Proposed Residential Development Noise Impact Assessment

Land to the west of Thurnscoe Bridge Lane and South of Derry Grove, Thurnscoe, Barnsley S63 0TT

Avant Homes Yorkshire

Unit 2, Mariner Court, Peel Avenue, Durkar, Barnsley WF4 3FL

Prepared by:

SLR Consulting Limited

15 Middle Pavement, Nottingham, NG1 7DX

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Basis of Report

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1.0 Introduction

Avant Homes Yorkshire has appointed SLR Consulting Limited (SLR) to undertake noise impact assessment for a proposed residential development on Land to the west of Thurnscoe Bridge Lane and South of Derry Grove, Thurnscoe, Barnsley S63 0TT (the Site).

This document has been prepared to support a full planning application with Barnsley Metropolitan District Council (BMDC) for the creation of 296 No. new residential dwellings.

This assessment has been prepared in review of noise impacts from transportation sources and commercial premises on the intended occupiers of the proposed development. It has been developed in accordance with Professional Practice Guidance (ProPG) Planning and Noise – New Residential Development (2017).

This report has been prepared and checked by suitably qualified persons as defined in Section 9.0. 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.

2.0 Site Description

The development Site is located off Thurnscoe Bridge Lane, in Thurnscoe, Barnsley South Yorkshire, and covers an area of approximately 13.7 hectares being approximately 8.6 miles east of Barnsley town centre and forming part of the (HS52) allocation within the Barnsley Metropolitan Borough Council Local Plan (Adopted January 2019)[1].

The Site is greenfield in nature having been used for agricultural use. The allocation parcel slopes from north to south as well as down towards the western boundary. It is bounded by existing residential dwellings to the north and bounded by established trees on the West, South and eastern boundaries.

A former railway embankment is present on the southern side of the main land parcel along the adjacent Thurnscoe Rifle Club, Wallis Metals and Highgate Stadium. The southwestern triangular portion of the site (~3.7 ha) is proposed to be utilised in part for biodiversity mitigation being relatively flat in nature and bounded by Thurnscoe Dike to the south.

Access to the site is provided from the existing adopted highway running adjacent the eastern boundary; Thurnscoe Bridge Lane. A public right of way crosses the site North to South leading from the existing POS on Derry Grove linking through to the existing public bridleway on the Southern boundary.

Figure A below has been prepared to highlight the geolocated development land with a red site boundary amongst an aerial view for context.

Figure A: Site Location with Aerial View for Context

[1] https://www.barnsley.gov.uk/media/17249/local-plan-adopted.pdf

2.1 Incident Noise Sources

The Site is bound by transportation sources as including Thurnscoe Bridge Lane immediately east and an elevated section of the Wakefield Line railway nominally 100 m east, along with the A635 nominally 225 m south. These sources have the potential to cause transportation noise impacts on the proposed development land.

To the south of the Site resides commercial premises of particular interest to this assessment, as including Thurnscoe Rifle Club (Nicholas Lane, S63 9AT), Wallis Metals (Nicholas Lane, S63 9AS) and Highgate Stadium.

The former railway embankment to the south of the Site is disused, therefore does not carry rail traffic.

2.2 Proposed Development

Appendix B has included proposed scheme development plans.

The proposed development seeks of 296 No. new residential dwellings residential dwellings with single access route from Thurnscoe Bridge Lane to the east.

This noise assessment has been based on the highlighted development proposals as obtained at the earliest opportunity of development planning. The below layout of Figure B has been considered as part of this noise and vibration impact assessment.

Figure B: Proposed Development

2.3 Land Allocation

The Site has been allocated for residential use within the Barnsley Local Plan (Adopted January 2019) reference HS52. The following commentary has been provided for noise, mindful of BMDC Strategic Housing and Employment Land Availability Assessment (SHELAA) (2016 update)[2].

BMDC's SHELAA has given focus to industrial uses, or any other potential polluting uses, defining land categorisation based on:

- **Site has no bad neighbours**: no surrounding neighbours which would be incompatible with future development (e.g. noisy or polluting uses).
- **Site has bad neighbours with potential for mitigation**: surrounding neighbours which would be incompatible with future development, but with opportunities for mitigation e.g. landscaping, buffers etc.
- **Site has bad neighbours with no potential for mitigation**: surroundings neighbours which would be incompatible with future development, mitigation is not possible.

BMDC SHELAA Appendix B[3] has subsequently defined allocation reference 183 "*Land to the west of Thurnscoe Bridge Lane and South of Derry Grove, Thurnscoe, Barns, S63 0TT"* under the summary that the "*site has no bad neighbours"*. However, it remains that there is no evidence to support the allocation with respect to noise, other than the above-listed categorisation of adjacent neighbours and compatibility.

It remains one subject of this assessment to understand if the SHELAA has appropriately accounted for noise pollution to this allocation. For example, as identified in Section 2.2, to the south there is a gun club, scrap metal works and disused dog track, whereby it could be outwardly considered that the *"site has bad neighbours with potential for mitigation".*

The consideration of adjacent commercial and industrial sources has remained important for proposed residential use when considering overarching Agent of Change requirements under Paragraph 193 of National Planning Policy Framework. Direct liaison has therefore been attempted with the relevant commercial site operators to understand commensurate noise risks in this assessment.

2.4 Pre-Application Enquiry

Pre-application advice regarding a proposed residential development at the allocated Site was undertaken by the applicant in July 2024, under reference: 2024\ENQ\00177.

The relevant Pollution Control Officer included the following commentary, of *"no overall objection to the proposal subject to conditions being attached to any future planning permission relating to the submission of a noise impact assessment".*

It has been subsequently noted that a noise impact assessment was not requested by BMDC within list of documents and plans required to validate the application. On this basis, it has been considered that noise is not a primary concern of BMDC for this land allocation.

[2] https://www.barnsley.gov.uk/media/17029/eb26-shelaa2016update-main-report.pdf
[3] https://www.barnsley.gov.uk/media/17083/eb26-shelaa2016update-appendix-b.pdf

3.0 Planning and Noise Guidance

3.1 Noise Policy Statement for England (NPSE)

Inter alia, the NPSE *"seeks to clarify the underlying principles and aims in existing policy documents, legislation and guidance that relate to noise".* The aims and this statement apply to all forms of noise including environmental noise, neighbour noise and neighbourhood noise. These noise types are qualified from the NPSE as follows:

- "Environmental noise" includes noise from transportation sources.
- "Neighbour noise" includes noise from inside and outside people's homes; and
- "Neighbourhood noise" which includes noise arising from within the community such as industrial and entertainment premises, trade and business premises, construction sites and noise in the street.

The Statement sets out the long-term vision of the Government's noise policy, which is to *"promote good health and a good quality of life through the effective management of noise within the context of policy on sustainable development."*

It is recognised that the statement expresses the long-term desired policy outcome, whereby using the words of "promote" and "good" recognises that it is not possible to have a single objective noise-based measure that is either mandatory or applicable to all sources of noise in all situations.

The concept of the "effective management of noise" applies to all types of noise and that the solution could be more than simply minimising the noise.

The NPSE provides definitions of health and quality of life as follows:

> *"2.12 The World Health Organisation defines health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity, and recognises the enjoyment of the highest attainable standard of health as one of the fundamental rights of every human being.*
>
> *2.13 It can be argued that quality of life contributes to our standard of health. However, in the NPSE it has been decided to make a distinction between "quality of life" which is a subjective measure that refers to people's emotional, social and physical wellbeing and "health" which refers to physical and mental wellbeing.*
>
> *2.14 It is recognised that noise exposure can cause annoyance and sleep disturbance both of which impact on quality of life. It is also agreed by many experts that annoyance and sleep disturbance can give rise to adverse health effects. The distinction that has been made between 'quality of life' effects and 'health' effects recognises that there is emerging evidence that long term exposure to some types of transport noise can additionally cause an increased risk of direct health effects. The Government intends to keep research on the health effects of long-term exposure to noise under review in accordance with the principles of the NPSE."*

The policy promotes the effective management and control of noise, within the context of Government policy on sustainable development and includes three aims to:

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

This Statement adopts established concepts from toxicology that are currently being applied to noise impacts. This concept details effect levels, at which an exposure may be classified

into a specific category. The classification categories as detailed within the NPSE are as follows:

- No Observed Effect Level (NOEL) - the level below which no effect can be detected. Below this level no detectable effect on health and quality of life due to noise can be established;
- Lowest Observable Adverse Effect Level (LOAEL) - the level above which adverse effects on health and quality of life can be detected; and
- Significant Observed Adverse Effect Level (SOAEL) - the level above which significant adverse effects on health and quality of life occur.

The second aim of the NPSE to *"mitigate and minimise adverse impacts on health and quality of life"* refers to the situation where noise impact lies somewhere between the LOAEL and SOAEL. This requires that all reasonable steps are taken to mitigate adverse effects on health and quality of life while accounting for the guiding principles of sustainable development. The NPSE states *"this does not mean that such adverse effects cannot occur".*

In defining the upper limit of SOAEL the NPSE states that *"it is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all source of noise in all situations. Consequently, the SOAEL is likely to be different for difference noise sources, for different receptor and at different times…"*. Consequently, values of SOAEL will differ between sources and situations.

3.2 National Planning Policy Framework (NPPF)

The National Planning Policy Framework (NPPF) was introduced by The Department for Communities and Local Government in March 2012, with the latest revision dated 19th 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 Section 15 conserving and enhancing the natural environment, the NPPF states the requirement to prevent unacceptable environmental impacts including noise:

> *"180. Planning policies and decisions should contribute to and enhance the natural and local environment by: …*
>
> *e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability…"*

Paragraph 191 of the NPPF further provides commentary on noise as follows:

> *"191. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*
>
> *a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life*[69]

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…"

Foot Note 69 - See Explanatory Note to the Noise Policy Statement for England (Department for Environment, Food & Rural Affairs, 2010).

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.

3.2.1 Agent of Change Principle

The Agent of Change principle has been defined in recent revisions of the NPPF to explain that new development should not result in unreasonable restrictions being placed on existing and established businesses. The onus for mitigation for any new development has been required to lie with the developer, rather than the business.

Paragraph 193 of the NPPF has been noted to state:

"Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed."

This principle has been deemed necessary to follow for the proposed residential development near to existing commercial sources. The guidance has provided that residential development should be suitably mitigated against commercial uses, to support the coexistence of noise-sensitive and noise-generating uses.

3.3 Planning Practice Guidance – Noise (PPGN)

PPGN provides guidance on how planning can manage potential noise impacts in new development, with interpretation and implementation of planning policy contained in the NPPF and NPSE. This was introduced in 2014 with most recent version issued in July 2019.

The PPGN noise exposure hierarchy table introduces a new threshold of the NOAEL no observed adverse effect level, being between the NOEL and LOAEL and where the noise has no adverse effect where exposure to it does not cause any change in behaviour, attitude or other physiological response.

The PPGN clearly established whether noise is likely to be a concern, following policy statements and requirements of the NPSE and NPPF with additional categorisation and guidance as follows:

"At the lowest extreme, when noise is not perceived to be present, there is by definition no effect. As the noise exposure increases, it will cross the 'no observed effect' level. However, the noise has no adverse effect so long as the exposure does not cause any change in behaviour, attitude or other physiological responses of those affected by it. The noise may slightly affect the acoustic character of an area but not to the extent there is a change in quality of life. If the noise exposure is at this level no specific measures are required to manage the acoustic environment.

As the exposure increases further, it crosses the 'lowest observed adverse effect' level boundary above which the noise starts to cause small changes in behaviour and attitude, for example, having to turn up the volume on the television or needing

to speak more loudly to be heard. The noise therefore starts to have an adverse effect and consideration needs to be given to mitigating and minimising those effects (taking account of the economic and social benefits being derived from the activity causing the noise).

Increasing noise exposure will at some point cause the 'significant observed adverse effect' level boundary to be crossed. Above this level the noise causes a material change in behaviour such as keeping windows closed for most of the time or avoiding certain activities during periods when the noise is present. If the exposure is predicted to be above this level the planning process should be used to avoid this effect occurring, for example through the choice of sites at the plan-making stage, or by use of appropriate mitigation such as by altering the design and layout. While such decisions must be made taking account of the economic and social benefit of the activity causing or affected by the noise, it is undesirable for such exposure to be caused.

At the highest extreme, noise exposure would cause extensive and sustained adverse changes in behaviour and / or health without an ability to mitigate the effect of the noise. The impacts on health and quality of life are such that regardless of the benefits of the activity causing the noise, this situation should be avoided."

It is qualified further to the above statements that the word "level" does not necessarily refer to a single value of noise exposure and that several factors may need to be considered to determine what noise would amount to an adverse or significant adverse effect. Specifically stating:

"Although the word 'level' is used here, this does not mean that the effects can only be defined in terms of a single value of noise exposure. In some circumstances adverse effects are defined in terms of a combination of more than one factor such as noise exposure, the number of occurrences of the noise in a given time period, the duration of the noise and the time of day the noise occurs."

PPGN also provides additional guidance in what is required from the agent of change following circumstances described by Paragraph 187 of the NPPF. It states that the agent of change must *"define clearly the mitigation being proposed to address any potential significant adverse effects that are identified"*.

