



Employment Use Development Noise Impact Assessment

Land at Junction 22 of the M1, Cliffe Hill Farm

Caddick Developments Limited

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Basis of Report

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Appendix A Glossary of Terminology

A.1 Acoustic Terminology

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1.0 Introduction

Caddick Developments Limited has appointed SLR Consulting Limited (SLR) to undertake noise impact assessment for a proposed employment use development on Land at Junction 22 of the M1, Cliffe Hill Farm (the Site).

This document has been prepared to inform a full planning application within Hinckley and Bosworth Borough Council (HBBC) with the following description of development:

“Full Planning Application for the redevelopment of the site at Cliffe Hill Farm at J22 of the M1 for storage and distribution uses (Class B8), general industry (Class B2), ancillary office space (Class E(g)(i)), together with associated development including access, landscaping, earthworks, ancillary infrastructure, and parking”

This report has been prepared to inform noise impacts from the proposed development following the assessment principles of British Standard BS 4142:2014 + A1:2019 *Methods for rating and assessing industrial and commercial sound*. It has been developed in accordance with overarching national and local requirements for planning and noise, as well as the relevant technical standards and guidance in the assessment of noise impacts.

This report has been prepared and checked by Suitably Qualified Persons as defined in Section 8.0. 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.

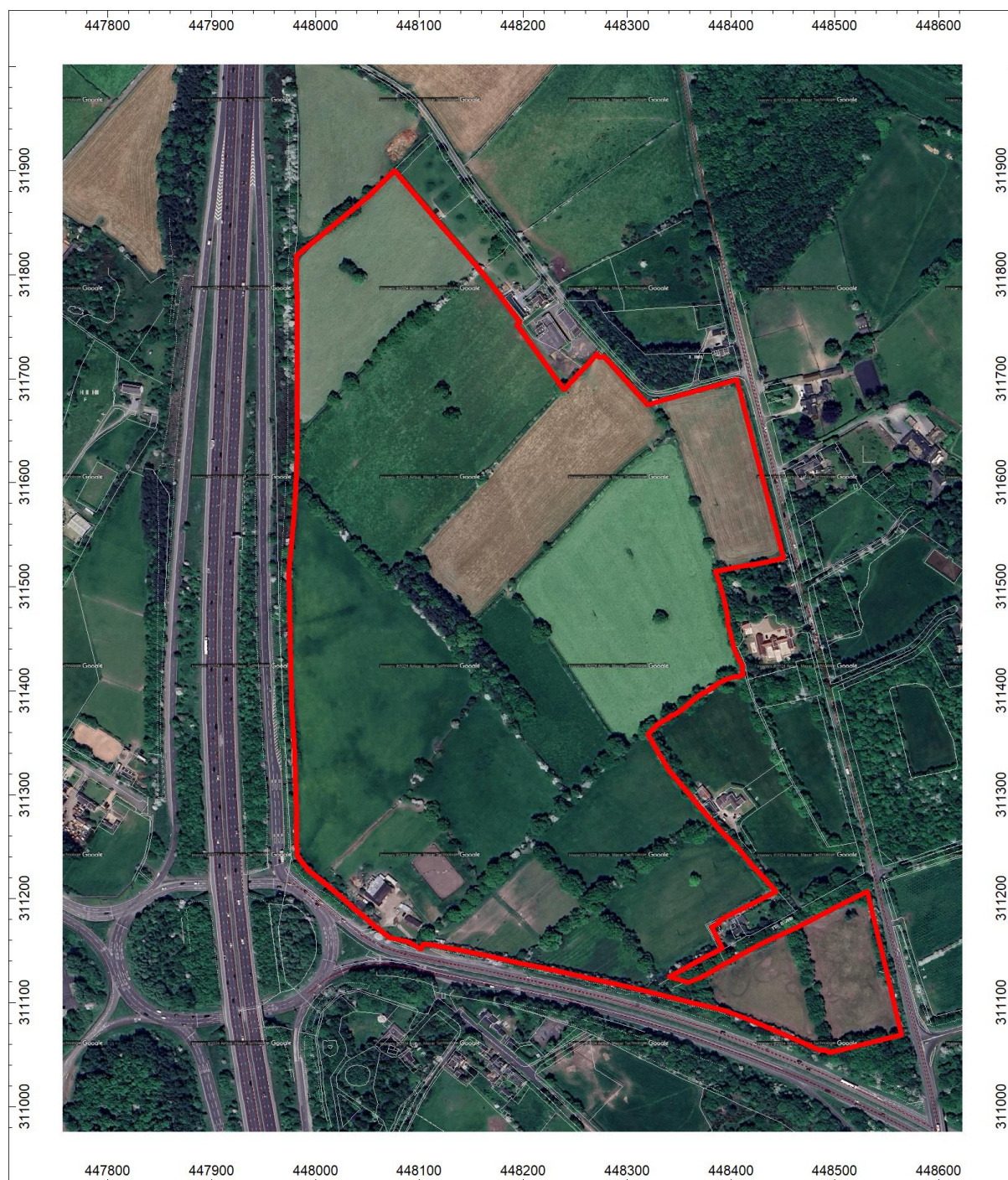


2.0 Site Description

The proposed development has been proposed within Cliffe Hill Farm, defining a land area agricultural land of 28.24 hectares, at the northeast corner of Junction 22 of the M1 motorway and the A50 dual carriageway.

The area subject to development (red line) has been highlighted in Figure A below with an aerial view for context.

Figure A: Proposed Development Land



2.1 Proposed Development

The planned proposal has included for the creation of up to 64,794 m² of employment use buildings within a 13.75-hectare net developable area. These have been illustrated within the development masterplan as 6 No. Units of varying size, labelled Unit 1 to Unit 6 from north to south.

Access to the Site has been proposed to through a new Site entrance to the south from the A50, with egress to the southeast along Whitwick Road.

The proposed masterplan layout has been shown within Figure B below.

Figure B: Masterplan Layout



Development associated with employment uses have been proposed in detailed form, to typically comprise of single footprint rectangular buildings with areas of external circulation, hard standing and parking¹. Each employment use has been envisaged to include a proportion of building footprint as office space.

The layout of the proposed scheme has generally included buffers between proposed employment use buildings and Site boundary to residential locations, along with service areas facing away. Changes in land height have been proposed in the formation of the proposed development.

2.2 Noise Generation from Proposed Employment Activities

