessment of the joinery works to new receptors proposed as part of the development to identify if a “significant adverse impact” is present, which could raise the likelihood of complaint. Imposing upon the existing commercial enterprise.

5.1.1 BS4142 Assessment- RLBFJ,

SLR have considered the noise levels at NMP4 to have contributions from both road traffic, and the RLBFJ works. With an average ambient noise level of 49dBA $L_{Aeq,,T}$ weekday.

SLR have considered based on observation no significant contribution from the joinery works at NMP1 to the southeast.

On this basis measurements at this position have been considered representative of residual sound levels in the absence of RLBFJ of circa 46dB $L_{Aeq,\,T}$ and a background sound level of 39dB L_{A90} during the daytime.

SLR calculate therefore the anticipated worst case specific level at the western site boundary of the proposed development site boundary would be circa 46dB L_{Aeq} from RLBFJ based on logarithmic mathematical subtraction of the residual noise level at NMP1 from the cumulative ambient level at NMP4.

Thus, contribution to the noise climate at the western site boundary is expected to be “adverse impact”, in the context of BS4142 where this is circa 7dB above background sound levels at dwellings within the Proposed Development.

In turn no feature corrections are warranted to the rating level at this magnitude which remains as per the specific level calculated based on witnessed site engineer observations of there being no particularly distinct acoustic features.

Noting the above numerical assessment is likely an overestimate of impact specifically as a result of RLBFJ activity.

This would be considered an indication of “Adverse Impact” where BS4142 States:

> “A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context”

But crucially not a “Significant Adverse Impact” where BS4142 States:

> “A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context”

The context is such that observations during the site visit at NMP4 in closest proximity to these potential noise sources noted the continued dominance of road traffic immediately adjacent.

With no commercial sources noted to be significantly distinct albeit over and above the existing traffic related noise climate during observation and via the assessment exercise provided above, where the residual sound climate generally about the site is evidenced to be circa 46-47dBA $L_{Aeq, T}$ daytime.

The evening and night have been considered particularly sensitive periods of operation where it would normally be appropriate to consider that residents will likely be resting or sleeping within their homes. During this time, it could be expected that residents may choose to leave windows open, where a level difference of approximately 13 dB would normally be expected inside the dwelling through a partially open window.

However, no operations are evidenced at night as a result of RLBFJ. Thus, risk during this key period is mitigated from the outset, in addition internal ambient noise levels within the worst affected dwellings have been predicted to relate to the residual sound climate where this prevails at a similar level or beyond the specific sound levels of this assessment.

In combination and at any time, the resulting ambient sound level would more prominently comprise mainly of the residual sound from transportation activities, rather than that of RLBFJ.

Where any industrial or commercial sound remains audible, as might be possible during periods of operation, then it has been considered possible in context for some minor level of effect. This has been considered relevant for any source character that could have different temporal or spectral characteristics than the prevailing residual climate.

Predicted noise impacts have been supported as below significant adverse impact are supported when considering the context of the Site.

To summarise considering the ethos of “Agent of Change” and its intended use “Significant Adverse Impacts” are avoided from the outset at the new proposed dwelling curtilage external to proposed properties, and therefore complaints are considered to be unlikely.

It is further considered that where external amenity spaces such as gardens feature close boarded fences (see relevant report sections contained herein). Noise levels as a result of RLBFJ would be further reduced for development occupants.

Is therefore submitted that further detailed assessment is unwarranted in the local context and external commercial premises are not at risk of nuisance complaint because of new occupants to the proposed development which in turn could risk imposing upon said businesses continued operation.

It is further anticipated therefore that the proposed acoustic mitigation measures to control road traffic noise levels immediately adjacent at the new dwellings will also be more than sufficient such that the agent of change (Proposed Development) would not be likely constitute a risk to the commercial operations of the adjacent businesses identified.

For the avoidance of doubt noise levels captured at NMP 4 have been to inform and calibrate noise modelling exercises associated with the Proposed Development and the proposed mitigation strategies detailed in the relevant section of this documentation effectively incorporate the observed noise levels at the western boundary including RLBFJ.

6.0 ProPG Assessment

The assessment method of ProPG has been applied to the development to understand the risks and design requirements to mitigate the proposal from environmental transportation noise sources.

6.1 Stage 1 – Initial Risk Assessment

The environmental survey provided in Section 4.0 of this report has been utilised to inform a baseline noise modelling exercise for the site.

6.2 Noise Model

The sound predictions for the assessment have been undertaken using a proprietary software-based noise model, CadnaA®, which implements the full range of UK calculation methods. The calculation algorithms set out in ISO 9613-2:2009 have been used and the model assumes:

- A ground absorption factor of 0.5 (mixed ground conditions).
- Relative humidity of 70%.
- Air temperature of 10°C.
- Contour Data to include OS terrain data.
- A reflection factor of 2.

The effects of the existing noise climate impacting the proposed new scheme have been considered for this assessment.

With reference to the criteria set out in this document and the noise modelling inputs and impacts summarised, building evaluation maps have been produced for the daytime and night-time periods.