The guidance also provides there are four broad types of mitigation including:

- *"engineering: reducing the noise generated at source and/or containing the noise generated;*
- *layout: where possible, optimising the distance between the source and noise-sensitive receptors and/or incorporating good design to minimise noise transmission through the use of screening by natural or purpose built barriers, or other buildings;*
- *using planning conditions/obligations to restrict activities allowed on the site at certain times and/or specifying permissible noise levels differentiating as appropriate between different times of day, such as evenings and late at night, and;*
- *mitigating the impact on areas likely to be affected by noise including through noise insulation when the impact is on a building."*

Use of toxicology thresholds of NOEL, LOAEL and SOAEL for the assessment of noise impacts is reinforced within PPGN, which includes a noise exposure hierarchy table to define human perception at these effect levels, as titled *"when noise could be a concern"* and shown below in Table A.

Table A: 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 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

3.4 ProPG Planning and 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.

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* (BS 8233) and *The World Health Organisation Guidelines for Community Noise* (1999).

Table B: ProPG Internal Ambient Noise Levels

Activity	Location	07:00 – 23:00 dB $L_{Aeq,16h}$	23:00 – 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.			

3.4.1 Application for Commercial Sources

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 guidance has advocated the methodology of BS 4142[4] in establishing the impact of industrial and/or commercial sound. If rated as lower than adverse subject to context following BS 4142, its contribution may be included in the degree of risk established for the Site. If considered to be dominant, such as being rated at least adverse subject to context following BS 4142, then the ProPG risk assessment should not be applied to the industrial or commercial noise component. In low-risk cases a subjective judgement of dominance has

[4] British Standard BS 4142:2014 +A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound.

been advocated as sufficient, based on the audibility of the industrial and/or commercial sound.

The assessment method of ProPG has been applied to the residential development to understand the risks and design requirements to mitigate the proposal from environmental noise sources. Where commercial impacts have been viewed satisfied by the design of the scheme and remain less than adverse including context, then the ProPG Stage 1 risk assessment allows that any commercial impacts may be included within its assessment.

> *"In the special case where industrial and/or commercial noise is present on the Site but is "not dominant" (i.e. where the impact would be rated as lower than adverse (subject to context) if a BS4142:2014 assessment was to be carried out), its contribution may be included in the noise level used to establish the degree of risk in Stage 1 and may also be included in the consideration of Stage 2 Element 2 Internal Noise Level Guidelines (and if included, this should be clearly stated)."*

3.4.2 Acoustics Ventilation and Overheating Guide (2020)

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.

3.5 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. It is an indication that the specific sound source has 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.

4.0 Environmental Survey Summary

The following section has referred to a study of environmental sound levels carried out between Saturday 20th and Tuesday 23rd April 2024.

This included consideration of on-Site and off-Site sound level measurements to characterise the incident levels of sound from sources of transportation, industrial and commercial nature.

4.1 Equipment and Measurements

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

The sound level meter was calibrated before the measurements using the handheld acoustic calibrator and further checked upon completion of the survey. No significant drift was observed with calibration offsets of ≤ 0.20 dB. The calibration chain of equipment has been maintained traceably to national standards, no greater than one year for sound calibrators and two years for sound level meters.

Table C: Sound Monitoring Equipment

Location	Description	Serial No.
1	Cirrus CR:171B Class 1 Sound Level Meter	G400059
	Cirrus CR:515 Class 1 Acoustic Calibrator	99960
2 & Off-Site	Cirrus CR:171B Class 1 Sound Level Meter	G300561
	Cirrus CR:515 Class 1 Acoustic Calibrator	87922
3	Cirrus CR:171B Class 1 Sound Level Meter	G302667
	Cirrus CR:515 Class 1 Acoustic Calibrator	94806
	Davis Instruments – Vantage Vue Weather Station: 6250UK	MT211213036

Sound pressure levels were primarily measured on-Site with respect to incident noise sources and proposed development housing locations. All sound pressure level data was recorded at 1.5 m above ground and in free-field conditions.

- Location 1: Within the east boundary of the Site and measured 10 m from the edge of Thurnscoe Bridge Lane at approximate (X,Y) (445621, 404891). The purpose of this measurement location was to understand exposure from the adjacent road. The location was viewed to be a representative worst case, at the curtilage of proposed residential driveways.
- Location 2: To the south of the Site on the boundary line, adjacent to raised bunding nominally 60 m from the centre of Thurnscoe Rifle Club at approximate (X,Y) (445380, 404770). The purpose of this measurement was to understand exposure from the adjacent rifle ranges, from Saturday morning.
- Location 3: Further along the south boundary at nominal (X,Y) (445551, 404800) to understand the relative level of other commercial activities to the south of the Site during weekend and weekend periods.

No monitoring locations were attempted to the north of the Site given an absence of incident, environmental noise sources in that area of land. Furthermore, the Site was notably open to the north and included various pathways to the adjacent residential area.

The north of the Site was therefore not viewed to be particularly informative or secure, for the purposes of establishing an assessment baseline.

The on-site monitoring Locations have been shown on the plan of Figure C below.

Figure C: Baseline Monitoring Locations

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

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

The sound level meters were configured to record 1/16th second time history as allowing the recalculation of other time-history metrics in following of overarching guidance and manufacturers recommendations. They were also provided with audio recording enabled to identify and attribute sources of sound in the absence of personnel attendance.

Graphical results describing unattended have been provided for the above-listed sound level metrics at 15-minute histories within Appendix C.

4.2 Weather Conditions

A weather station was deployed at Location 3 and shown graphically within Appendix C to explain that temperatures ranging from 5 – 13 °C. Average and gust wind speeds fell below 5 m/s for most of the study, with those periods on Tuesday morning least acceptable due to elevated gust speeds regularly above 5 m/s.

The prevailing wind direction was east-north-easterly to north-north-westerly as providing neutral-positive vectors from transportation sources to the east and neutral-negative vectors from commercial and industrial sources to the south.

The presence of rainfall was noted during the Monday morning of the study, causing wet road surfaces and elevated sound levels from road traffic.

Conditions were viewed to be generally acceptable to environmental measurements, except in the cases of rainfall during Monday morning and elevated wind during Tuesday morning. In the avoidance of doubt any data associated with adverse conditions has been removed from the following analysis.

4.3 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 at all Locations to retrospectively understand the prevailing sound climate in unattended conditions.

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

- Road traffic noise from Thurnscoe Bridge Lane was dominant at Locations 1 to 3, comprising of low-speed traffic at 30 mph.
- Sound from the natural environment included birdsong.
- Intermittent rail traffic passing was audible along the elevated section of the Wakefield Line to the east. This included trains at low to moderate speed.
- Occasional overhead aircraft noise was noticeable from high altitude planes.
- No sounds of an industrial or commercial nature were readily noticeable and/or discernible to the south of the Site during times of site attendance.
- Minor pops or bangs associated with Thurnscoe Rifle Club at Location 2.

4.3.1 Dominance of Industrial and Commercial Sound

A site walkover at different times of attendance (in addition to the post-measurement review of audio recordings) did not highlight that industrial and/or commercial sound was present and dominant on the application Site during times of environmental surveying, beyond the residual sound level comprising of transportation noise.

Notwithstanding, operations at the Thurnscoe Rifle Club (Nicholas Lane, S63 9AT) and Wallis Metals (Nicholas Lane, S63 9AS) have been viewed necessary to appraise in more detail in context to the proposal.

This has included considerations of Agent of Change in Section 5.0, with accompanying measurements and assessments.

4.4 Baseline Survey Results

4.4.1 Period Averages and Maxima

Period average summaries for the purposes of transportation noise considerations have been provided within Table D below.

Table D: Summary of Period Average Sound Levels

Date Range	Location	Period	Time HH:MM	Average dB $L_{Aeq,\ T}$	Maximum dB $L_{Amax(F)}$
Sat 20/04/24 to Tues 23/04/24	1	Day	07:00 – 23:00	59 – 61	-
		Night	23:00 – 07:00	51 – 55	70 – 72
	2	Day	07:00 – 23:00	44 – 49	-
		Night	23:00 – 07:00	41 – 45	62 – 64
	3	Day	07:00 – 23:00	49 – 51	-
		Night	23:00 – 07:00	41 - 45	59 – 61

The above-listed data has been established considering:

- Daytime over entire 16-hour periods between 07:00 – 23:00.
- Night-time averaged over an 8-hour period between 23:00 – 07:00.
- Maxima based upon the 10th highest value per 2-minute period within each 8-hour night 23:00 – 07:00, in following of an appropriate numerical method[5].

A difference of greater than 15 dB between dB $L_{Amax(F)}$ and dB $L_{Aeq,8h}$ night values has been established at Location 1. This has promoted a potential significance of maximum sound levels from transportation sources beyond the average equivalent levels for plots near Thurnscoe Bride Lane. These maxima have been attributed to road traffic passing at moderate speed, which was prevalent at night.

At Locations 2 and 3, the contribution of night maxima has been attributed to sources other than transportation (such as birdsong and the dawn chorus). Notwithstanding, the absolute measured values have not been viewed particularly impacting with respect to the acoustic design in residential buildings.

4.4.2 Residual and Background Sound Levels

The 'typical' residual and background sound levels have been reported in Table E in accordance with BS 4142, with background levels as established from histograms of the recorded dB $L_{A90,15min}$ data at Locations 1, 2 and 3 and provided within Appendix C.

In line with Section 8.1.4 of BS 4142, the monitoring duration has reflected the range of sound levels for the period assessed. In practice, there has been no single level for background sound where this is a fluctuating parameter, although a representative value of the period has been used. Note this has not been calculated as either the lowest or mean average value of dB $L_{A90,T}$ according to the assessment standard, where a representative value has been considered.

[5] 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.

Table E: Summary of Residual and Background Sound Levels

Measurement Details				Residual sound level dB $L_{Aeq,15min}$		Background sound level dB $L_{A90,15min}$	
Date Range	**Location**	**Period**	**Time HH:MM**	**Range**	**Typical***	**Range**	**Typical***
Sat 20/04/24 to Tues 23/04/24	1	Day	07:00 – 19:00	52 – 64	59	38 – 55	50
		Evening	19:00 – 23:00	52 – 60	56	32 – 47	44
		Night	23:00 – 07:00	28 – 65	46	25 – 49	29
	2	Day	07:00 – 19:00	40 – 58	42	34 – 46	39
		Evening	19:00 – 23:00	35 – 51	40	31 – 40	39
		Night	23:00 – 07:00	27 – 55	33	25 – 45	26
	3	Day	07:00 – 19:00	44 – 63	48	36 – 48	42
		Evening	19:00 – 23:00	40 – 53	45	32 – 43	40
		Night	23:00 – 07:00	29 – 60	36	26 – 46	27
* Typical values of background sound level have been established from counts of data from Appendix C. Typical residual sound levels have been equated at times of typical background sound.							

In the assessment of commercial and industrial noise impacts, the lower values of residual and background sound level at night have presented a tendency towards a worst-case assessment. However, it has not been possible to halt commercial sources for the purposes of measurement where further considerations have been necessary.

Those values for background and residual sound level from Locations 2 and 3 have been reviewed from the dataset in Table E as a commensurate means to establish representative levels. During these times the dataset has not altered significantly between these positions, between and into the evening period due to the influence from surrounding transportation sources. Furthermore, commercial operations were not known to have been prevailing on Sunday of the study as has been included in this dataset.

The dataset reported in Table E has therefore described levels of residual and background when the commercial operations will occur and has been considered primarily as a function of local and distant transportation sources.

5.0 Agent of Change Considerations

The incoming developer would comprise the Agent of Change, in following of Paragraph 193 of NPPF (December 2023). Consequently, the design of the proposed residential site has required consideration of the operation and associated noise from surrounding businesses. These have been considered primarily from those locations to the south, as including:

- Thurnscoe Rifle Club (Nicholas Lane, S63 9AT).
- Wallis Metals (Nicholas Lane, S63 9AS).
- Highgate Stadium.

This document has been provided further to detailed considerations of the above-listed businesses, with further contact by SLR where necessary to understand the nature of emissions or events.

5.1 Thurnscoe Rifle Club

Thurnscoe Rifle Club (TRC) were contact prior to attending Site (as reported in Section 4.0) and the timing of attendances coincided with meeting a representative for the purposes of noise measurements and assessment.

The following information has been paraphrased from direct email to explain that TRC have been in operation for a significant period and generally do not operate under any noise-related limit.

- The club has been in existence since the 1940's. It is one of a few, public outdoor shooting ranges in Yorkshire and important in the regional shooting community.
- The club's website[6] is particularly outdated.
- The licenced operating hours for the club are during daylight, 7 days per week. Members use time slots before and after work.
- There are no licence restrictions on what calibre can be used at what time.
- Some members have adapted licences allowing them to shoot 24 hours per day (understood for vermin rather than target shooting).
- The club, with full support from South Yorkshire Police, was in the process of applying to allow larger calibre firearms in April 2024.
- TRC licensing decisions are by the relevant firearms authority and not BMDC.

It has been further acknowledged that TRC have been very forthcoming to assist the detail in this assessment and assisting the Agent of Change consideration for the land allocation.

TRC have also been noted to operate in a land area immediately adjacent to a significant change in height with the footpath to the north remaining from a former section of elevated railway. The ranges have been noted with nominal land heights of 30-31 mAOD whereas the peak of the railway bund has been reviewed at 39-40 mAOD. The adjacent land area associated with the Site has been noted to steadily rise in height to the north from Location 2 at nominally 34 mAOD. The north boundary of TRC has therefore already included significant mitigation in the form of earth bunding.