The proposed masterplan shown in Figure B has indicated the location for where employment activities would be likely to occur on the Site. The activities have been considered in the cumulative assessment of environmental noise impacts as follows:

- Vehicle movements on along the newly formed access route.
- Movement of HGVs and forklifts around external loading bays.
- Use of parking areas.
- Breakout noise from buildings.
- External plant and equipment.

For employment use development of this nature, exacting operational information has been considered to remain largely unknown given the potential variation between future operators. Some level of reasonable assumption has therefore been necessary in forming noise impact assessment for the employment use scheme.

Given the scale of the proposed employment use development, further detail has been provided for the potential for noise impacts on the wider road network, outside of the redline boundary.

2.3 Noise Sensitive Receptors

The Site has been noted in a rural area with sparse residential properties in surround. Those noise sensitive receptors (NSRs) of consideration within this assessment have been referenced from land and property search information in terms of existing residential development in the immediate vicinity.

These NSRs shown in Figure C have been referenced as NSR A to NSR J within this report, with reference to the following properties:

- A. White Hill.
- B. White Hill Lodge.
- C. Coalbourn Cottage (note Greystones adjacent set back from this NSR)
- D. White Hill.
- E. Forest Edge.
- F. Weavers Cottage.
- G. Old Mill Farm.
- H. Halls Farm.

¹ 24473-UMC-ZZZZ-ZZ-DR-A-0601-C01-Proposed Masterplan



I. 198-200 Little Shaw Lane.

J. Holly Hill Farm (note The Hollies and Oak Tree Farm set back from this NSR).

Figure C: Identification of Nearest Noise Sensitive Receptors



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 applicable to 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 different 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 December 2024 (updated February 2025).

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:

“187. 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 198 of the NPPF further provides commentary on noise as follows:

“198. 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 life⁷²



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 72 - 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.

3.3 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 the 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.”

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



Response	Example of Outcomes	Increasing Effect Level	Action
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 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 +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context;
- A difference of around +5 dB 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 Baseline Survey Summary

The following section has referred to a study of environmental sound levels carried out between Thursday 10th October 2024 and Tuesday 15th October 2024, defining baseline conditions for the development.

4.1 Equipment and Measurements

Pre-development environmental sound measurements were carried out using the following equipment listed in Table B.