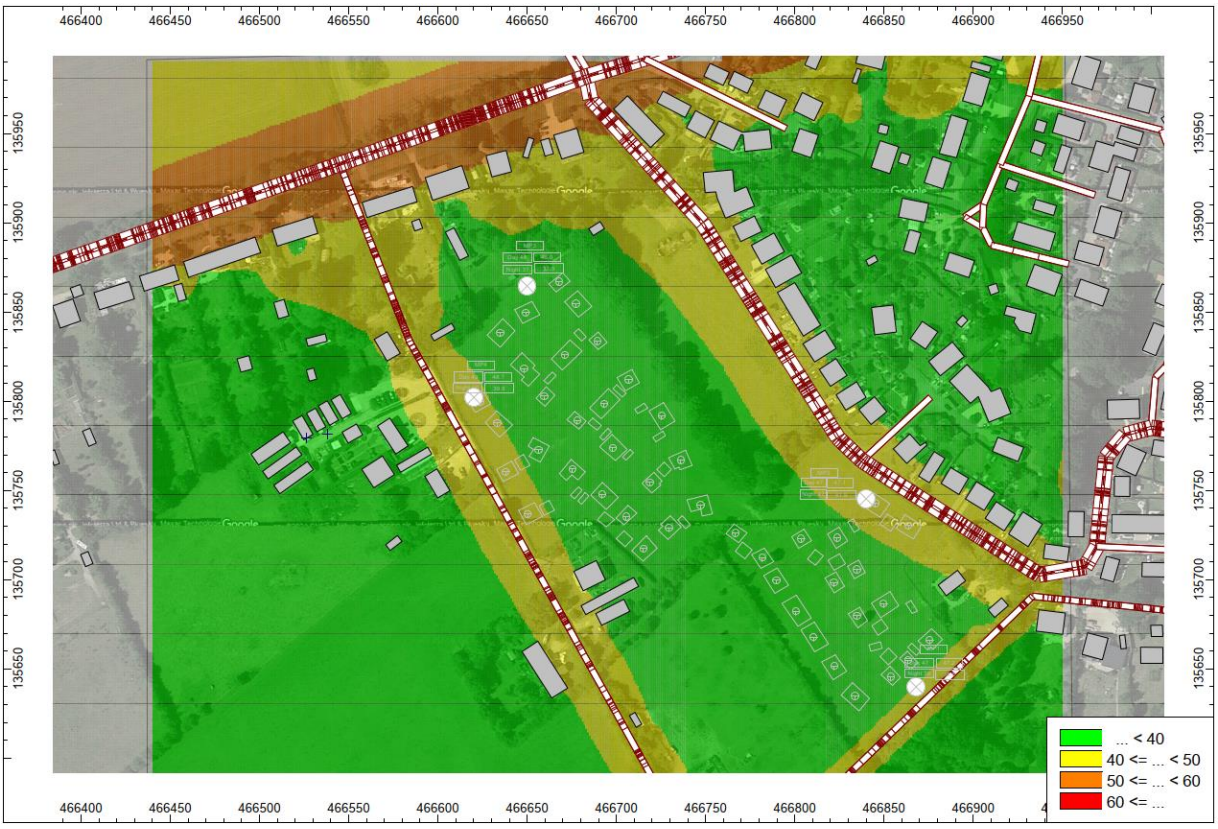
The scale has been set to be directly comparable with the negligible, low, medium and high risk of adverse effects categories set out within ProPG and has been used to provide a hierarchy of noise mitigation measures required to protect residences from road traffic noise.

The ProPG noise maps are presented below for the daytime and night-time, respectively. It is noted that the noise maps have been modelled at 1.5 m height above ground during the daytime to represent the height of a ground floor living room window or garden, and 4 m above the ground during the night to represent the height of a first-floor bedroom window.

It should be noted that ProPG does not define specific threshold boundaries for negligible, low, medium and high noise risk. However, this assessment has defined arbitrary boundaries on the basis of relevant guidance from ProPG.

Figure 6-1: ProPG Stage 1 Prediction of Road Traffic Noise Levels – Day $L_{Aeq,16h}$

Figure 6-2: ProPG Stage 1 Prediction of Road Traffic Noise Levels – Night $L_{Aeq,8\ hour}$



The initial site noise risk assessment has been categorised as below:

The most prevalent environment noise source across the site was noted from transportation sources, particularly road traffic during the daytime and night.

The initial Site noise risk assessment shows that the site interior presently falls into Low and Negligible noise risk category during both the day and the night time, where ProPG States:

For Negligible Noise Risk ProPG states:

"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"

For Low Noise Risk ProPG states:

"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 (Acoustic Design Statement) which confirms how the adverse impacts of noise will be mitigated and minimised in the finished development."

6.3 Stage 2 – Full Assessment

6.3.1 Good Acoustic Design Process

ProPG has stated it is imperative for acoustic design to be considered at an early stage of the development control process, as to avoid unreasonable acoustic conditions and prevent those which are unacceptable.

The main requirements for Good Acoustic Design have been explained relative to transport sources incident on the site.

6.3.1.1 Barriers Bunds, Terrace Barrier Blocks

Given the relatively flat in respect to the site topography, the benefit of noise barriers at the site boundary would be of limited value, particularly at upper floor levels.

Noise barriers have been considered in the context of private amenity spaces particularly those orientate perpendicular to read traffic noise sources this is detailed in the relevant section of this document.

6.3.1.2 Standoff distances

As established within the ProPG Stage 1 assessment the site falls into low and negligible noise risk categories.

Given the urban brownfield site common to most sites the available land is generally constrained such that there are minimal opportunities for any substantial standoff of distance value for acoustic mitigation purposes.

A general standoff of at least 10 m would normally be applied for other factors such as air quality. To avoid excessive maxima then stand offs of around 10 m are useful from road traffic sources although become less suitable unless removing large developable areas of the scheme (given 3 dB per doubling of distance).

A balance is therefore struck between the proposed stand offs within the current masterplan as sensible against the climate of day or night noise levels.

6.3.1.3 Topography

There are not any specific topographical benefits to be gained via masterplanning layout

6.3.1.4 Plot Orientation

Orientation has been viewed primarily useful to afford screened garden areas behind intervening dwellings, where gardens are orientated toward the site interior. Although in some instances this is not achievable. Where plots are perpendicular to road traffic noise sources, this would be of its own benefit being that typically “side” elevations would not typically have windows to key internal spaces and more often these windows would serve stairwells or corridors.

This is evidenced particularly with respect to the western boundary.

6.3.1.5 Internal Layouts

It has been acknowledged that ‘good acoustic design’ generally requires facing less-sensitive rooms (i.e., kitchens and bathrooms) towards the dominant incident noise sources. However, this is not always achievable.

It is noted that at outline planning stage such information may not be available. But can be readily considered at detailed planning stage.

Amenity spaces have been orientated to the rear of dwellings away from key noise sources wherever possible. Where this is not achievable mitigation has been considered in the form of garden barrier fencing which is discussed in further depth in the relevant section of this document.