[6] https://thurnscoerifleclub.wordpress.com/

5.1.1 Applicable Policy and Shooting Noise Limits

There remains an absence of national or local policy information with respect to leisure and shooting ranges, or how to assess noise from a specific operator such as a gun club.

Contact was attempted with MBDC EHO via email as part of pre-application discussion, however no response was received. This report has therefore included no contribution from MBDC on the setting of commensurate limits to judge the acceptability of TRC shooting noise against a proposed residential context.

Guidance for shooting noise levels in external amenity areas of dwellings in the UK has notably included Clay Target Guidance from the CIEH[7]. However, this has not been without acknowledging stated limitations of its scope:

> *"1.1 Limitations in scope*
>
> *The scope of this guidance is limited to clay target (pigeon) shoots. It should not be taken as having any application to other outdoor shooting events or other gun club activities."*

The range of guns considered within the above-listed CIEH scope has included shotguns. Of note, the type of firearms typically used at TRC have included airguns but rarely include higher calibre firearms including shotguns. There has been considered some relevance to the character of noise and its effect in the worst case. Notwithstanding, there is a caution advised on the use of CIEH guidance where the primary activities carried out at TRC does not concern regular shotgun use, such as with a clay pigeon context.

Of note, the CIEH guidance utilised the Shooting Noise Level (SNL) index, against the potential for annoyance to occur. The SNL includes logarithmic average of the loudest 25-shots over a 30-minute period using a short measurement time of the shot level. The shot level is a continuous series of very short measurements expressed using fast time weighting 'F' or alternatively at short equivalent average dB $L_{Aeq,100ms}$ or dB $L_{Aeq,125ms}$ where results remain comparable when using short term SNL data.

The CIEH guidance has been noted to state that annoyance is less likely to occur at a SNL below 55 dB(A), and likely to occur at a SNL above 65 dB(A). In following of the hierarchy of noise and effects and when noise could be a concern from PPG-N per Table A, the following Table F has been viewed as most-relevant to noise from regular shooting activities.

Table F: Suggested Noise Levels and Effect Levels for Shooting

Noise Sensitive Receptor Location and Time of Day	PPG-N Threshold	Shooting Noise Level	PPG-N Effect Level Action
Amenity area (i.e. residential garden in free-field conditions) during the day.	LOAEL	SNL < 55 dB(A)	No specific measures required below this level.
	LOAEL to SOAEL	55 ≤ SNL ≤ 65 dB(A)	Mitigate and reduce to a minimum.
	SOAEL	SNL > 65 dB(A)	Avoid.

[7] Clay Target Shooting: Guidance on the Control of Noise. Chartered Institute of Environmental Health, January 2003.

5.1.2 Applied Shooting Noise Limits

In the absence of any other form of authoritative guidance on shooting noise levels specific to shooting ranges within BMDC, and with an absence of local EHO assistance, the above listed categorisation of Table F has been suggested as reasonably applicable where reviewing noise and effects from short-term shot noises as including regular activities. It has otherwise been noted as an approach adopted by another local authority[8].

This study has used shot levels based on a sample of off-site and on-site levels, recorded respectively within TRC and the development land area. A short term shot level of dB $L_{Aeq,62.5ms}$ has been used within this report, as the equipment provided within Table C requires at least a 1/16th second time history when seeking to appraise octave band levels from short term time history data. The short-term dB $L_{Aeq,62.5ms}$ data has been read directly from the equipment, and assessed in terms of activities that would be carried out regularly.

5.1.3 Summary of Measured Levels

The general approach to measurements of noise from shooting activities was undertaken in the morning of Saturday 20th April 2024 with simultaneous samples of off-site and on-site levels, recorded respectively within TRC and the development land area. The general measurements and use of these firearms has been provided across the following ranges indicated within Table G where measurements were 90° perpendicular towards site.

Table G: Summary of Measured Firearms

Firearm Type	Distance (m)	Range Measured (yd)	Range Used (yd)	Frequency of Use
22LR rifle	3	25, 50	25,50,100	Regularly
12-bore shotgun	5	50	50	Rarely
357 magnum	5	50		

The following summary of information in Table H has been based on the measured values adjacent (re. Table G) with simultaneous values at Location 2. A total quantity of at least 10 No. shots were recorded with each firearm type, typically in batches of 5 No. shots. The assessed values have been equated from the logarithmic average of the 4 No. highest events as a tendency towards the worst-case measurement in Table H.

Table H: Summary of Measured Firearms Levels

Firearm Type	Shot Level Adjacent		Shot Level at Location 2	
	Range	Assessed	Range	Assessed
22LR Rifle	104 – 107	107	61 – 63	62
22LR Rifle (45°)	*107 – 112*	*112*		
12-bore shotgun	118 – 120	120	78 – 82	81
357 magnum	119 – 122	122	79 – 83	82

The characteristic emissions for firearms were noted to include most energy within the mid- to high-frequency range between 500 – 4 kHz octave bands.

[8] https://beta.southglos.gov.uk/static/31c4da1c6243be47fe8fc62c65233012/Specific-Guidance-Note-1-Planning-and-Noise-SPD.pdf

In the case of regularly used 22LR rifles, the level of short term 1/16th second data was comparable to extraneous natural sounds such as bird song and has been characterised as a 'popping sound' rather than a noticeable or loud 'bang'.

5.1.3.1 Directionality Characteristics

It has been considered that the sound characteristics from firearms remain highly directional, as indicated within the data of in Table H for the 22LR rifle.

Directivity patterns for rifles have been referenced[9] nominally 5 dB higher at 45° and 9 dB higher at 0° (on-axis) to the source.

5.1.4 Predicted Sound Levels from Rifle Club Activities

It has been established from the measurements within this section that regular sound pressure levels from the rifle club would relate to 22LR club rifles. There would remain a possibility for higher sound levels to occur on occasion.

A model has been created in CadnaA to appraise the likely SNL where otherwise correlated via measurement on Site at Location 2. This model has followed latest industry standard calculations of ISO 9613 Parts 1 and 2[10] with measured sound levels as an input to the predictions. This has included:

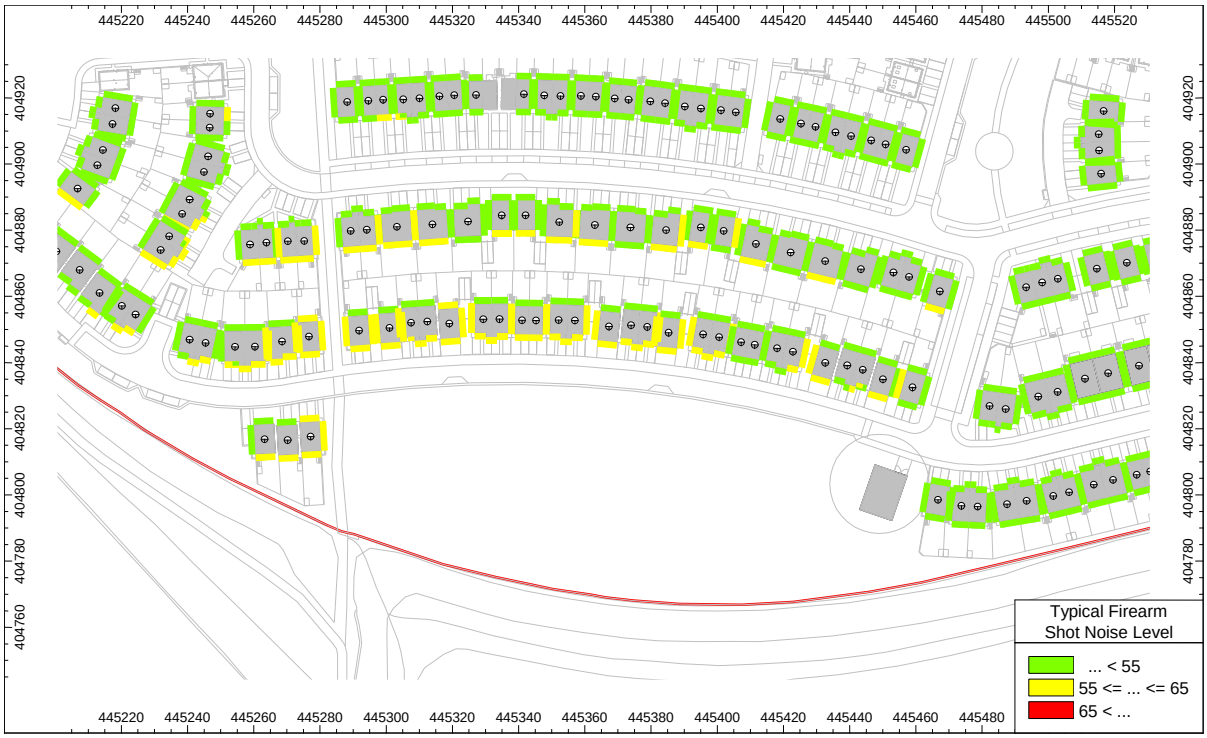
- Reference to Table H.
  - Associated octave band spectra and additional directivity.
  - The model has been calibrated to a 22LR rifle and 62 dB(A) at Location 2.
- No screening or barriers added anywhere outside of the Site except as buildings.
- Air absorption relevant to 10 °C temperature and 70 % humidity.
- Mixed ground conditions (G = 0.5).
- Model base mapping from Ordnance Survey and client layout.
- DEFRA open license lidar data defining 1 m ground contours.
- Reflection order of 2.
- Grid of 5 m x 5 m points modelled 1.5 m above ground.

The following Figure D have explained that the Site would not be constrained to a significant degree using typical firearms by TRC.

[9] Falch, E. "Noise from Shooting Ranges, a Nordic Prediction Method for Noise Emitted by Small-Bore Weapons," Nordic Council of Ministers' Noise Group, NBG, May 1984.

[10] BS ISO 9613-2:2024. Acoustics — Attenuation of sound during propagation outdoors. Part 2: Engineering method for the prediction of sound pressure levels outdoors.

Figure D: Typical Firearm Shot Noise Level



5.1.5 Discussion

The assessment in this section has been based upon the use of typical firearms witnessed in use at TRC, against criteria applicable to clay pigeon shooting, given the lack of specific noise criteria for a gun club. This approach has required the use of a SNL, defined by a very short noise level which has been measured on- and off-site, with impacts assessed against regular activities, being those of a frequency greater than 25 No. shots per 30 min period. This information has been developed to provide the off-site predictions per Figure D.

It is acknowledged that occasional SNLs may occur at a higher level, but would not constitute a regular, or sustained activity. This provides complication in the assessment of noise whereby regular activities would normally be considered. Consequently, while louder noise levels could be experienced infrequently, where Table H has indicated an increase of up to 20 dB, these would not be 'regular' per above definition such that a similar assessment approach has been discounted.

It has been ascertained from TRC, that no upper noise limit has been applied through licensing of their commercial Site. For the proposed residential development, there would be no upper noise level applicable for daytime activities. A reasonable balance has been sought in the consideration of Agent of Change and coexistence of residential use within the BMDC land allocation against commercial noise typically emitted by TRC.

The applicant has followed Agent of Change considerations and offered mitigation by means of a stand-off distance from the southern boundary, with the appropriate placement of SUDS drainage. Housing has been typically designed to face gardens away from the incident noise, to ensure that external areas have been protected. These factors have generally constituted Good Acoustic Design principles for sustainable development.

An attempt has been made to include BMDC EHO in the formation of this assessment. In reflection of both land allocation and pre-application commentary, firearm noise from TRC has not provided outward concern for the proposed residential proposal.

5.2 Wallis Metals

Contact was made with Wallis Metals (WM) for the purposes of obtaining sound level measurements of scrap metal yard activities for this assessment. The operator however declined to allow attended measurements inside this commercial site, determining that other approaches were necessary to decipher the likely impact form this source.

A review of planning history has not revealed any known noise level limit or assessment associated with WM. It has otherwise been considered that WM would operate under an Environmental Permit, with the regulatory authority noted as BMDC.

The stated opening hours of Wallis Metals has been noted[11] as 07:45 -16:45 Monday to Friday, 07:45 – 13:45 Saturday and closed on Sundays.

Subjective observations from Section 4.0, coupled with a review of audio recordings during operational times, has not outwardly identified any subjective impacts from WM on the proposed development land. In this regard the commercial and industrial sound has not been observed or considered “not present” based on the witnessed case. Notwithstanding it has been considered that some level of noise impact could occur from scrap metal activities.

The general layout of WM had included a weighbridge and bailer towards the entrance, with stockpiles of scrap metal central to the site, with a couple of excavators with grab attachments. The area to the east has been noted for stockpiles of used tires.

In the case of commercial sources incident upon the development, these have been considered following the assessment methodology of BS 4142. The detail in this section has been formulated from baseline information reported in Section 4.0 in addition to further works described within this section.

5.2.1 Specific Sound Levels from Wallis Metals Activities

It has been established from the observations adjacent to WM that the most noticeable sound pressure levels from commercial sources off-Site related to handling operations beyond any other activities.

Based on similar situations and measurements of scrap yard activities[12], the sound power levels of associated grabber-mounted excavators moving scrap and associated bailers have been appraised at 105 dB L_{wA} and 99 dB L_{wA} respectively.

A model has been created in CadnaA to appraise the likely impact of commercial sources during operational daytime periods, where otherwise not obtainable directly via measurement on Site. This model has followed industry standard calculations of ISO 9613 Parts 1 and 2 with measured sound levels as an input to the predictions. This has included:

- 2 No. grabber-mounted excavators central to the site with bailer to the south west.
- Nominal 3 m tall concrete boundary wall, with no other buildings modelled.
- Mixed ground conditions (G = 0.5).
- Model base mapping from Ordnance Survey and client sources.
- DEFRA open license lidar data defining 1 m ground contours.
- Reflection order of 2.