Table B: Sound and Vibration Monitoring Equipment

Location	Description	Serial No.
1	Norsonic Nor140 Class 1 Sound Level Meter	1403010
	Norsonic 1251 Acoustic Calibrator	31875
	Davis Instruments Vantage Vue Weather Station: 6250UK	MT211213028
2	Cirrus CR:171B Class 1 Sound Level Meter	G061094
	Cirrus CR:515 Class 1 Acoustic Calibrator	72210
3	Cirrus CR:171B Class 1 Sound Level Meter	G080284
	Cirrus CR:515 Class 1 Acoustic Calibrator	59336
4	Cirrus CR:171B Class 1 Sound Level Meter	G068726
	Cirrus CR:515 Class 1 Acoustic Calibrator	102979
5	Cirrus CR:171B Class 1 Sound Level Meter	G400059
	Cirrus CR:515 Class 1 Acoustic Calibrator	99960
6	Cirrus CR:171B Class 1 Sound Level Meter	G303356
	Cirrus CR:515 Class 1 Acoustic Calibrator	97641

The sound level meter and matched calibrator confirmed to Class 1 acoustic accuracy, with the calibration chain of equipment maintained traceably to national standards, no greater than one year for the sound calibrator and two years for the sound level meter. The SLM was hand calibrated before measurements and further checked upon completion of the survey. No significant drift was observed with calibration offsets of ≤ 0.20 dB.

Sound level measurements were provided in free-field conditions at several locations, 1.5 m above ground. These were used to understand the residual and background sound levels representative of the nearest receptors surrounding the proposed development. The weather station was positioned adjacent to Location 1 for the duration of the survey.

The monitoring protocol consisted of substantially unattended readings over the survey with attendances at the start and end of the monitoring period.

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

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



Graphical survey results describing each monitoring location have been provided for the above-listed metrics within Appendix B. The monitoring Locations have been shown on the plan of Figure D below.

Figure D: Baseline Sound Monitoring Locations



4.2 Sound Climate

The development site included a strong contribution of road traffic noise emanating from the west with respect to the M1 Motorway and from the south with respect to the A50. Frequent movements were otherwise noted from Whitwick Road to the east. Consequently, the development site was dominated by transportation noise whereby graphical representations within Appendix B have provided typical diurnal patterns at each long-term location.

4.3 Weather Conditions

The time history of weather conditions within Appendix B has provided that for the most survey, average wind speed fell below 5 m/s and there was an absence of rainfall, generally providing conducive conditions for environmental sound monitoring.

Wind speed gusts were noted above 5 m/s during the weekend of the study, alongside a rain shower during Monday morning.

A data handling exercise has been undertaken, which has informed that the prevailing sound levels for assessment purposes do not change where these infrequent adverse weather conditions have been excluded. Notwithstanding, the following information has been created from the filtered dataset to exclude any adverse conditions.

4.4 Residual and Background Sound Levels

The 'typical' residual and background sound levels have been reported in

Table C in accordance with BS 4142, with background levels as established from histograms of the recorded dB $L_{A90,T}$ data provided within Appendix B.

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.



Table C: Summary of Measured Residual and Background Sound Levels

Measurement Details				Residual sound level dB $L_{Aeq,T}$		Background sound level dB $L_{A90,T}$	
Date Range	Location	Period	Time HH:MM	Range	Typical*	Range	Typical*
Thursday 10/10/2024	1	Day	07:00 – 19:00	58 - 61	59	55 - 60	57
		Evening	19:00 – 23:00	56 - 68	57	55 - 58	56**
		Night	23:00 – 07:00	59 - 60	59	57 - 57	57**
Thursday 10/10/2024 to Tuesday 15/10/2024	2	Day	07:00 – 19:00	55 - 65	59	47 - 63	57
		Evening	19:00 – 23:00	51 - 63	59	44 - 61	51
		Night	23:00 – 07:00	47 - 65	57	42 - 64	44
	3	Day	07:00 – 19:00	52 - 62	57	50 - 61	55
		Evening	19:00 – 23:00	50 - 60	57	46 - 58	47
		Night	23:00 – 07:00	45 - 62	55	39 - 61	43
	4	Day	07:00 – 19:00	57 - 64	60	55 - 63	59
		Evening	19:00 – 23:00	53 - 63	59	48 - 61	52
		Night	23:00 – 07:00	47 - 63	57	41 - 62	43
	5	Day	07:00 – 19:00	61 - 74	65	56 - 66	63
		Evening	19:00 – 23:00	59 - 67	63	53 - 64	60
		Night	23:00 – 07:00	53 - 67	60	47 - 64	51
	6	Day	07:00 – 19:00	58 - 69	67	57 - 67	63
		Evening	19:00 – 23:00	56 - 69	63	53 - 66	61
		Night	23:00 – 07:00	53 - 68	61	50 - 66	53

* 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.

** Given the short-available history at this location, values from L2 have been considered as a conservative representation in the assessment of impact.