Based on the above it is considered that all potential site layout-based mitigation options have either been integrated or have been discounted due to conflicts with other technical design disciplines

It is considered that all optimisations of the site layout, and design have been reviewed for acoustic design purposes in accordance with the GAD process from ProPG.

6.3.1.6 Development in Situ -Stage 2 Assessment

Figure 6-3 and **Figure 6-4** present the ProPG Noise Risk for Stage with the development in situ.

Figure 6-3: ProPG Stage 2 Prediction of Road Traffic Noise Levels – Day $L_{Aeq,16h}$

Figure 6-4: ProPG Stage 2 Prediction of Road Traffic Noise Levels – Night $L_{Aeq,8\ hour}$

Consideration for further noise mitigation should next be given to acoustic design of building fabric, glazing and ventilation associated with dwellings, as well as assessment of noise levels in any private amenity spaces associated with the development.

7.0 Building Fabric, Glazing and Ventilation-Acoustic Design

7.1 Ventilation

7.1.1 Internal Noise Level Guidelines

ProPG has provided a summary of internal noise level guidelines as part of Stage 2 assessment that have been replicated in **Table 3-2** of this assessment.

The method adopted to achieve suitable internal noise level guidelines has been based upon information contained within the recent ANC publication, The AVO Guide. This has provided an approach as to how the competing aspects of thermal and acoustic comfort can be managed and has been written to reflect the requirements of ProPG and overarching planning requirements.

Given the initial and worst-case Site risk assessment as medium risk, it has been considered commensurate to judge suitable façade components in terms of windows and ventilation elements.

The range of whole dwelling ventilation strategies for development has been taken from The Building Regulations 2010 Approved Document F (2022) Means of Ventilation (ADF). Note: the 2013 edition referenced different ventilation modes as System 1-4, for ease of reference this is maintained in the below assessment.

However as of 2022 it should be noted that other ventilation strategies are also viable and considered valid subject to detailed design such as PiV (Positive Input Ventilation).

Part F (2013 System 1-4 ventilation strategies are summarised below in **Table 7-1**.

Table 7-1: Part F (2013) Ventilation Modes and System References

Ventilation strategy according to ADF
System 1: Intermittent extract fans
System 2: Passive stack ventilation
System 3: Continuous mechanical extract (MEV)
System 4: Continuous mechanical supply and extract with heat recovery (MVHR)

For the purposes of this assessment, it is considered that where background ventilation fresh air provision may be provided by trickle vents (Systems 1 or 3), and an acoustic performance value requirement is stated for the ventilator, the stated performance assumes 2.no ventilation would be installed per room.

Where further vents are required in any one room the acoustic performance value of each individual vent should increase by:

10LOG(N) Where N= the number of vents required per room.

7.2 Noise Model

The sound predictions for the assessment have been undertaken using a proprietary software-based noise model, CadnaA®, which implements the full range of UK calculation methods. The calculation algorithms set out in ISO 9613-2:2009 have been used and the model assumes:

- A ground absorption factor of 0.5 (mixed ground conditions).
- Relative humidity of 70%.

- Air temperature of 10°C.
- Contour Data to include OS terrain data.
- A reflection factor of 2.

The effects of the existing (and proposed) noise climate impacting the proposed new development have been modelled to inform acoustic design of dwellings.

With reference to the criteria set out in this document and the noise modelling inputs and impacts summarised, building evaluation maps have been produced for the daytime and night-time periods.

It should be noted the scale has not been set to be directly comparable with the negligible, low, medium and high risk of adverse effects categories set out within ProPG but is arbitrary with the purpose of identifying specific compliance thresholds with BS8233:2014, Approved Document O and other relevant guidance in a hierarchical fashion.

For the avoidance of doubt the noise model includes transport noise sources, and noise sources applied to be representative of RLBFJ to the west.

Specific details of the design measures to be incorporated would be reviewed once further information on the "as built" project design proposals emerge, typically at detailed planning stage or RIBA Stage 4 (Technical Design).

7.3 Night Time Maximum Noise Levels dB L_{AFMax}

No maximum noise level modelling has been conducted; on the basis that point source distance attenuation (6 dB per doubling of distance) would be anticipated as opposed to line source attenuation for typical road traffic noise modelling (3dB per doubling of distance).

Therefore, typical noise modelling exercises would exhibit an overestimate of incident L_{AFMax} levels at proposed dwellings.

However, boundary noise measurements indicate compliance with moderate category threshold (< 64 dB $L_{Amax)}$ as per Table 4.2, and noting 6 dB doubling of distance these maximum noise levels at night are not considered problematic and would dissipate more rapidly towards the interior of the site than continuous noise traffic.

7.4 Building Evaluation Noise Modelling

The building evaluation noise models are presented in **Figure 7-1** and **Figure 7-2** for the daytime and night-time $L_{Aeq\ 16\ hour}$ and $L_{Aeq\ 8\ hour}$ periods respectively.

The requirements for glazing and ventilation sound insulation performance are presented in Error! R eference source not found. overleaf.

The assessment considered L_{AFMax} when assessing the required glazing and ventilation also.

Note: if there is a desire to rationalise glazing and ventilation across living rooms and bedrooms to each dwelling for the avoidance of doubt, the highest noise category in any period (day or night) should be read accordingly alongside Error! Reference source not found. for each plot.

.