[11] https://www.wallismetals.co.uk/contact-us

[12] Pitch Scrap Metal Recycling Facility at The Pitch, Budden Road, Bilston, West Midlands, WV14 8JN. SLR Consulting Limited, May 2020.

- Receiver points at relevant points of the development corresponding + 1.5 m above ground level (AGL) for ground floor residential locations.

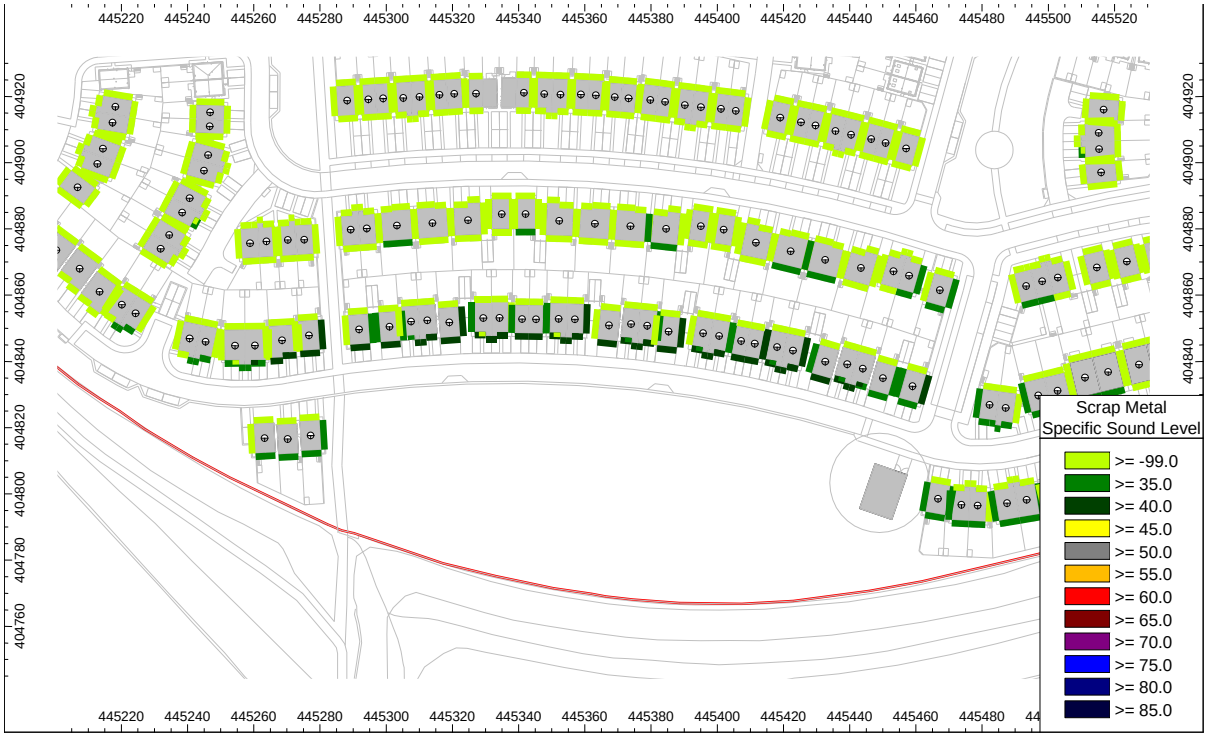
The output of these predictions has been provided in Table I as a statement of the highest sound pressure level incident on the closest façade of the proposal. This has otherwise accounted for the highest sound level at either floor as typically seen at first floor level.

Table I: Model Predicted Specific Sound Levels

Time	Façade Associated with Mitigated Layout	Predicted Specific Sound Level $L_{Aeq,1h}$
1-hour operational daytime between 07:45 – 16:45	Ground floor front	≤ 41
	Ground floor rear	≤ 36

The above listed predictions have been illustrated in Figure E below. These results have provided a large difference between the worst-case (front) facing façades and the lower case (inward, rear) facing façades, where relevant to proposed amenity areas of the scheme.

Figure E: Prediction of Industrial and Commerical Sound Levels



5.2.2 BS 4142 Assessment

The following numerical assessment has been provided in accordance with BS 4142 to compare the worst-case predicted rating sound levels of scrap yard activities against the typical background sound levels existing at the times of commercial operations.

Table J: BS 4142 Assessment of Scrap Yard Use

Results	Daytime 07:45 – 16:45		Commentary
	Front Façade	Rear Façade / Amenity Space	
Residual sound level, dB $L_{Aeq,T}$	42	42	Lowest background and residual sound levels relevant to Location 2 per Table E.
Background sound level, dB $L_{A90,T}$	39	39	
Reference time interval	1-hour	1-hour	Assessment is for daytime period where scrap metal yard is in use.
Specific sound level, dB $L_{Aeq,T}$	41	36	Equated sound levels from noise modelling as shown within Table I and Figure E, for worst-case Plots 118 – 140. Considers time weighted predicted sound level per model, with no further on-time correction necessary.
Acoustic feature correction, dB	+ 3	+ 3	While not directly observed, commercial activity has been assumed with some level of impulsivity to be marginally perceptible (+ 3 dB), to prevail over any intermittent character. The source was not of tonal or other character.
Rating level dB $L_{Ar,Tr}$	44	39	Specific sound level plus acoustic feature correction.
Excess of rating over background sound level	+ 5	0	A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context. 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. It is an indication that the specific sound source has a low impact, depending on the context. The context is a residential development adjacent to scrap yard, in an area of higher residual transportation noise.
Assessment indicates likelihood of **depending on context*	Adverse Impact	Low Impact	
Uncertainty of the assessment	Not significant		Uncertainty has been minimised with use of lower baseline sound levels.

5.2.3 Context

The numerical assessment in Table J has highlighted the potential for low to minor adverse impacts during the day, where the rating sound levels have been predicted to exceed the representative background sound level on the ground floor front façade of proposed Plots. Alongside, the development has provided potential to achieve low impact on the rear façades generally facing away from the incident sources or for plots inset to the Site with further distance and/or screening attenuation.

It has been acknowledged that assessments in Table J need to be considered in context, following the requirements of BS 4142. The concept of "context" has been notably emphasised in Section 11 of BS 4142 when considering numerical impacts established from applying the standard.

The purpose of these predictions has been to understand the degree of risk posed by commercial sources in the consideration of an application for new residential development. It has been demonstrated in context, that those areas of the development facing towards would typically be expected to result in *some levels* of noise impact from commercial and industrial sound. The resulting specific sound levels would relate to impulsive metal handling operations and excavator use, rather than constant plant noise. This situation was not however, observed during site attendances or reviewed within audio recordings.

BS 4142 highlights that a contextual consideration should include *"the sensitivity of the receptor and whether dwellings …will already incorporate design measures that secure good internal and/or outdoor conditions"*. The possibility of securing suitable design measures within the proposed residential buildings has been reflected as a pertinent point of context in this assessment.

Good acoustic design has otherwise been noted by positioning sensitive external areas as rear or north/east facing, away from the noise to the south. Levels of industrial and commercial sound within external amenity areas, or with rear facing rooms, would be significantly lower than the predictions and of low impact compared to the assessment in Table J relevant to front facing areas of the scheme.

Where impacts of the worst-case façades remain less than adverse including context, then the ProPG Stage 1 risk assessment has been considered in context relevant to the following statement.

> *"In the special case where industrial and/or commercial noise is present on the site but is "not dominant" (i.e. where the impact would be rated as lower than adverse (subject to context) if a BS4142:2014 assessment was to be carried out), its contribution may be included in the noise level used to establish the degree of risk in Stage 1 and may also be included in the consideration of Stage 2 Element 2 Internal Noise Level Guidelines (and if included, this should be clearly stated)."*

The character of the specific sound level from scrap handling operations has been considered potentially of different spectral characteristics to the residual sound level, comprising mainly of road traffic and birdsong. Where any industrial or commercial sound remains audible, as would be possible during periods of lower residual sound, then it has been considered possible in context for some minor level of effect to result. Such effect would be limited to certain plots and would not adversely affect most of the development, such as south / west facing rooms or inward facing amenity spaces.

Regarding the "Agent of Change" principle contained within the NPPF, this has stated:

> *"Where the operation of an existing business or community facility could have a **significant adverse effect** on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed."*

A significant adverse impact has not been indicated, with impacts being between low to adverse in the worst-case. Therefore, the ethos and intent of the Agent of Change principle under NPPF have been achieved from the outset with the provided standoff to development.

Nonetheless it has been anticipated that any sound insulation recommendations made in respect to glazing and ventilation for control of noise from transportation sources would also sufficiently attenuate the commercial noise source to areas inside dwellings. NSRs of the development would therefore contain sound insulation provisions that allow residences to keep windows closed (e.g. mechanical ventilation) for the worst-case façades and no such provision would be necessary in external amenity spaces.

5.3 Highgate Stadium

Highgate Stadium holds an extant planning approval for events as including dog track racing which has not been in use over the past last five years for greyhound racing events[13], with references on the official Facebook page[14] highlighting the last known events for other breeds in September 2021.

The grounds of Highgate Stadium have been notably used for auctions[15] from 10:00 each Saturday as covered within the times of personnel attendance and measurements within this assessment.

During the morning period of Saturday 20th April 2024, it was noted that operators hosting auctions at Highgate Stadium used a small PA system. The level of sound from this system was audible amongst the residual sound level immediate north but not readily noticeable on or within the proposed residential Site given the associated distance and landform between. It has been further confirmed through a review of audio recordings at Location 2, that no distinguishable sound could be associated with auction use of Highgate Stadium with the prevailing sound level relating to road traffic and birdsong.

In its current use, the level of noise impact from Highgate Stadium has not been viewed as particularly significant or impacting with respect to the adjacent land allocation and proposed residential development. An attributable noise impact assessment has therefore not been carried out whereby under Agent of Change considerations, no significant adverse noise effects could be expected due to the nature of existing activities.

It has otherwise been considered that extant planning approval could provide an increased level of noise impact with regular eventing and dog-track racing, beyond the level of minor noise emissions noted with hosting auctions. However, on balance that the stadium has not been used in this capacity for a significant period, and there is no documentation to support that it ever will be in the future, relevant Agent of Change considerations have been duly considered as part of this assessment as of minimal significance with respect to noise.

[13] https://en.wikipedia.org/wiki/Highgate_Stadium

[14] https://www.facebook.com/people/Highgate-greyhound-stadium/100057803463680/

[15] https://highgateauctions.weebly.com/

6.0 ProPG Assessment

6.1 Transportation Noise Model

A noise model has been developed using the results of Table D of this report to define the sound level outside of each façade of the residential development adjacent to Thurnscoe Bridge Lane.

Where worst-case transportation noise risks have been noted to the east of the Site, as reported within Table D, a model of the eastern area has been considered commensurate with the transportation risk.

The modelling has used industry standard calculation software CadnaA, as implementing UK standard calculation protocols including the Calculation of Road Traffic Noise (CRTN, 1988).

The model has been developed assuming mixed-ground (G = 0.5) and reflection order of 2, with building façade pressure levels shown as free-field points at 1.5 m and + 3.0 m per floor level, corresponding to respective ground and upper floor levels.

Modelling has shown parity with results of Location 1 from Table D, by placing receivers in model space. The following noise level plots of Figure F and Figure G have been created for respective day and night time periods, based on the calibrated noise model, to show exposure for each plot of the development with the scheme 'as proposed'. This has included the development building with façade evaluation tool highlighting exposure by colours on front and rear façades, generally aligning with the risk hierarchy of ProPG.

No noise model has been created to explain night maxima across the Site given that propagation from a line source would not occur in the same manner for average equivalent and maximum noise levels. It has been considered in following of the predicted average equivalent to maximum sound level relationship, further to Table D, that dB $L_{Amax(F)}$ exposure at the east of the Site would converge to nominally 15 dB above the average equivalent dB $L_{Aeq,8h}$ level when 20 m from the edge of Thurnscoe Bridge Lane. In context to the proposed layout, maximum sound levels might only exceed 15 dB above the average equivalent dB $L_{Aeq,8h}$ level for only the first plot to the east, closest to Thurnscoe Bridge Lane.

Figure F: Noise Exposure Per Building Façade – Ground Floor Day

Figure G: Noise Exposure Per Building Façade – First Floor Night

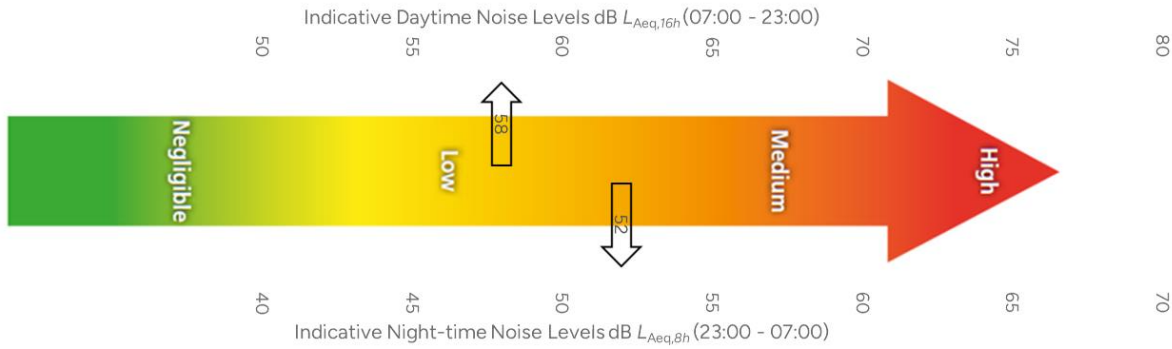
6.2 Stage 1 – Initial Risk Assessment

The following period sound pressure levels of Table K have been used for an initial site risk assessment according to Stage 1 of ProPG.