5.0 Noise Impact Assessment

The impact of noise from the development on the surrounding environment will depend on several factors, including (but not limited to) the time of day, frequency of occurrence and nature of sound source.

Development activities will naturally pose greater noise risk where they have been permitted during noise sensitive periods of the evening and night where the likelihood of annoyance or sleep disturbance increases. Human response to noise depends on sociological factors, attitudes and perceptions which can be difficult to define and account for any individual case.

The recognised methodology for assessment of operational phase impacts has been taken from BS 4142:2014 + A1:2019 *Methods for rating and assessing industrial and commercial sound*. This standard has been noted to include consideration of sound from industrial processes, fixed plant installations, loading and unloading of goods and mobile plant that is intrinsic to the premises (such as forklift trucks). The numerical assessment has been provided below for relevant periods of proposed operation, following the definition of specific sound levels.

5.1 Specific Sound Level Calculations

Given the proposal for employment use development with unknown future operators, a level of assumption has been necessary to describe the likely noise emissions based on similar and approved schemes. All established assumptions and limitations have been outlined herein this section.

The development masterplan has been used as a baseline for assessing operational emissions from the Site. This has included considerations of the following components based on industry standard methods, and measurements of similar developments:

- Vehicle movements along the access route.
- Movement of HGVs and forklifts around external loading bays.
- Use of parking areas.
- External plant and equipment.
- Breakout from buildings.

The data has been provided in this section as a summary of input data provided in octave bands in Appendix C. Where reference has been made to single figure values, such as sound power level, in all cases the provided spectral values have been used.

The quantification of noise impacts has been considered with extended operation of the scheme over day (07:00 – 19:00), evening (19:00 – 23:00), and night (07:00 – 23:00) periods, where relevant variation in baseline conditions has been provided in Section 4.4.

5.1.1 Vehicle Movements Along the Access Route and New Road

Table D has referred to trip generation provided by Hub Transport Planning Limited, to define peak hour movements along the access route and new access road at different times of operation, based on the 85th percentile peak hour trip rates. These figures would be significantly above what might be expected from other sources, such as standard average TRICS rates, to present a robust assessment of transport movements.

Figures for the predicted maximum movements per hour have been used to determine the likely worst-case hour for movements in the daytime, evening and night periods in Table D below. These have been based on the raw data movements shown in each hour within Appendix C.



Table D: Vehicle Movements Along the Access Route and New Road

Speed, km/h	Vehicle Type	Highest Quantity of Two-Way Movements per Hour	Time of Day	Input Sound Power Level, dB L _{WA}
16	HGV	63	Day	93
		13	Evening	
		17	Night	
	LGVs/Cars (i.e. All 2-way trips excluding HGVs)	468	Day	80
		46	Evening	
		75	Night	

Given the limited quantity of road traffic along the access routes falling below the limit of reliability for CRTN methods², being generally about the threshold of 50 No. movements per hour, a haul road method has been used as described by BS 5228-1³ as defining an equivalent line source in model space. Octave band input data of Appendix C has been taken from SLR's library of measurements of HGVs and cars at 10 mph from similar sites.

The quantity of vehicles applicable to each unit has been split based upon total GIA listed within Section 2.1 per Table E below.

Table E: Two-Way Movements Per Unit

Unit	HGVs (2-way totals)			LGVs/Cars (2-way totals)		
	Day	Evening	Night	Day	Evening	Night
Unit 1	14	3	4	105	10	17
Unit 2	21	4	6	154	15	25
Unit 3	6	1	2	45	4	7
Unit 4	11	2	3	82	8	13
Unit 5	8	2	2	63	6	10
Unit 6	3	1	1	19	2	3

5.1.2 Movement of HGVs and Forklifts Around External Loading Bays

An assumption has been made that HGVs could be reversing into or about loading areas with additional external movements from forklift trucks. The quantity of HGVs has followed the assumptions of Section 5.1.1 and the data within Appendix C has accounted for measurements of vehicles reversing with associated alarms.

An assumption of forklift movements in operation adjacent to each HGV has been made. All sources have been considered at 1.5 m height.

² Section II, Para 30. Department of Transport Welsh Office – The Calculation of Road Traffic Noise. HMSO, 1988.

³ Section F2.5. British Standard BS 5228-1:2009 +A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.



Table F: Vehicle Movements Within External Loading Bays

Speed, km/h	Vehicle Type	Input Sound Power Level, dB <i>L_{WA}</i>	Time of Day	Quantity of Two-Way Movements Per Hour
10	HGV Reversing	90	Day	Per Table E.
			Evening	
			Night	
	Forklift	88	Day	20 per hour
			Evening	5 per hour
			Night	10 per hour

Some level of assumption has been necessary to define the on-time of each activity of Table F. Reversing of HGVs has been considered as short-lived but slow events, with forklift operations as intermittent and in operation for several trips during any hour.