Table 7-2 Required Glazing and Ventilation Acoustic Performance Values

Model Devised Noise Exposure Level Category *	Daytime External Noise Level, dB $L_{Aeq, 16\ hour}$ (07:00-23:00)	Night-Time External Noise Level, dB $L_{Aeq\ 8\ hour}$ (23:00 - 07:00 hours)	10th Highest Maximum Noise Levels at Night dB L_{AFmax}	Glazing Performance Requirement dB $R_w + C_{tr}$	Suitable Background Ventilation Modes and Performance Requirements Preliminary Overheating Control Design Guidance	
					Suitable Modes and Description	Ventilator $D_{ne,w} + C_{tr}$ (If applicable)
Moderate	≥53 and ≤54	Not Applicable	Not Applicable.	20 (Standard Thermal Double Glazing)	Good (BS8233:2014) internal acoustic conditions will be achieved with windows closed, and provision of acoustic trickle vents, WHV or MVHR for background ventilation. (Systems 1-4) Opening of windows should however be avoided a to cool an overheating room and ensure the acoustic requirement of Approved Document O will also be met. At the lower end of this range, passively attenuated solutions such as acoustic louvres and passively attenuated air input pathways may be acoustically feasible as a method to control overheating. However, opening of windows should be avoided for noise levels in this range **during the night.** Alternative overheating control strategies should be devised that are not dependant on opening windows, such as adiabatic cooling, boosted mechanical purge extraction or MVHR.	25
Low	≥48 and ≤53	≥43 and ≤45	≥58 and ≤64		Reasonable (BS8233:2014 +5dB) internal acoustic conditions will be achieved with windows partially open for background ventilation. Good (BS8233:2014) internal acoustic conditions will be achieved with windows closed, and provision of acoustic trickle vents, WHV or MVHR for background ventilation. When windows are open to ventilate rooms or to cool an overheating room the acoustic requirement of Approved Document O will also be met.	
Negligible	< 48	< 43	58		Good internal acoustic conditions will be achieved with windows closed or open. When windows are open to background ventilation or to cool an overheating room, acoustic conditions will be in line with BS8233:2014.	20 (Nominal Acoustic Trickle Vent)

*Category boundaries derived that are not necessarily directly reflective of ProPG noise category boundaries but intended to reflect guidance in BS8233:2014, ProPG and Approved Document O.

It is noted that no dwellings fall into the SLR derived moderate noise category during the night. All dwellings fall into Low and Negligible during this period for the voidance of doubt.

Figure 7-1 Building Evaluation dB $L_{Aeq, 16\ hour}$ Daytime

Figure 7-2 Building Evaluation dB $L_{Aeq, 8\ hour}$ Night Time

7.5 Residential Ventilation Additional Considerations (Overheating & Purge)

The outline proposals above are suitable to achieve internal noise levels from BS8233:2014, ProPG and WHO Guidance

However, it will occasionally be necessary to open windows to provide additional ventilation for purge (e.g. short term extraction of fumes or odours) or to cool an overheating room.

There is no need to apply limits to noise ingress during purge ventilation as this is usually done for a short duration and can often be planned not to coincide with times when the occupants may wish to maintain low internal noise levels.

It may also be desirable to open windows to provide cooling during the hotter months of the year. Occupants should not have to choose between unacceptably high internal noise levels or uncomfortable internal temperatures.

7.6 Approved Document O

The simple way to comply with Part O is to provide adequate window openings such that comfortable internal temperatures can be maintained during the hottest times of the year.

However, the document precludes the use of open windows for overheating control at night if this would result in internal noise levels above 40 dB L_{Aeq} or 55 dB L_{amax}.

7.6.1 ADO Site Review

For moderate overheating risk sites, ADO indicates that the insertion loss for an open window in the overheating condition would be 9dB.

On this basis night-time external ambient noise levels do not exceed 49 dB $L_{Aeq,\ 8\ hour}$ at night, and the 10th highest night time maximum noise levels do not exceed 64 $L_{AF\ Max}$ at the nearest dwelling curtilage.

On this basis the internal ambient noise level requirement of ADO will be met with open windows at all dwellings from the outset with no specific additional acoustic design measures required.

In general terms it is considered that there are feasible methods to achieve acoustically suitable control of overheating subject to a good acoustic design process.

It is considered that overheating is now controlled by a building regulation, and that demonstrating feasibility and describing potential options for the development is now sufficient at planning, and pre planning stage.

However additional guidance on limiting solar gains, and heat removal are enclosed in **Appendix C** to this document where relevant.

8.0 External Amenity Noise Level Assessment

It is generally accepted that private amenity spaces i.e. gardens, should have an area within them such that daytime noise levels are below the lower guideline value of ≤50 dB $L_{Aeq,16\ hour}$ to provide a suitable climate for leisure and relaxation, and not exceed an upper limit of 55dB $L_{Aeq,\ 16\ hour}$

However, it is not necessarily essential for the entire garden to achieve this, nor is it often practical in environments with relatively high prevailing noise levels to do so particularly near to key transportation links.

Indeed BS8233:2014 states that *"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 $L_{Aeq,16hr}$". The standard continues… "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 but should not be prohibited."*

As such, it is normally considered reasonable to provide mitigation measures to protect external amenity where external noise levels would otherwise exceed 50-55 dB $L_{Aeq,T}$ on the basis that part of the garden will achieve these levels.

The below noise model presented in **Figure 8-1** indicates the areas proposed for amenity spaces across the development.

Figure 8-1: Noise Model– Daytime-Garden Amenity Noise Levels dB $L_{Aeq,\ 16\ hour}$

As such the majority of gardens would be expected to have noise levels below the lower threshold for external amenity noise level guidance from BS8233 and ProPG of 50dB $L_{Aeq,\ 16\ hour}$,

Some limited amenity areas towards the western site boundary will fall between the lower 50dB and upper 55dBA $L_{Aeq,}$ 16-hour thresholds.

However the provision of standard close boarded garden fencing to amenity areas (minimum surface mass 10kg/m^2) would be expected to mitigate noise levels into all private amenity spaces to <50dB $L_{Aeq,T}$ from the outset.

Therefore, the BS8233:2014 external amenity guidelines would be expected to be met for the Proposed Development.

9.0 Mechanical Plant and Services Atmospheric Design Noise Limits

9.1 Overview-Plant and Services Provision

The proposed development dwellings may incorporate building services plant which can potentially vent to external locations or have externally located plant items.

These can produce audible noise and may require noise control measures.