Table K: Summary Assessment of External Noise Levels, dB

Location	Period	Hours	Indicative Noise Level
East (worst-case)	Daytime	07:00 – 23:00	56 dB $L_{Aeq,16h}$
	Night-Time	23:00 – 07:00	51 dB $L_{Aeq,8h}$ 65 dB $L_{Amax(F)}$

Figure H: ProPG Indicative Risk Assessment



The dominant sound sources across the Site were noted from transportation sources of the Thurnscoe Bridge Lane, with highest levels and potentially greatest impacts estimated due to proximity to the road. Further consideration at night has been given due to maximum sound levels from passing vehicles.

The initial site noise risk assessment from transportation sources has been categorised in the worst-case, of 'medium risk' on future occupants of the new noise sensitive development. Where a medium noise risk has been noted, the pre-planning application advice stated in ProPG has been provided as follows:

> *"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."*

Most of the development has been considered to fall within 'low risk' noise levels, where ProPG notes that:

> *"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".*

Commercial activities have been observed outside of the Site and otherwise considered "not dominant" on the proposed development where appropriately mitigated according to the details of Section 5.0. The assessment of ProPG risk has therefore included any contribution of these commercial sources where commensurate mitigating means have otherwise been derived mindful of transportation impacts.

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 to avoid unreasonable acoustic conditions and prevent those which are unacceptable.

Given the range of measured sound levels across the developing land space occurring from local and distant sources, there has been minimal acoustic benefit in moving residential rooms of the proposal by any significant degree.

The orientation of proposed plots has resulted in parallel and perpendicular dwellings to Thurnscoe Bridge Lane. It has been encouraged as part of good acoustic design to face dwelling frontage towards incident sources as far as possible, affording a mainly linear frontage to the east (front) towards Thurnscoe Bridge Lane.

By implementing such layout and orientation, this has created consistent, rear facing and shielded amenity spaces using the intervening buildings as local shields. In turn this would reduce sound emanating across the Site and at second-row dwellings. It would also minimise the need for other controls, for example at the boundary with respect to amenity space boundary walls at the front of the Site.

Suitable screening, orientation and layout has been adopted in the design with respect to commercial sources. In this regard, suitable noise levels would result in all amenity spaces of the proposal. The central, southern section has been purposed for non-noise-sensitive uses such as the SUDS basin.

The plan layouts of each dwelling type have not been reviewed in this assessment. It has been acknowledged that 'good acoustic design' generally requires facing less-sensitive rooms (i.e. kitchens, utility rooms and bathrooms) towards the dominant incident noise sources. For residential houses of at least three-bedrooms, it has been considered unavoidable that some first-floor bedrooms would normally remain facing towards the incident noise sources.

It has been understood that all proposed dwellings are to be formed by traditional means with masonry insulated façades, along with an insulated and tiled roof. The sound insulation of these components has been deemed least consequential to resulting internal ambient noise levels, where the acoustic performance of glazing and ventilation elements will typically remain as dictating.

6.3.2 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 B 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 glazing and ventilation components, where calculations have been carried out in single figure decibel values.

The range of whole dwelling ventilation strategies for development has been taken from The Building Regulations 2010 Approved Document F Volume 1: Dwellings Requirement F1: Means of Ventilation (2021 edition) (ADF). An outline appraisal for suitability has been

provided using Table B2 of the AVO Guide, in Table L below as any ventilation scheme. This information is caveated by Table M with suitable acoustic specifications.

Table L: Outline Appraisal of Different Ventilation Strategies (Worst-Case)

Ventilation strategy according to ADF	Typical windows and vent	Higher acoustic performance windows and vent
Intermittent extract fans	✓	✓
Passive stack ventilation	✓	✓
Continuous mechanical extract (CMEV)	✓	✓
Continuous mechanical supply and extract with heat recovery (MVHR)	✓	✓

It should be considered as part of good acoustic design that minimising the quantity of penetrations through a building façade should be favoured in higher noise level areas. An intermittent mechanical extract ventilation strategy has been outwardly assumed for the development in context to limited site-wide, external noise risk.

For any mechanical ventilation system, the ventilation routes should face away from the incident noise source as far as possible. This provision would reduce noise travelling into the habitable room via the ductwork. Where this is not possible the intake and exhaust ducts should incorporate attenuation to control intrusive noise to meet the criteria in Table B.

The following specifications of Table M have been based on calculations to the detailed method in section G2.1 of BS 8233 (equivalent to the method in BS EN 12354-3).

An adaptation term has been provided for all specifications following the method ISO 717-1:2020. This has included a comparison between the normalised, A-weighted sound spectrum for day and night against the adaptation curves for C_{tr}. The relevant spectrum adaptation term C_{tr} has been confirmed by visual comparison as relevant to the measured spectra, or as otherwise listed suitable to measured sources from Table A1 of ISO 717-1.

Table M: Specifications for Windows and Ventilators

Scheme (See Figure I)	Element	Specification	Typical Configuration
1. Typical	Windows	≥ 27 dB $R_w + C_{tr}$	Double glazing 4-16-4 standard glass types
	Background ventilator	≥ 30 dB $D_{ne,w} + C_{tr}$	Standard* window trickle vents as rated
2. First row plots to East / Thurnscoe Bridge Lane	Windows	≥ 27 dB $R_w + C$	Double glazing 4-16-4 standard glass types
	Background ventilator	≥ 33 dB $D_{ne,w} + C_{tr}$	Acoustic* window trickle vent as rated
* This specification has relied upon no greater than 2 No. ventilators per habitable room.			

It can be seen from the illustration of Figure I below, that uprated specifications for sound insulation, per Scheme 2 of Table M, would only be necessary for the first row plots to the east along Thurnscoe Bridge Lane. For the remainder of the Site, typical sound insulation specifications would apply.

Figure I: Sound Insulation Scheme

6.3.3 Overheating Risk

The advice in this section has so far considered the internal ambient noise level with closed windows under Building Regulations ventilation conditions. The AVO guide has informed that acoustic assessments should also be formed for the overheating ventilation condition, which in the first instance has been considered with open windows.

A simplistic insertion loss of 13 dB has been initially considered from external free field to internal reverberant levels through an open window, as part of AVO Stage 1 approach. It has been acknowledged that acoustic losses for a fully open window may be much less and in the region of 4 – 9 dB depending on the Overheating Risk Location.

On this basis the following summary of Table N has been provided as an initial consideration of the worst-affected façades with both closed and open windows. Use of a 9 dB external to internal loss follows the Simplified Method for a Moderate Risk Location as per Section 4 of the following Guide[16].

Table N: Estimated IANLs from Different Ventilation Conditions

Level 1 Risk Assessment following the AVO Guide			Internal Ambient Noise Levels (IANLs)		
Location	**Windows**	**Ventilation Condition**	**Day dB $L_{Aeq,16h}$**	**Night dB $L_{Aeq,8h}$**	**Max dB $L_{Amax(F)}$**
Worst-case north bedroom per Plot 3-4	Closed vents open	Building	32	27	41
	Partially open	Overheating	43	38	52
	Fully open		47	42	56
Typical	Closed vents open	Building	31	26	41
	Partially open	Overheating	39	34	49
	Fully open		43	38	53

In case of closed windows, building ventilation conditions have been shown to provide suitable internal ambient noise levels following ProPG and AVO, given that predicted values in Table N do not exceed those in Table B.

In the case of partially or fully open windows, the above listed sound levels have been compared against the simplified requirements for meeting Building Regulations Approved Document O: Overheating[17], provided at ≤ 40 dB $L_{Aeq,T}$ and 55 dB $L_{Amax(F)}$ at night (23:00 – 07:00) in all areas of the Site.

Figure J below has been prepared to demonstrate where additional provisions would be required in first floor areas of the scheme to achieve compliance with ADO, where opening windows in accordance with a simplified method would not be appropriate.

To achieve compliance with ADO, opening windows in accordance with a simplified method would not be appropriate where shown red, such that a more informed strategy would be necessary. As part of this, a full overheating assessment should be provided for all the Plot types and their orientation within the scheme.

[16] Guide to Demonstrating Compliance with the Noise Requirements of Approved Document O, July 2022, v1.0

[17] The Building Regulations 2010 Requirement O1: Overheating mitigation, 2021 Edition. As applicable to a building notice or full planning application submitted after 15th June 2022.

Figure J: ADO Simplified Method Suitability

While the AVO Guide has advocated that attenuated louvres, vents, or plenum windows as available design solutions to overcome external noise ingress during an overheating condition, these have not been understood as typical approaches for mass-market housing. Furthermore, large ventilation louvres can affect other pertinent issues (such as dwelling elevations in planning approval) that could change in size following detailed CIBSE TM59 calculations that occur post-approval.

It has been subsequently understood that the preferred method to achieve additional cooling ventilation in an overheating state would be achieved by mechanical extract and passive inlet with fans and associated ducting in the roof void.

Products such as Vent Axia NBR Coolbox kits must be installed with the roof aperture on the 'quiet' side of the building, away from the incident noise source. Further guidance on resulting internal ambient noise levels from these mechanical systems should be taken from manufacturers data alongside appropriate guidance such as CIBSE B4[18], to ensure that indoor ambient noise levels in the overheating ventilation condition do not exceed ADO limits at night.

6.3.4 External Noise Level Guidelines

Amenity areas have been provided as gardens and public open spaces within the development.

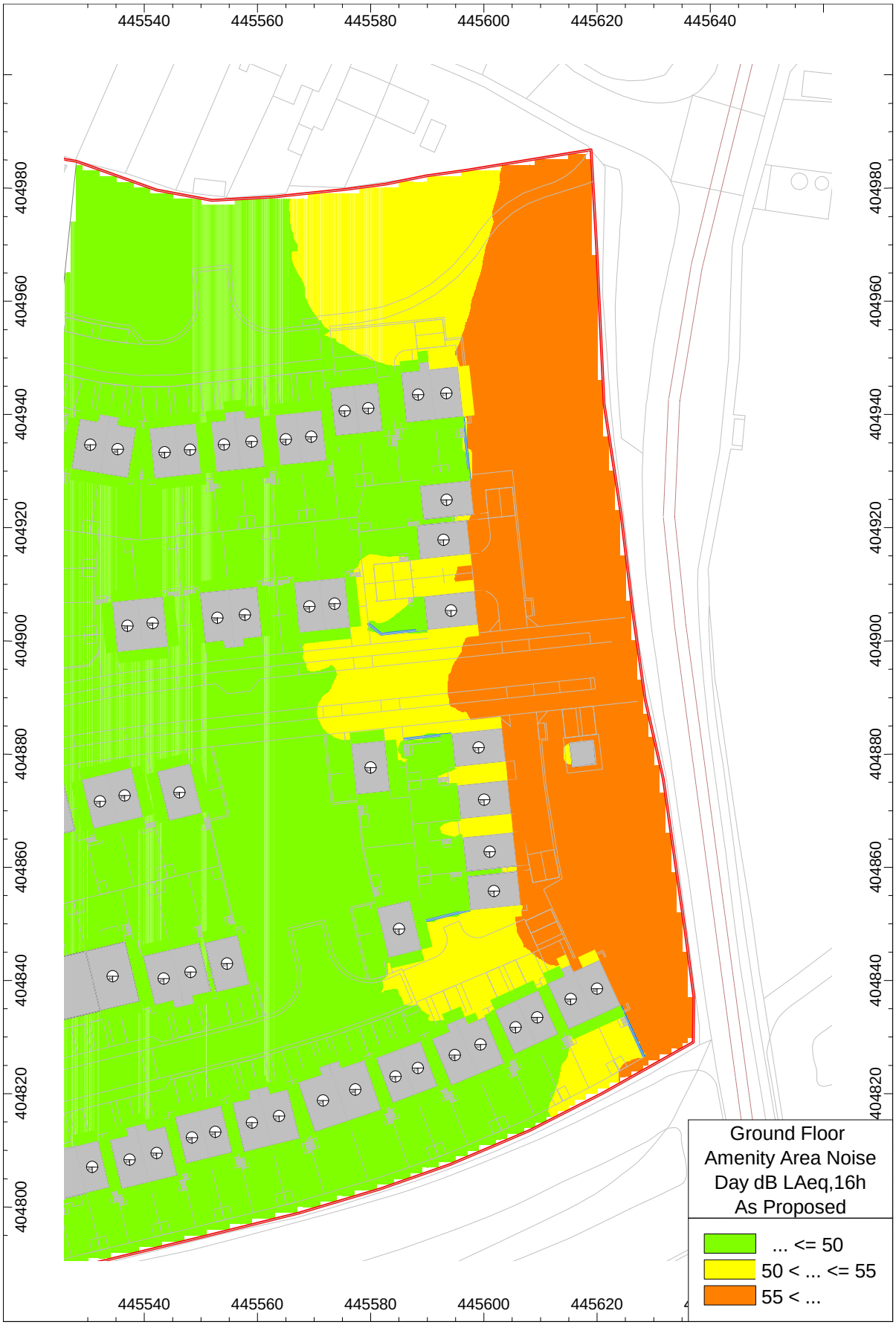
At the worst-case plots to the east, Stage 1 summary assessment data of Table K has indicated that the ProPG guidance of 50 – 55 $L_{Aeq,16h}$ could be exceeded. A boundary wall for these plots has been viewed commensurate noise mitigation for these areas.