5.1.3 Use of Parking Areas

There has been no standard assessment method adopted in the UK for the assessment of noise from proposed parking bays. In general terms, sound from the car park will be characteristic of vehicles entering and exiting, to include short-term noises associated with vehicles arriving and leaving parking bays, as well as people entering and exiting their vehicles.

This assessment has considered the sound emission from all parking bays in accordance with the LfU Study 2007⁴ as modelled elements within CadnaA software. The referenced method has been summarised to give sound power levels for parking area sources, considering two movements in and out of each space, standardised from reference measurements at 7.5 m from the parking bay.

The quantity of parking movements has depended on the trip rates of light vehicles from the transport data as expected during different periods of operation, linking to the number of movements in any one hour. These have been provided in terms of parking coefficients and sound power levels within Table G below.

Table G: Car Parking Sound Levels

Unit	Total Quantity of Parking Spaces	Time of Day	Worst-Case Car Movements Per Hour	In or Out Movements Per Space Per Hour	Input Sound Power Level, dB <i>L_{WA}</i>
Unit 1	150	Day	105	0.350	86
		Evening	10	0.033	75
		Night	17	0.057	78
Unit 2	219	Day	154	0.352	88
		Evening	15	0.034	78
		Night	25	0.057	80

⁴ Bavarian State Office for the Environment – Parking Area Noise. Recommendations for the Calculation for sound Emission of Parking areas, Motorcar Centres and Bus Stations as well as of Multi-Storey Car Parks and Underground Car Parks. Revised Edition, 2007.



Unit	Total Quantity of Parking Spaces	Time of Day	Worst-Case Car Movements Per Hour	In or Out Movements Per Space Per Hour	Input Sound Power Level, dB L_{WA}
Unit 3	66	Day	45	0.341	81
		Evening	4	0.030	70
		Night	7	0.053	73
Unit 4	124	Day	82	0.331	84
		Evening	8	0.032	74
		Night	13	0.052	76
Unit 5	95	Day	63	0.332	83
		Evening	6	0.032	73
		Night	10	0.053	75
Unit 6	32	Day	19	0.297	76
		Evening	2	0.031	66
		Night	3	0.047	68

The quantity of HGV movements in parking areas has depended on the trip rates of HGVs as shown in Table D. These have been provided in terms of parking coefficients and sound power levels within Table H below.

Table H: HGV Parking Sound Levels

Unit	Total Quantity of Parking Spaces	Time of Day	Worst-Case HGV Movements Per Hour	In or Out Movements Per Space Per Hour	Input Sound Power Level, dB L_{WA}
Unit 1	39	Day	14	0.179	89
		Evening	3	0.038	82
		Night	4	0.051	84
Unit 2	74	Day	21	0.142	92
		Evening	4	0.027	85
		Night	6	0.041	86
Unit 3	66	Day	6	0.045	86
		Evening	1	0.008	79
		Night	2	0.015	81
Unit 4	46	Day	11	0.120	88
		Evening	2	0.022	81
		Night	3	0.033	83
Unit 5	20	Day	8	0.200	83
		Evening	2	0.050	77
		Night	2	0.050	77
Unit 6	6	Day	3	0.250	79



Unit	Total Quantity of Parking Spaces	Time of Day	Worst-Case HGV Movements Per Hour	In or Out Movements Per Space Per Hour	Input Sound Power Level, dB L_{WA}
		Evening	1	0.083	74
		Night	1	0.083	74

5.1.4 Noise Breakout of Operational Buildings

In assessing the operational noise breakout from the new industrial buildings, some level of assumption has been made to the likely internal sound level and proposed form and construction of façade components.

It has been considered that the typical occupancy sound level of any building used under light industrial use building would be expectedly higher than those for storage or offices. Any future operator would have an onus to control internal sound levels below the levels defined by The Control of Noise at Work Regulations (2005). The lower exposure action value of which, at 80 dB $L_{EP,d}$ for any employee, has been used to approximate an internal reverberant sound level 10 dB below, at 70 dB $L_{Aeq,T}$ and immediately inside each façade and roof of every proposed building.

The sound spectrum used to define internal reverberant sound pressure levels for industrial use, along with the attenuation from insulated wall and roof systems has been provided within Appendix C. These would comprise a composite dB R_w for the entire façade protecting internal industrial areas and would typically be achieved using steel profiled panelling with internal lining and thermal insulation between leaves. The general sound reduction index of metal insulated roof, wall and façade systems has been noted from one proprietary manufacturer⁵ in the region of 23 – 58 dB R_w .