Therefore, to protect existing sensitive receptors in the vicinity of the site the below noise design limits should be adhered to for residential plant and services servicing houses and dwelling, such as air source heat pumps (ASHP), Mechanical Ventilation and Heat Recovery (MVHR) or Mechanical Extract Ventilation (MEV).

Based upon review of the survey data captured at NMP1 is indicated as having typically lower median dB $L_{A90,T}$ background sound levels and is also nearest to existing sensitive dwellings, these noise levels are summarised in the table below.

Table 9-1: Typical Background Sound Levels

Period	Modal dB L_{A90}
Daytime 07:00-23:00	39
Night-time 23:00-07:00	20

BS4142 states:

> *"Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night."*

On this basis consideration is given to the internal ambient noise level limits from BS8233:2014 of 35dB $L_{Aeq,}$ and 30dB L_{Aeq} day and night respectively. Generally, receptors will be internal to existing dwellings particularly at night.

Thus, assuming (worst case) a partially open window for background ventilation at existing dwellings provides an insertion loss of 13dB, provided new noise sources are at least 10 dB below these levels internally impacts can be expected to be low in magnitude as experienced at sensitive receptors.

On this basis the below limits are suggested.

9.2 Plant and Services Design Limits

It is there proposed to control daytime building plant and services emissions as per the table below across the site to protect residential amenity at the nearest existing dwelling.

Table 9-2 Derived New Plant and Services Noise Limits

			s	
Daytime 07:00-23:00	38	38-13=25	-10	Low
Night Time 23:00-07:00	33	33-13=20	-10	Low

Therefore, based on the guidance provided, if plant and services were designed to the above design rating level limit would constitute a “Low Impact” when assessed in accordance with BS 4142 and considering BS 8233:2014.

The external design rating level limits above are ‘free-field’ levels at any height above ground and 1.0 m from the nearest noise sensitive property façade.

It applies to the overall cumulative operation of building services plant associated with the scheme without any specific tone or character.

It must be considered that the above represents a cumulative rating level limit and therefore individual items of plant should be designed to provide sufficient margin below this for the cumulative level from all simultaneously operational plant to not exceed the above.

If the plant noise will contain specific tones or intermittent character, then further penalties should be applied as per the guidance in BS 4142 during assessment.

9.2.1 Pumping Station

It is understood the site is likely to feature a pump station within the northwest area of the site.

The above design limits within **Table 9-2** would also be considered reasonable in context for this provision.

Presently no specific details of the station are available so as to undertake detailed assessment, however it is anticipated this can be accommodated at detailed planning stage or controlled via a suitably worded planning condition in line with the recommendations made within the section of the report and **Table 9-2** above.

10.0 Site Related Road Traffic Noise Assessment

SLR have consulted with the transport engineer for the project and on this basis, it is considered that any potential noise impacts related to road traffic Increases as a result of the development will be negligible and <1dB where traffic on the adjacent road network does not increase by more than 20% as a result of the development. This is not significant in respect to the assessment methodologies presented in DMRB and CRTN.

11.0 Conclusions

This document has been prepared to inform noise in relation to the proposed development.

A BS4142 assessment considering context has been undertaken in respect to RLBFJ activities to the west. It is concluded in context that no significant adverse impacts are anticipated, and thus complaints are unlikely from occupants at new dwellings and that the existing commercial enterprise will not be imposed upon by the Proposed Development.

The noise levels exhibited at the western boundary as well as those generally from road traffic noise in the surround have been considered within the ProPG Stage 1 assessment.

The initial site noise risk assessment has been categorised in the worst case as ‘low risk’ on the future occupants of the new noise sensitive development, with much of the site falling into “negligible risk” to the majority interior.

Stage 2 assessment in accordance with ProPG has reviewed a good acoustic design process, internal ambient noise levels, external amenity areas and other matters.

Commensurate design specifications have been established considering current industry guidance. It has been realised that suitable internal and external amenity standards in accordance with PropG and BS 8233:2014 can be readily achieved by the scheme.

In addition, the acoustic design requirements of Approved Document O Overheating, can be achieved from the outset at all dwellings with no specific additional acoustic design measures.

On the basis that design guidance within this report has been adopted, it follows that any “significant adverse” noise impacts will be avoided in the finished development as to accord with overarching national and local planning requirements for new residential development.

A recommendation is made to the decision maker to grant with noise conditions if necessary to ensure that significant adverse effects will be avoided for the proposed dwellings, by use of a commensurate scheme of control as outlined within this report.

12.0 Closure

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

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

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

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

The SQP confirms that the relevant measurements and calculations:

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

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

Regards,

SLR Consulting Limited

Claire Bye, BSC. (Hons) AMIOA
Senior Acoustic Consultant

Vince Taylor, BSc. (Hons) MSc MIOA
Technical Director-Acoustics

Appendix A Glossary of Terminology

Noise Impact Assessment

Land E. Beechlands Road, Medstead

Bargate Homes Limited

SLR Project No.: 433.000068.00004

29 April 2024

The human ear can detect a very wide range of pressure fluctuations, which are perceived as sound. In order to express these fluctuations in a manageable way, a logarithmic scale called the decibel, or dB scale is used. The decibel scale typically ranges from 0dB (the threshold of hearing) to over 120dB. An indication of the range of sound levels commonly found in the environment is given in the following table.

Table A-1: Sound Levels Commonly Found in the Environment

Sound Level	Location
0 dB(A)	Threshold of hearing
20 to 30 dB(A)	Quiet bedroom at night
30 to 40 dB(A)	Living room during the day
40 to 50 dB(A)	Typical office
50 to 60 dB(A)	Inside a car
60 to 70 dB(A)	Typical high street
70 to 90 dB(A)	Inside factory
100 to 110 dB(A)	Burglar alarm at 1m away
110 to 130 dB(A)	Jet aircraft on take off
140 dB(A)	Threshold of Pain

Acoustic Terminology

dB (decibel) — The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (of 20 µPa).

dB(A) — A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.

$L_{Aeq, T}$ — $L_{Aeq, T}$ is defined as the notional steady sound level which, over a stated period T, would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.