With greater distance from Thurnscoe Bridge Lane and with the inclusion of screening from the dwellings themselves as well as standard garden fencing, these plots and the remainder of the development have been considered to comfortably comply with the ProPG guidance to provide suitably protected, quiet and tranquil outdoor space within this development.

Figure K below has been prepared to demonstrate that, with the use of a 2.0 m tall boundary wall around garden areas for plots to the east of the Site, appropriately mitigated external amenity areas would conform with ProPG across the development.

[18] CIBSE Guide B4: 2016. Noise and vibration control for building services systems. The Chartered Institution of Building Services Engineers, June 2016.

Figure K: External Amenity Area Noise



7.0 Other Considerations

7.1 Off-Site Development Related Traffic Noise

The noise impact of any increase in off-site development related traffic noise has been considered in accordance with industry standard guidance from DMRB and CRTN as defined below.

- The Calculation of Road Traffic Noise (CRTN). Department of Transport Welsh Office. HMSO, 1988.
- Design Manual for Roads and Bridges (DMRB), Sustainability & Environmental Appraisal LA111 Noise and Vibration, Version 2. Standards for Highways, May 2020.

CRTN has provided the basis of the UK standard method to predict and measure road traffic noise. A statistical measure has been defined in this approach, termed dB $L_{A10,T}$, as describing road traffic noise level exceeded for 10% of the measurement period (or 90th percentile). This method has established a baseline noise level (BNL) over an 18-hour period from 06:00 to 00:00, termed dB $L_{A10,18h}$, from which statements of impact can be made.

The assessment of off-site development related road traffic requires input from project transportation consultants (SLR) to define forecast road traffic parameters for noise impact assessment.

The input data for CRTN assessment has been defined from annual average weekday totals (AAWTs) describing development traffic amongst forecast traffic on the highway, relevant to future years. The composition of traffic (% HGV) and other relevant factors including speed and road gradient, have also been necessary to define in the assessment approach. The method has also required for roads to be divided into segments and the BNL established for each segment, with and without development in operation.

DMRB has provided a means to quantify development related road traffic noise impacts where normally considered in short- and long-term periods. For the proposal, a review of short-term impacts has been considered most relevant when established in the opening year 2024 and with the scheme in full operation. The following magnitude of short-term change (or impact) from DMRB has been applied following Table O below.

Table O: Development Related Traffic Magnitude of Short-Term Change

Short Term Noise Change, dB $L_{A10,18h}$	Magnitude
0.0	No change
0.1 – 0.9	Negligible
1.0 – 2.9	Minor
3.0 – 4.9	Moderate
≥ 5.0	Major

7.2 Road Traffic Noise Impacts

It has been established from the study of road traffic volumes accompanying the planning application that some change in road traffic will occur on the surrounding road networks once the development is in full occupation. Further information has been provided by project transport consultants for the purposes of this section.

The method to assess road traffic noise impacts has followed that outlined in Section 7.1 considering CRTN and DMRB. Road traffic noise impacts have mainly been considered during the daytime where the scheme would be operational. In the simplest case, the scoping of road traffic noise impacts has been reviewed against the change in the baseline noise level in the opening year of 2026.

The scoping exercise has inherently considered road traffic volumes, considering any forecast change to composition, assuming other factors such as speed and ground type remain constant. For these reasons, road traffic noise impacts have been viewed in terms of the magnitude of change rather than modelling the absolute at building façades. All data has been reviewed in terms of AAWT's with and without the scheme in operation.

Flows have been considered as two-way and representative of total vehicles. These have been based on a traffic count survey data with growth rates have applied to define the full opening year of 2026. Only those links that have presented valid calculations for CRTN have been considered in following, to explain worst-case effects on the wider road network.

Table P: Estimated Composition of Road Traffic Without and With Scheme

Link Road Location	Without Scheme, 2026		With Scheme, 2026		Speed kph
2-Way Traffic	AAWT	% HGV	AAWT	% HGV	
Thurnscoe Bridge Lane (North)	10502	0.57	11006	0.55	48
Thurnscoe Bridge Lane (South)	10473	0.43	11093	0.40	48

Table Q: Estimated Magnitude of Change from Road Traffic

Location	Short Term Noise Change dB $L_{A10,18h}$	Magnitude of Impact
Thurnscoe Bridge Lane (North)	+ 0.2	Negligible adverse
Thurnscoe Bridge Lane (South)	+ 0.2	

It has been established that, due to a small difference in road traffic composition within the surrounding road network, that negligible adverse noise impacts would result. This traffic would be disseminated at the connecting road junctions as to result negligible effects within the wider road network.

In following it has been considered that no residential receptor would be subject to increased road traffic noise levels of any perceptible magnitude (i.e. << 1 dB) in context to the connecting road network. The scoping of road traffic noise impacts has been considered acceptable for the proposed residential use.

8.0 Conclusions

This document has been prepared for Avant Homes Yorkshire by SLR Consulting Limited to support proposed mixed residential and retail development at Land to the west of Thurnscoe Bridge Lane and South of Derry Grove, Thurnscoe, Barnsley S63 0TT.

The overarching planning principle of 'Agent of Change', Paragraph 193 of the National Planning Policy Framework (December 2023), has been acknowledged as a key consideration for any planning application on this Site. An appraisal of regular shot noise levels has been carried out for Thurnscoe Rifle Club and an assessment of scrap yard operations has been carried out for Wallis Metals in accordance with BS 4142.

The mitigation for commercial sources has followed 'good acoustic design' principles with respect to commercial sources to the south, to avoid the possibility of significant adverse effects for regular activities in external residential areas. Key considerations have been provided in terms of Site layout and a stand-off / SUDS placement to the south. The design has proposed a predominantly inward aspect, facing amenity areas shielded or away from these sources, such that noise impacts would be 'low' as to support coexistence of existing commercial and proposed residential uses.

An assessment of Wallis Metal has been undertaken in accordance with BS 4142 and highlighted the potential for 'low' to 'adverse' impacts. In this regard, the specific sound level of has not been prohibited from the assessment of Stage 1 noise risk following ProPG Planning and Noise: New Residential Development.

Stage 1 assessment in accordance with ProPG has provided that the site is influenced by dominant transportation noise. The initial site noise risk assessment has been categorised in the worst case as 'high risk' on the future occupants of the new noise sensitive development because of road traffic from local sources. Commercial activities have not been observed as influential on the Site and furthermore considered "not dominant" with respect to sources in the local area, following an assessment in accordance with BS 4142.

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 can be readily achieved by the development.

A review of road traffic impacts on the wider network has determined that the magnitude of road traffic change would be negligible in the local area as to provide negligible levels of noise impact. In following the level of noise associated with off-site road traffic noise has been viewed acceptable in accordance with overarching planning and noise guidance.

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 where 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.

9.0 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

Steve Skingle, BSc. (Hons) PgDip MIOA MAES
Technical Director – Acoustics & Vibration

Vince Taylor, BSc. (Hons) MSc. MIOA
Technical Director – Acoustics & Vibration

Appendix A Glossary of Terminology

Proposed Residential Development Noise Impact Assessment

Land to the west of Thurnscoe Bridge Lane and South of Derry Grove, Thurnscoe, Barnsley S63 0TT

Avant Homes Yorkshire

SLR Project No.: 410.065475.00001

20 November 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

A.1 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.

$L_{A10,T}$ & $L_{A90,T}$ — 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 Scheme Drawing

Proposed Residential Development Noise Impact Assessment

Land to the west of Thurnscoe Bridge Lane and South of Derry Grove, Thurnscoe, Barnsley S63 0TT

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20 November 2024

ACCESS TO FUTURE DEVELOPMENT

PUBLIC OPEN SPACE (TO BE TERRACED)

PUBLIC OPEN SPACE

PUBLIC OPEN SPACE

PUBLIC OPEN SPACE

PUBLIC OPEN SPACE

PUBLIC OPEN SPACE

LAP

SW ATTENUATION

PUMP STATION

Miniature Rifle Range

Path (um)

Path (um)

Thurnscoe Dike

Thurnscoe Dike

Ward Dike

THURNSCOE BRIDGE LANE

DERRY GROVE

HALLGATE

TURNER

Derry House

Shelte

N

PLANNING KEY

PLANNING LAYOUT KEY:

- SITE BOUNDARY
- ASSOCIATED LAND
- ROAD
- ROAD MARKINGS
- DRIVES & PATHS
- 1.8m TIMBER SCREEN FENCE
- 1.2m POST & RAIL FENCE
- 1.8m TIMBER GATE
- 1.2m METAL RAILINGS
- 0.45m KNEE HIGH RAIL
- 1.8m SCREEN WALL & FENCE PANEL INFILL
- EASEMENT
- VISIBILITY SPLAY
- EVCP
- BIN STORAGE
- BIN COLLECTION POINT
- INDICATIVE LOCATION OF SHED
- PLOT NUMBERS
- PARKING SPACES
- S106 AFFORDABLE PLOTS
- BLOCK PAVING
- EXISTING TREES AND HEDGING TO BE RETAINED
- TREES AND HEDGING TO BE REMOVED

Schedule of Accommodation

Thurnscoe, Bridge Lane **18/10/2024**

S106 Affordable Housing

Name	Arrangement	Bed	NDSS	Storey	M4(2)	Number
Bramley	End	1	Y	2	M4(3)	6
Totley	End	1	Y	2	N	6
B2.1	End	2	Y	2	N	10
B3	End	3	Y	2.5	N	8
Total						**30**

Open Market Housing

Name	Arrangement	Bed	NDSS	Storey	M4(2)	Number
Denborough	End	1	Y	2	N	16
WAB	End	2	Y	1	M4(3)	10
Ferndale	End	2	Y	2	N	13
Eastbeck	End	2	Y	2.5	N	14
Ripley	End	2	Y	2	N	62
Oakwood	End	3	Y	2	Y	14
Leyburn	Det	3	Y	2	N	21
Cadeby	Det	3	Y	2	Y	9
Baildon	End	3	Y	2.5	N	40
Salbury	End	3	Y	2.5	N	38
Wentbridge	Det	4	Y	2	Y	10
Dalton	Det	4	Y	2.5	Y	12
Cookbury	Det	4	Y	2	N	7
Total						**266**
Overall Total						**296**

AVANT homes
Unit 5, Mariner Court, Pool Industrial Estate, Wakefield, WF9 3FL
Tel: 01924 258413 Fax: 01924 258406
www.avanthomes.org.uk

DATE: Oct 2024 | SCALE: 1:500 @ A0 | DRAWN BY: DR

DWG TITLE: Planning Layout

PROJECT: Thurnscoe Bridge Lane, Thurnscoe

DWG NO: WY-TBL-200 | REV: -

G:\15. Group Layouts\01 - Regional Layouts\04 - West Yorkshire\Thurnscoe - Thurnscoe Bridge Lane\2 - Architectural\2.1 - DWG\Thurnscoe Proposed Site Layout

Appendix C Survey Summary Results

Proposed Residential Development Noise Impact Assessment

Land to the west of Thurnscoe Bridge Lane and South of Derry Grove, Thurnscoe, Barnsley S63 0TT