There has been the potential for variation in the assessment of sound breaking out of proposed industrial buildings depending on their use. Baseline façade estimates of 27 dB R_w and 24 dB R_w have been for used for respective roof and wall systems, to protect against a moderate level of internal industrial noise within each proposed unit. This assumption would be assisted with the express use of automatic loading doors on all proposed units.

Smaller areas of lower sound insulating elements (such as fire exit doors and any roof lights) have been considered to have no meaningful effect on noise breakout from employment use areas when rated nominally 30 dB R_w . Rather, the duration that any doors would remain open has been considered influential on off-site noise levels.

5.1.5 External Plant and Equipment

The type, quantity, and nature of plant to be located or ventilating externally to each unit has considered to include air-source heat pumps and ventilation units to support the proposed office uses. The main external source has been considered as ASHPs which have been illustrated where relevant on the proposed Masterplan.

Candidate selections of plant have been provided for inclusion within this noise impact assessment, based on the provisional selection of air handling units (AHUs) and air-conditioning units (AC). These have been defined for all units per Table I below.

⁵ Acoustic Performance Guide – Insulated Roof, Wall & Façade Systems. Kingspan, 2005.



Table I: Plant Location, Quantity, Type and Levels

Unit	Quantity	Plant Reference	Sound Pressure Level dB(A) at 1 m
1	1 No.	AHU G16	65 (exhaust)
	5 No.	AC CU M300	67 (heating)
2	1 No.	AHU G16	65 (exhaust)
	1 No.	AHU G10	53 (exhaust)
	5 No.	AC CU M300	67 (heating)
	1 No.	AC CU M50	56 (heating)
3	1 No.	AHU G12	59 (exhaust)
	2 No.	AC CU M300	67 (heating)
4	1 No.	AHU G14	62 (exhaust)
	4 No.	AC CU M300	67 (heating)
5	1 No.	AHU G14	62 (exhaust)
	3 No.	AC CU M300	67 (heating)
6	1 No.	AHU G10	53 (exhaust)
	1 No.	AC CU M300	67 (heating)

The location for external plant and equipment has been reasonably positioned away from the nearest NSRs at the side or rear of each building. In this configuration, location distance and adjacency to each industrial building has been considered to provide useful attenuation of sound levels for nearest NSRs adjacent.

Office ventilation systems have been designed to provide low indoor ambient noise levels in the region of 30 – 35 dB(A). Consequently, atmospheric side ventilation apertures have not been considered influential on the external environment from these low-noise plant items. It can be shown that limits of 55 dB(A) at 1 m (roughly as Noise Rating NR50 at 1 m) from any office façade ventilation aperture would be inconsequential to specific sound levels.

It has otherwise been considered that all plant items, consisting of ASHPs and ventilation, would need to accord with the technical requirements of BREEAM⁶, where the scheme aims to achieve relevant credit under Pol 05 noise pollution. While not the subject of this assessment, the acoustic requirement for any plant would need to be at least 5 dB below the background sound level at any time of proposed use. It can be shown that this performance standard would be readily achieved by the proposal, and with tolerance of at least 6 dB, based on the candidate plant design.

5.1.6 Embedded Mitigation

The main component of noise emanating from the Site has been largely identified in terms of movement along access roads, beyond movements within loading bays, plant or building breakout. The form of the development, in terms of layout, plant locations, moderate façade insulation and automatic door closers, has been outwardly considered embedded mitigation.

The modelling works in this section have further considered embedded mitigation as screening by means of a 2.0 m tall acoustic boundary fence to the north of the egress route,

⁶ BREEAM UK NEW Construction Technical Manual SD5079 (latest Version 6.1.2, November 2024).



adjacent to NSR F. The form of the acoustic barrier would need to be imperforate, of at least 15 kg/m² mass per area to control incident commercial and/or industrial noise.

5.2 Modelling Outputs

To understand specific sound levels for the purposes of assessment, a noise model has been created using CadnaA with input sound power level data from Section 5.1. The on time for all activities and equipment has been accounted for in the defined sound power levels.

The modelling process has followed the technical requirements of ISO 9613 Parts 1 and 2, accounting for all plant items at their developed location. The format of calculations has included all noise sources 1.5 m above ground with receptor locations of 1.5 m and +3.0 m per upper floor as appropriate to the receptor. Only the worst-affected façades have been illustrated for simplicity of reporting.