$L_{A10, T}$ & L_{A90} — If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The Ln indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L10 is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L90 is the 'average minimum level' and is often used to describe the background noise. It is common practice to use the L10 index to describe traffic noise.

$L_{Amax(F)}$ — $L_{Amax(F)}$ is the maximum A-weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.

Appendix B Survey Graphical Summary Results

Noise Impact Assessment

Land E. Beechlands Road, Medstead

Bargate Homes Limited

SLR Project No.: 433.000068.00004

29 April 2024

Figure C - 1: Time History Graph – Location NMP1, dB

Figure C - 2: Time History Graph – Location NMP2, dB

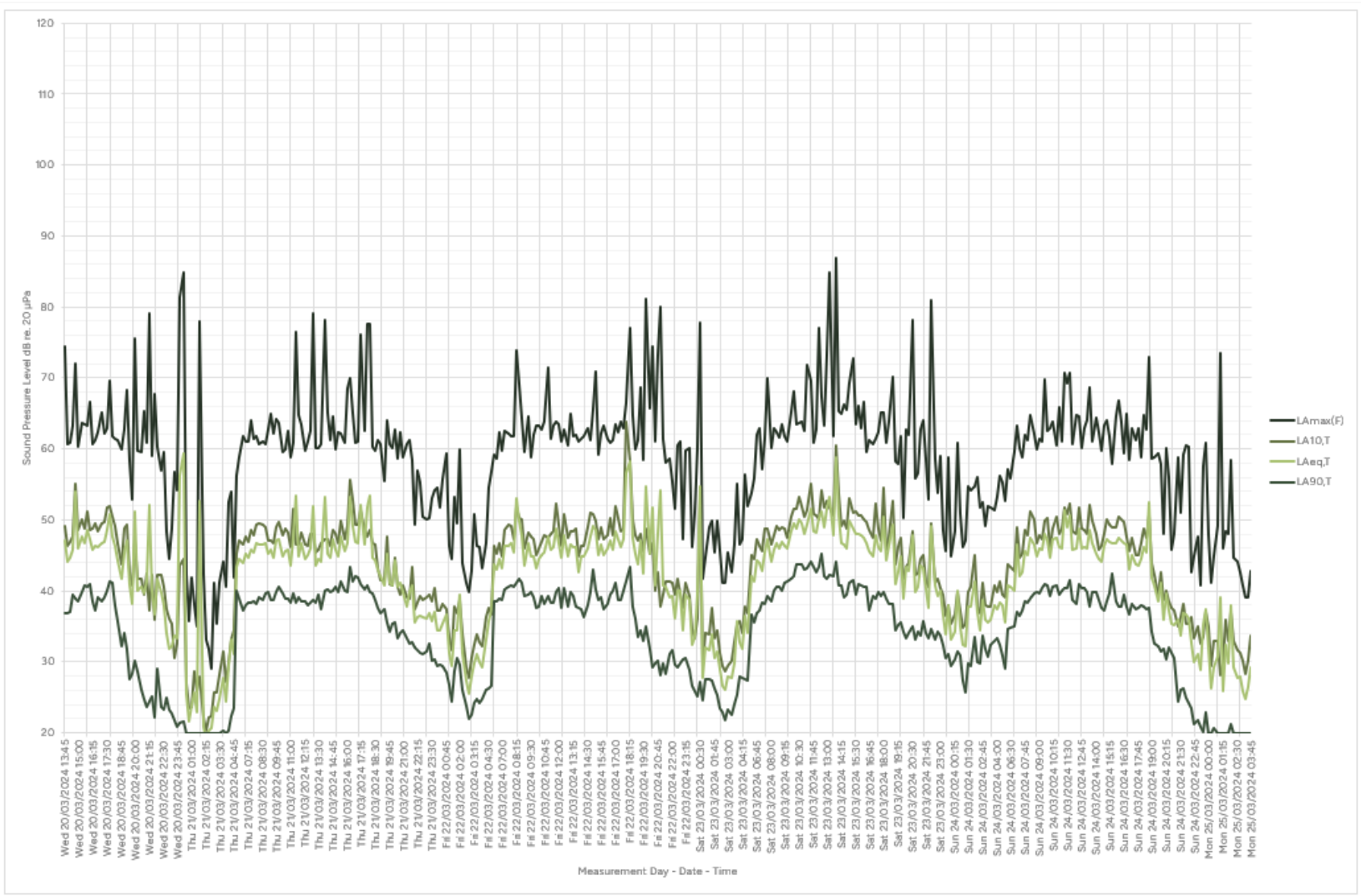


Figure C - 3: Time History Graph – Location NMP3, dB

Figure C - 4: Time History Graph – Location NMP4, dB

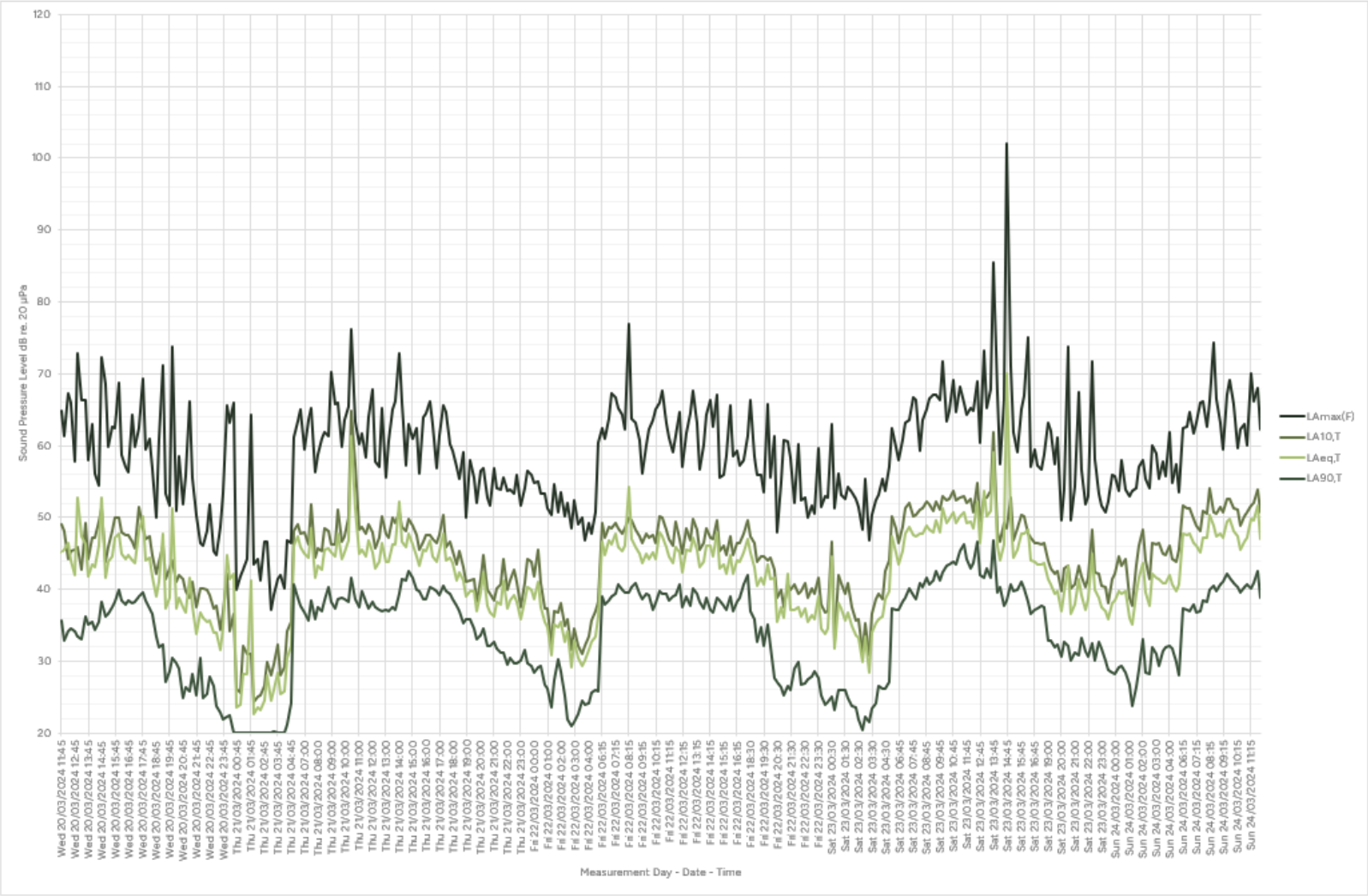
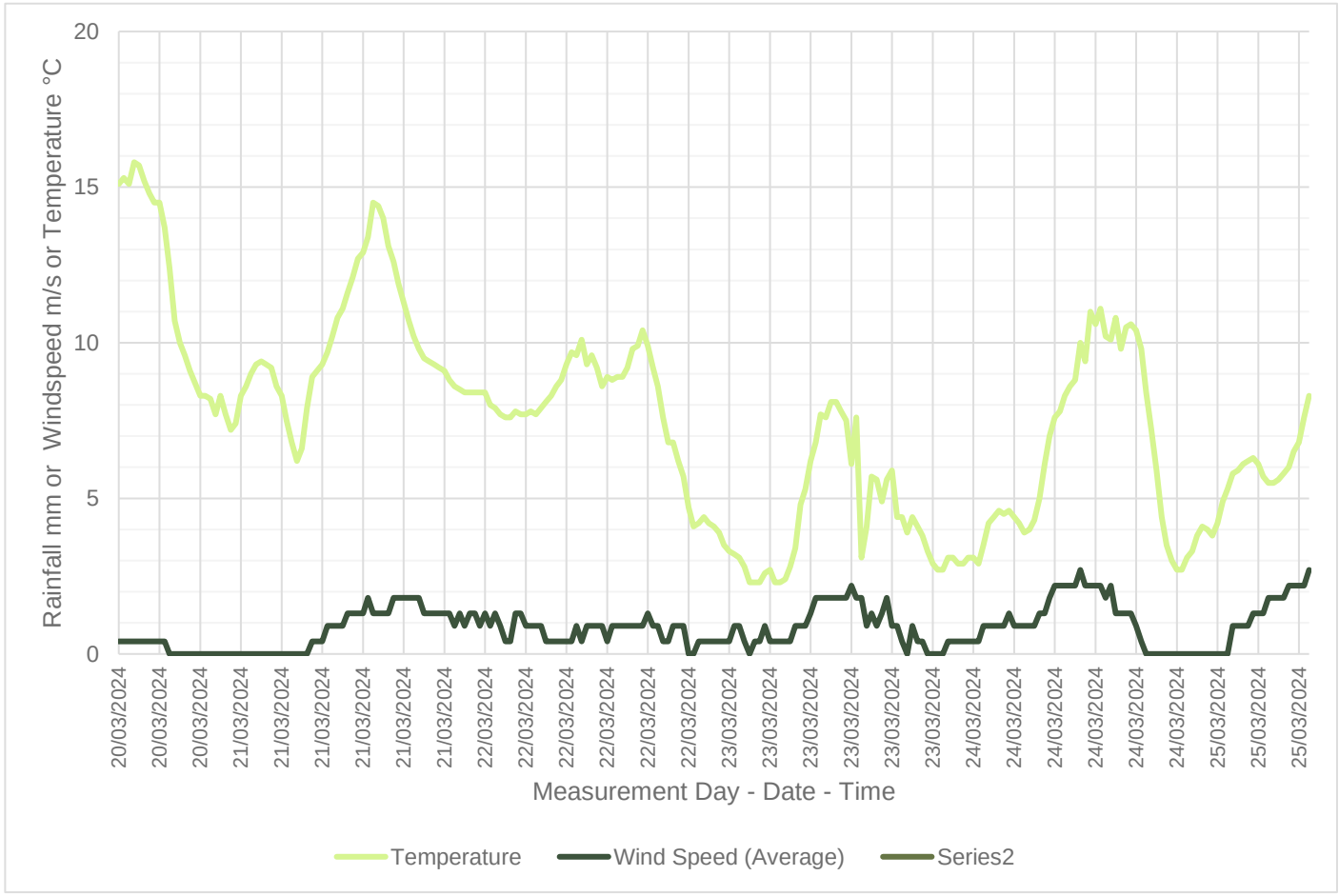


Figure C - 5: Weather Station Data



Appendix C Overheating Control Additional Guidance

Noise Impact Assessment

Land E. Beechlands Road, Medstead

Bargate Homes Limited

SLR Project No.: 433.000068.00004

29 April 2024

Acceptable Strategies for Reducing Overheating Risk

Limiting solar gains

Solar gains in summer should be limited by any of the following means.