Avant Homes Yorkshire

SLR Project No.: 410.065475.00001

20 November 2024

Figure C1: Time History Graph, Sound Pressure Level – Location 1

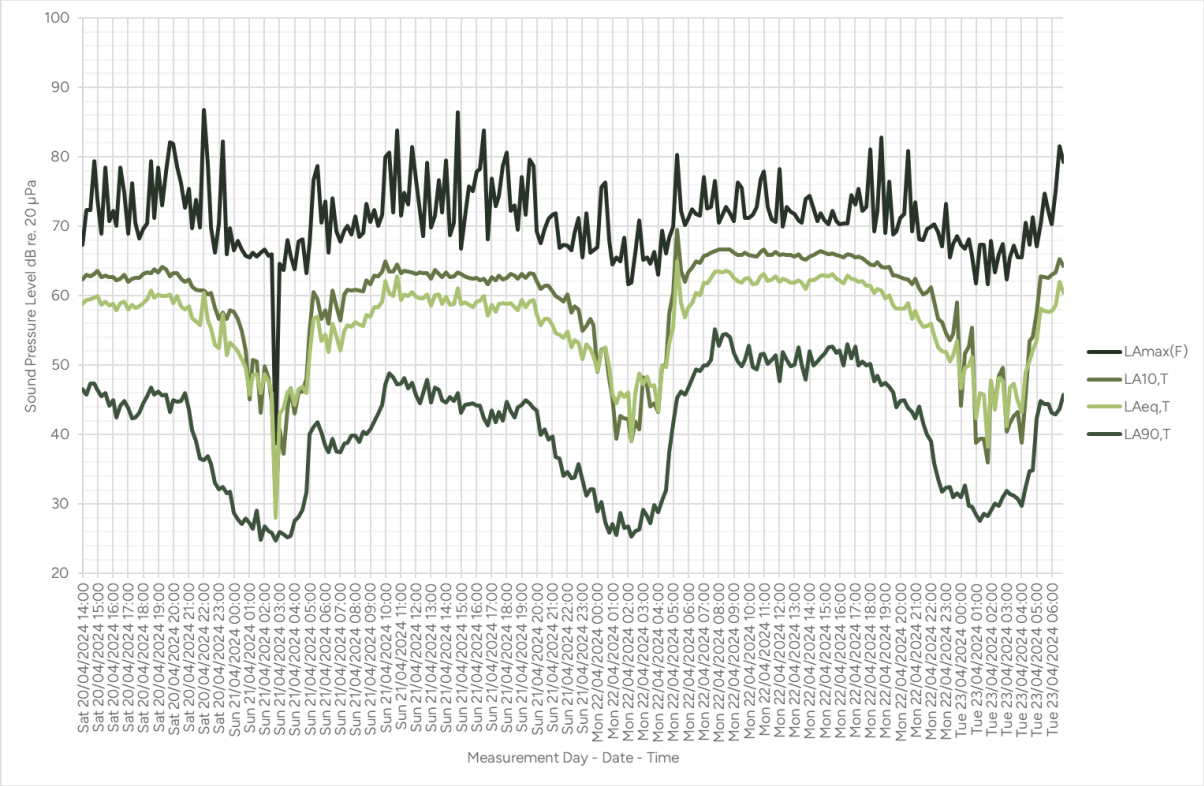


Figure C2: Background Sound Level Histogram – Location 1

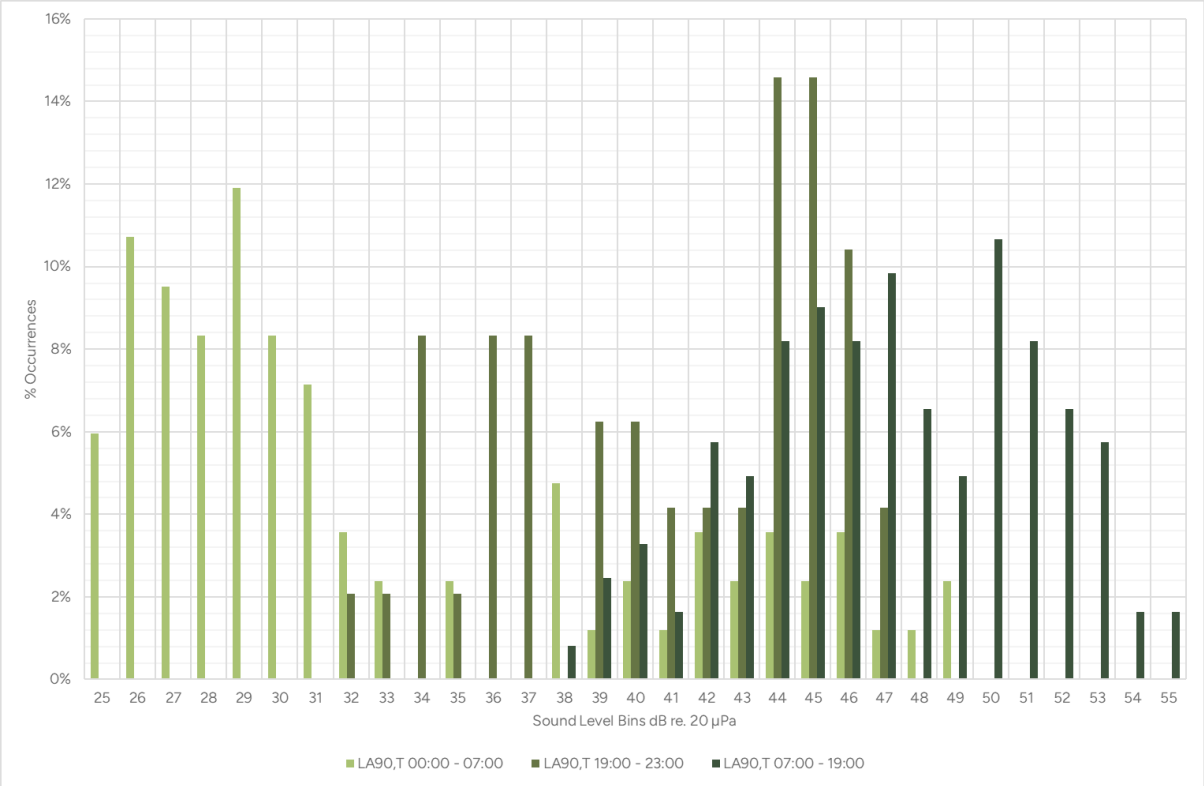


Figure C3: Time History Graph, Sound Pressure Level – Location 2

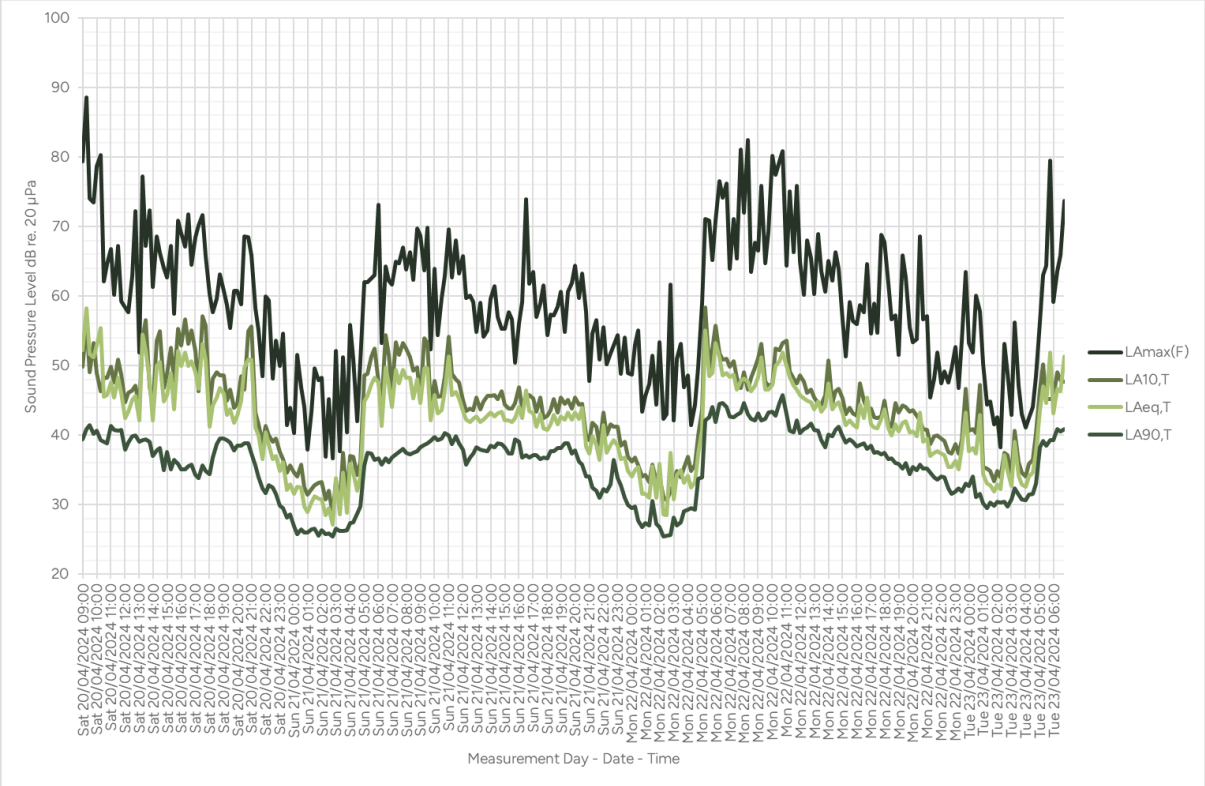


Figure C4: Background Sound Level Histogram – Location 2

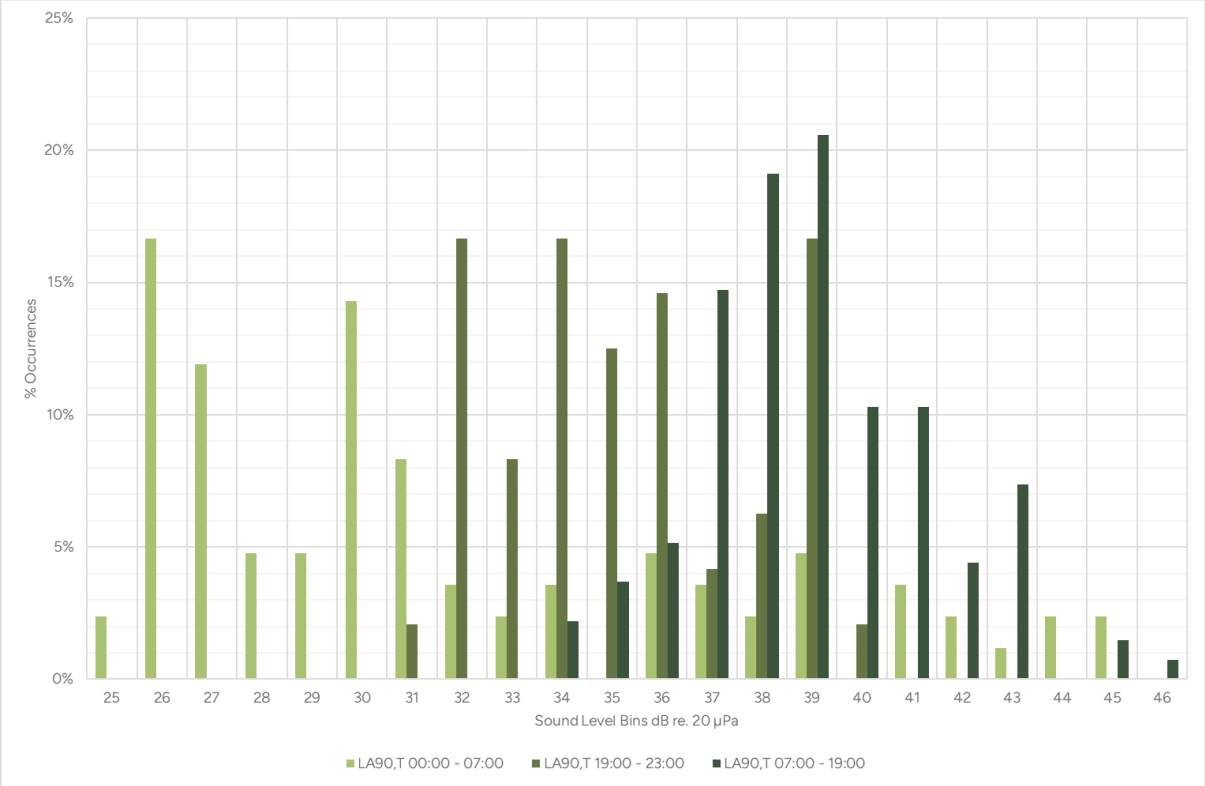