Propagation over mixed ground ($G = 0.5$) has been used to define soft and hard ground types along with a reflection order of 2, with each building comprising a reflecting element in model space.

The specific sound level occurring from the development has been equated on listed assumptions during different times of the day, evening, and night.

The following specific sound levels have been estimated from the described modelling process, with results illustrated in Figure E, Figure F and Figure G. Results have highlighted the highest level on the worst-affect façade, at either ground or upper floor level appropriate to the height of the receptor.

Table J: Specific Sound Levels

NSR Ref	NSR Name	Predicted Specific Sound Level dB $L_{Aeq,T}$		
		07:00 – 19:00	19:00 – 23:00	23:00 – 07:00
A	White Hill	41	39	39
B	White Hill Lodge	37	36	36
C	Coalbourn Cottage	38	36	36
D	White Hill	42	37	37
E	Forest Edge	42	40	40
F	Weavers Cottage	46	39	40
G	Old Mill Farm	46	39	40
H	Halls Farm	41	35	36
I	198-200 Little Shaw Lane	39	37	37
J	Holly Hill Farm	42	40	40
Highest value at any NSR		≤ 46	≤ 40	≤ 40



Figure E: Specific Sound Levels, Highest dB $L_{Aeq,T}$ at Building Façades – Daytime

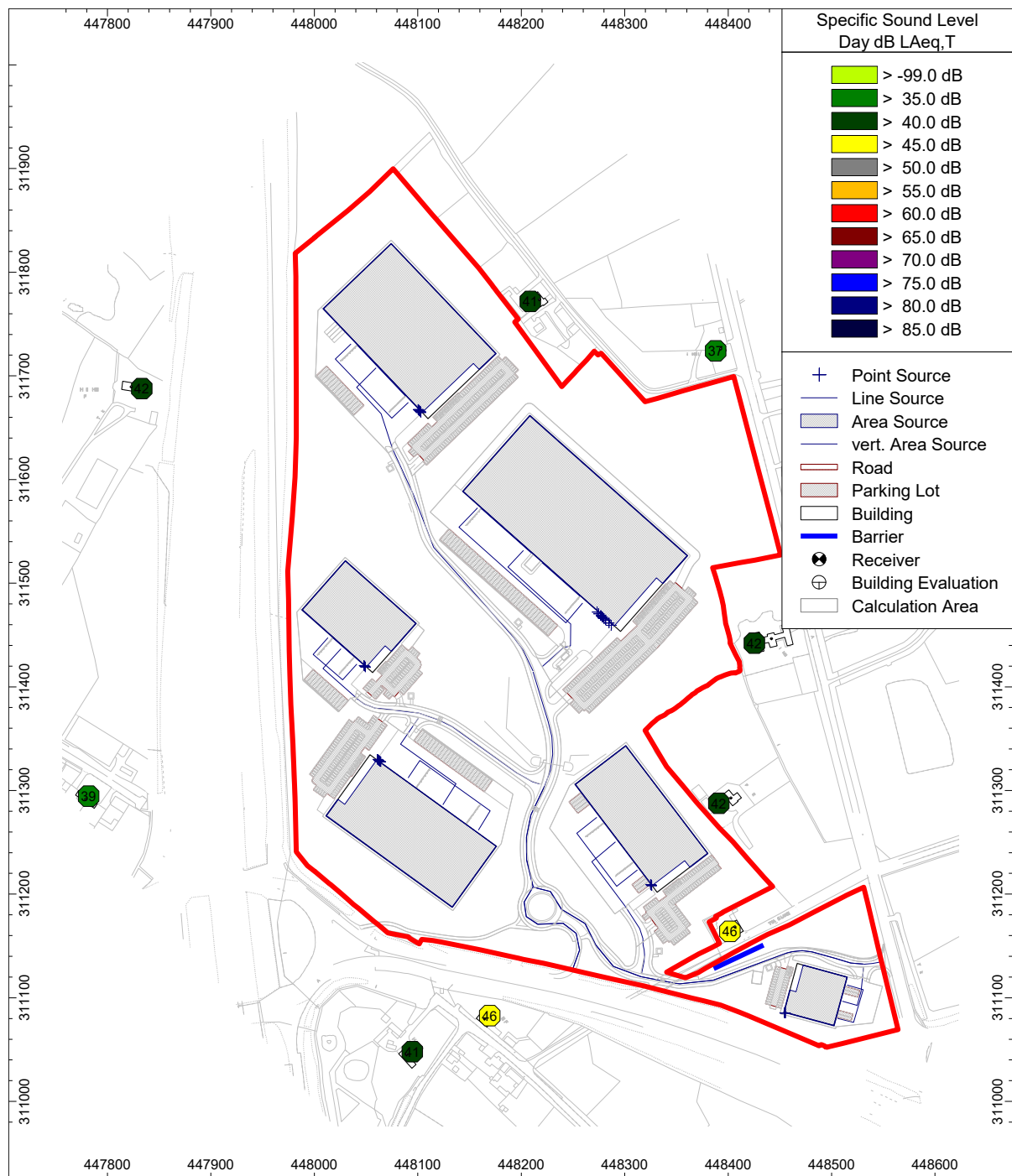


Figure F: Specific Sound Levels, Highest dB $L_{Aeq,T}$ at Building Façades – Evening