Fixed shading devices, comprising any of the following

i. i. Shutters.

ii. External blinds.

iii. Overhangs.

iv. Awnings.

Glazing design, involving any of the following solutions.

i. Size.

ii. Orientation.

iii. g-value.

iv. Depth of the window reveal.

Building design

– for example, the placement of balconies.

Shading provided by adjacent permanent buildings, structures or landscaping.

Although internal blinds and curtains provide some reduction in solar gains, they should not be taken into account when considering whether requirement O1 of ADO has been met.

Foliage, such as tree cover, can provide some reduction in solar gains.

However, it should not be taken into account when considering whether requirement O1 of ADO has been met.

NOTE: Examples of solar shading and their effectiveness are provided in the Building Research Establishment's BR 364 Solar Shading of Buildings

Removing Excess Heat

Excess heat should be removed from the residential building by any of the following means in order of hierarchy (likely controlled by noise risk)

a. Opening windows (the effectiveness of this method is improved by cross-ventilation).

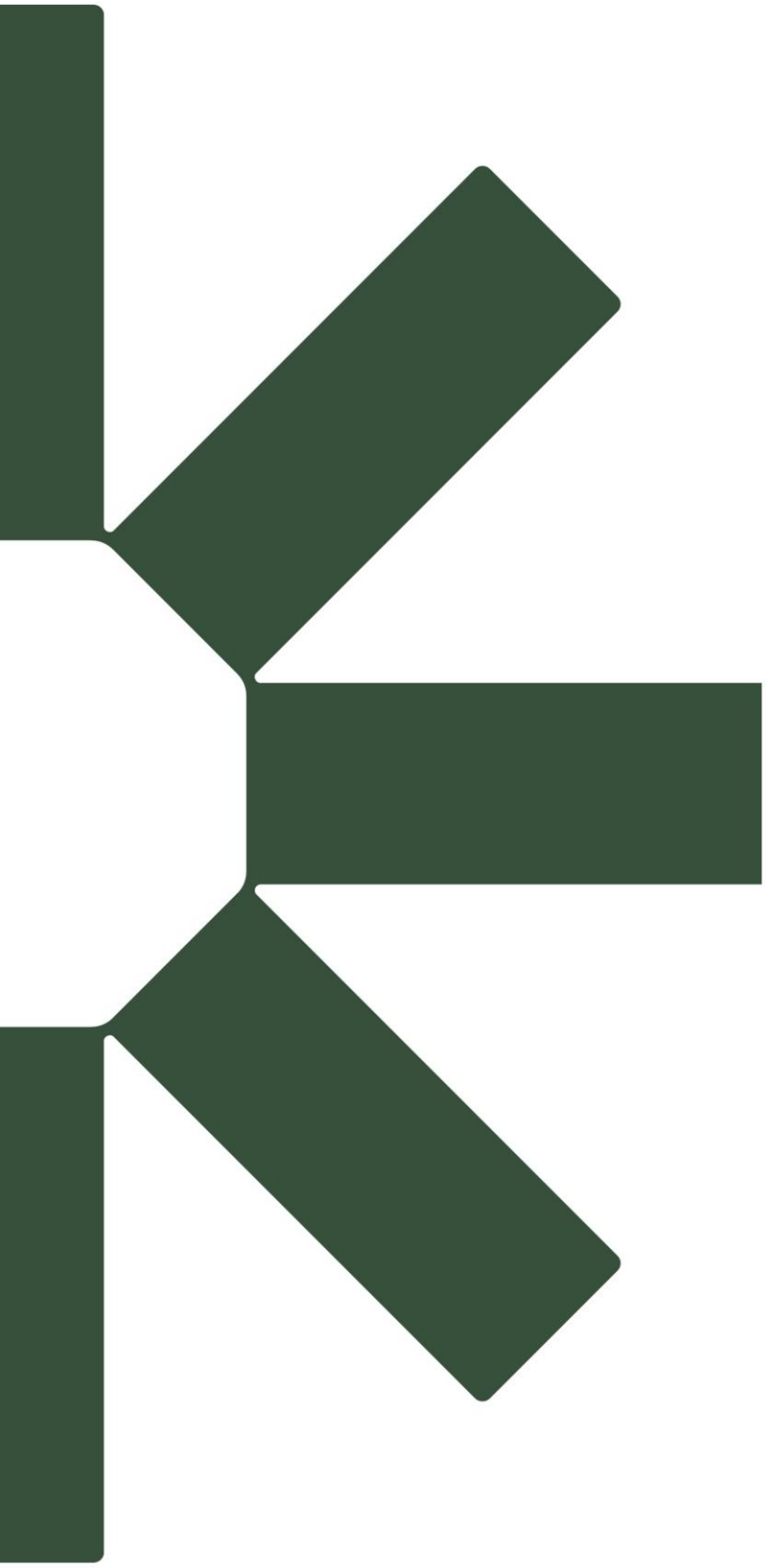
b. Ventilation louvres in external walls.

c. A mechanical ventilation system.

d. A mechanical cooling system

The building should be constructed to meet requirement O1 of ADO using passive means as far as reasonably practicable.

It should be demonstrated to the building control body that all practicable passive means of limiting unwanted solar gains and removing excess heat have been used first before adopting mechanical cooling.



Making Sustainability Happen