Figure C5: Time History Graph, Sound Pressure Level – Location 3

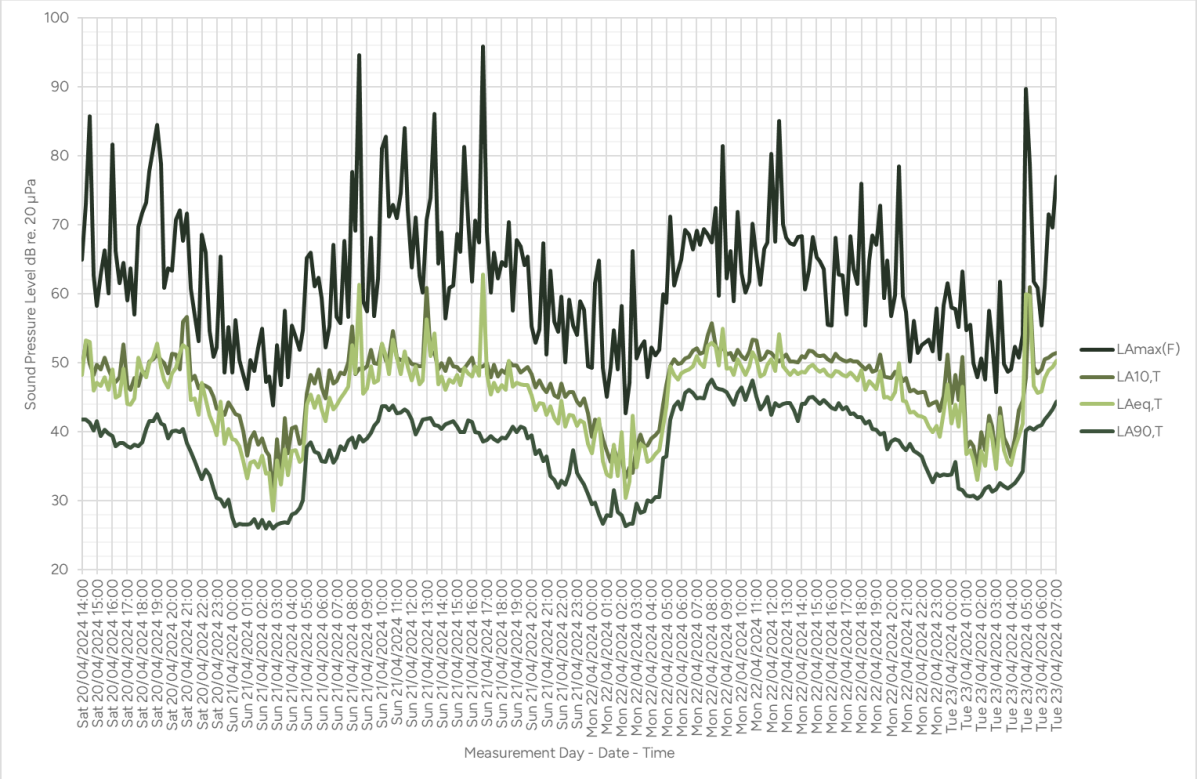


Figure C6: Background Sound Level Histogram – Location 3

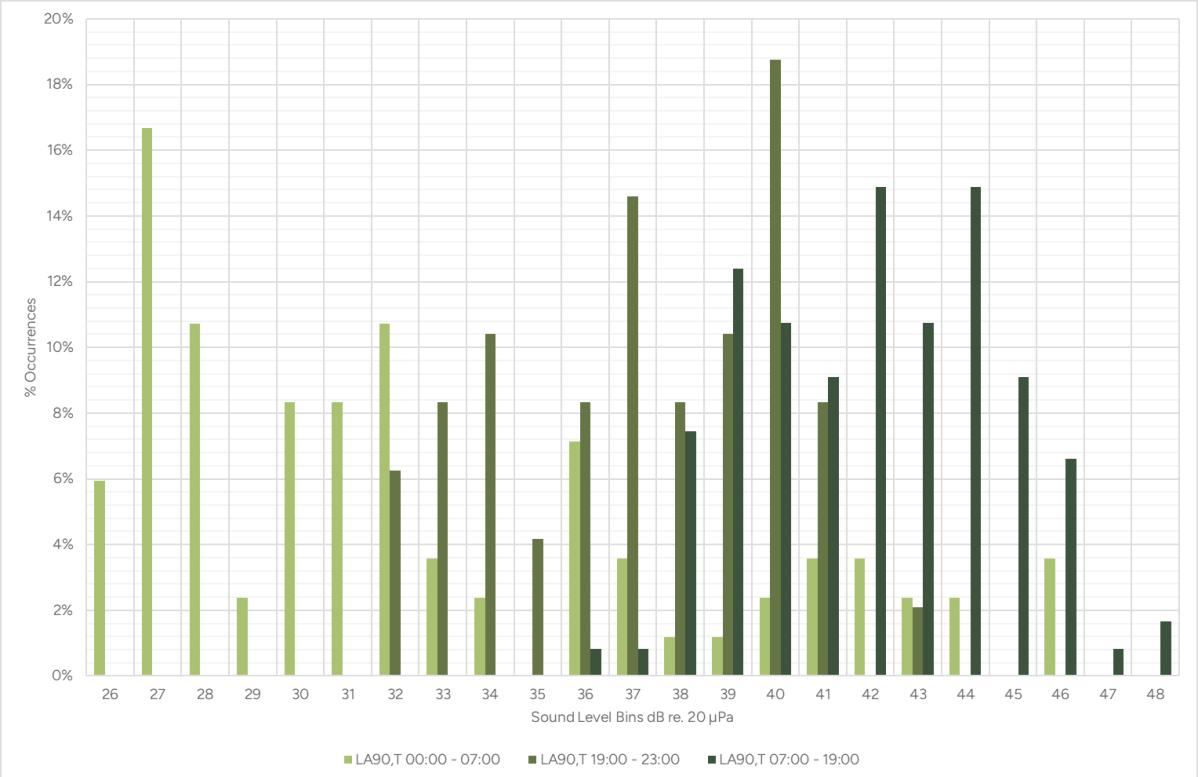


Figure C7: Time History Graph, Weather Conditions

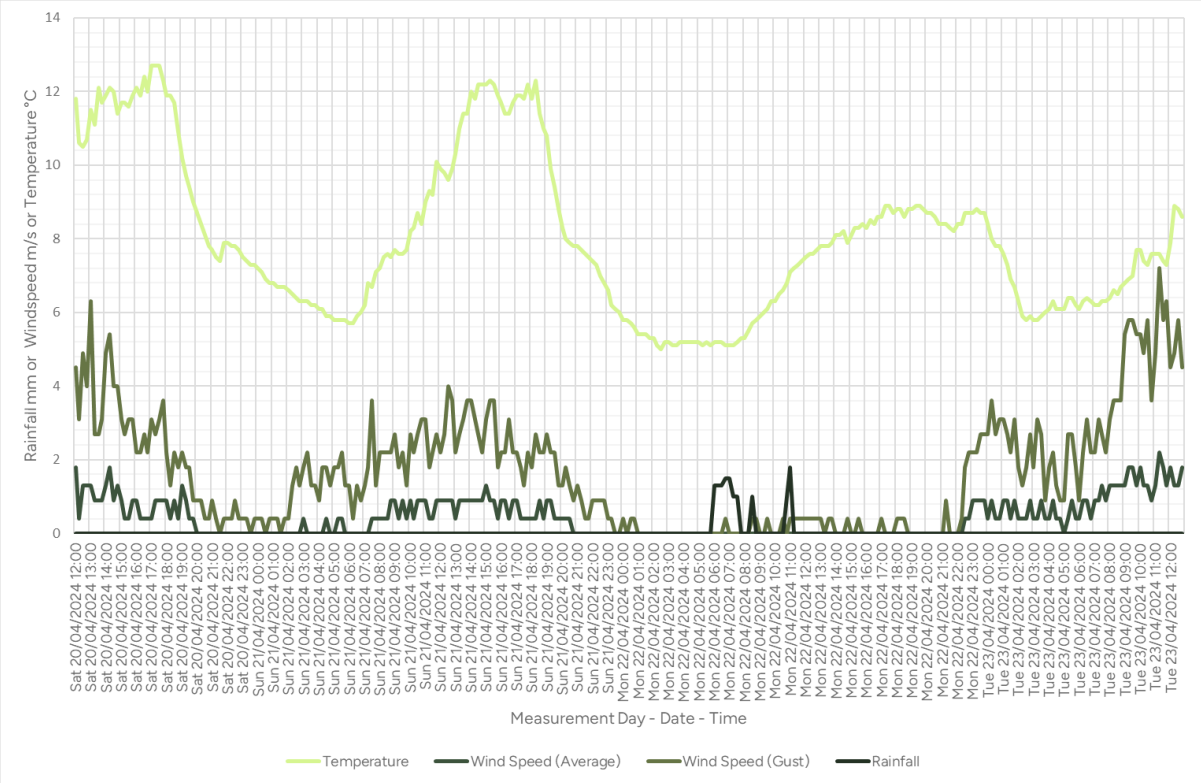
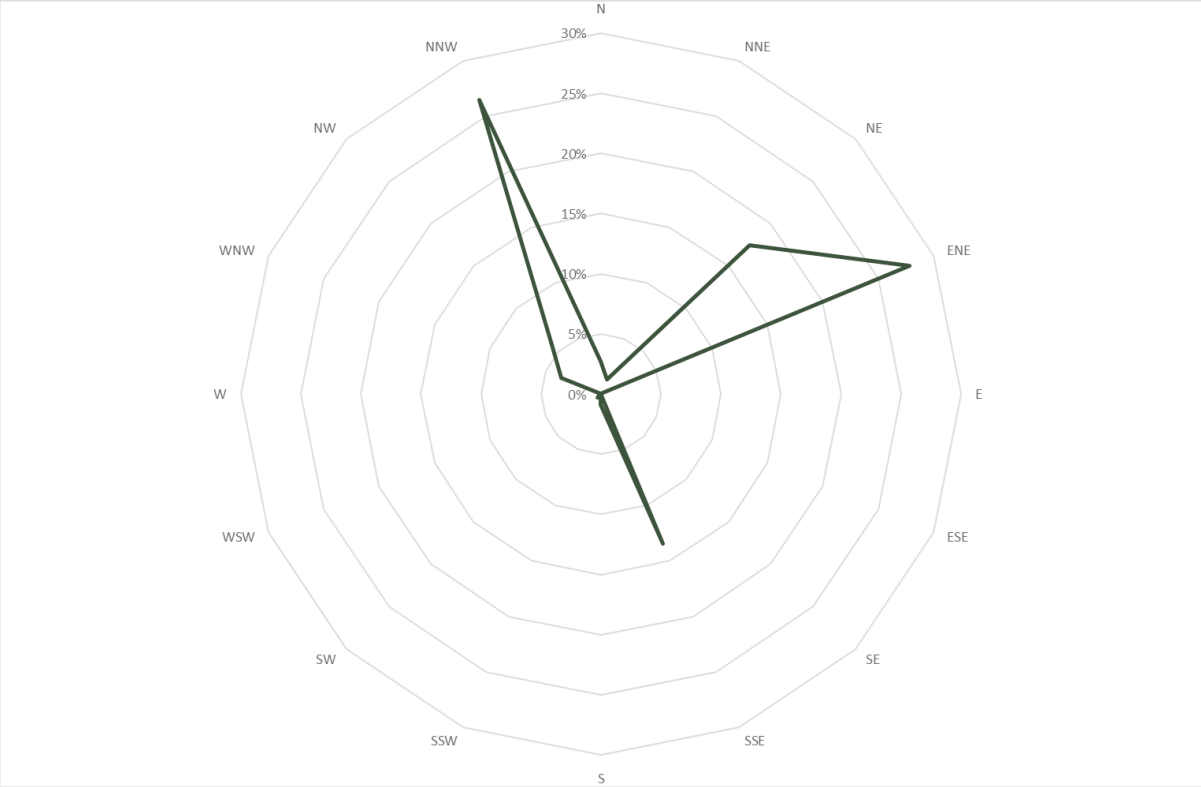
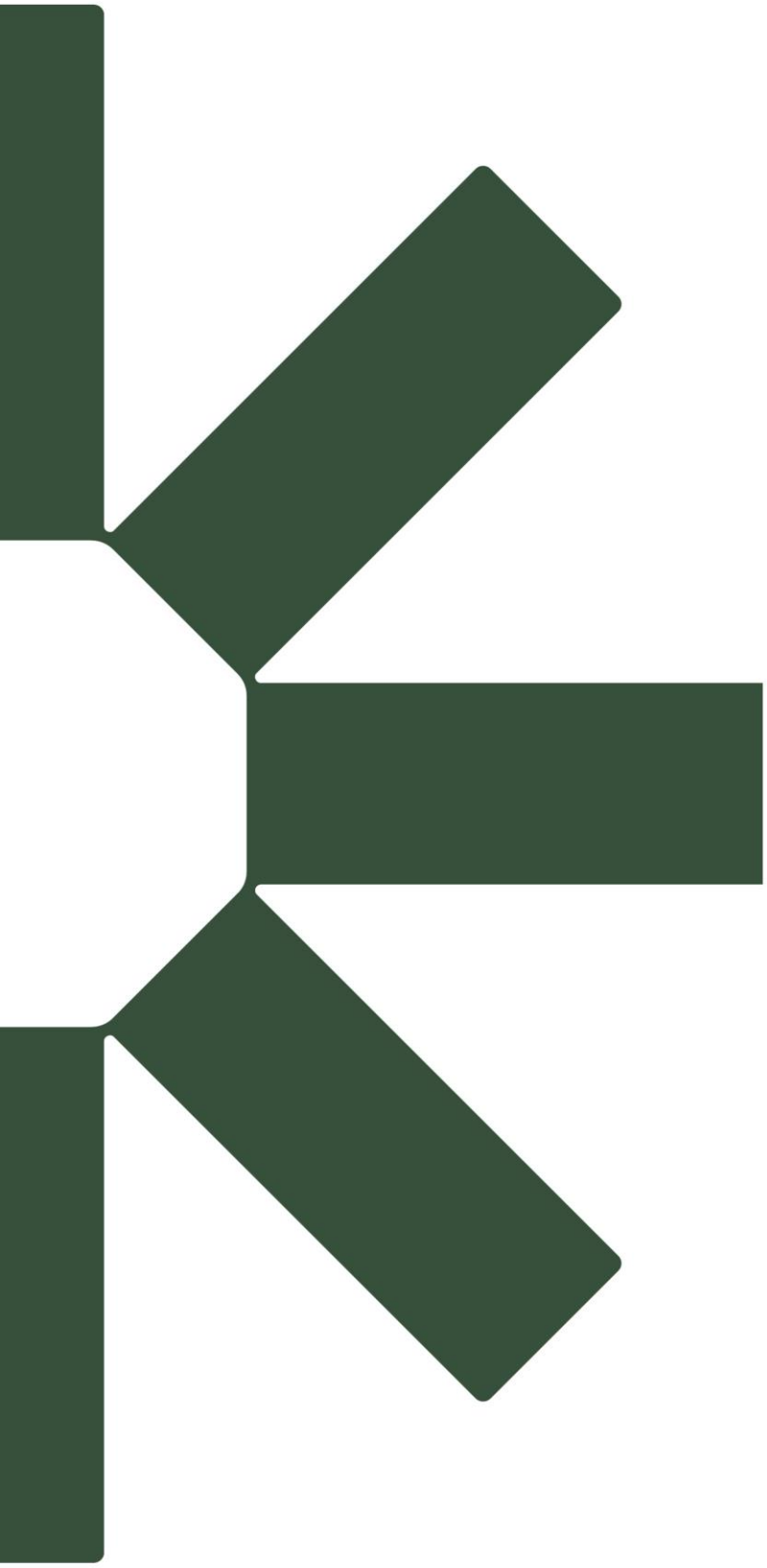


Figure C8: Wind Direction Polar Plot





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