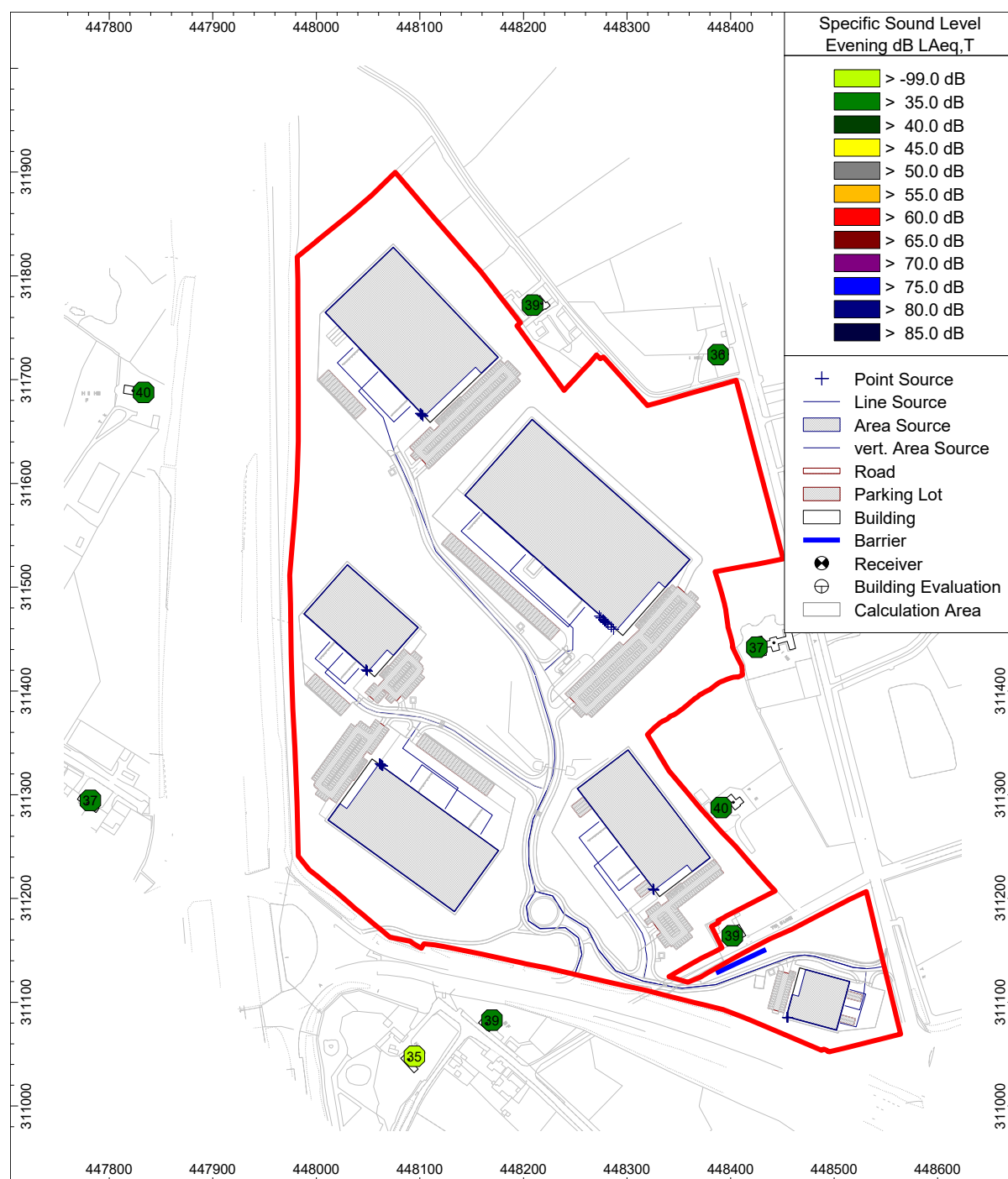
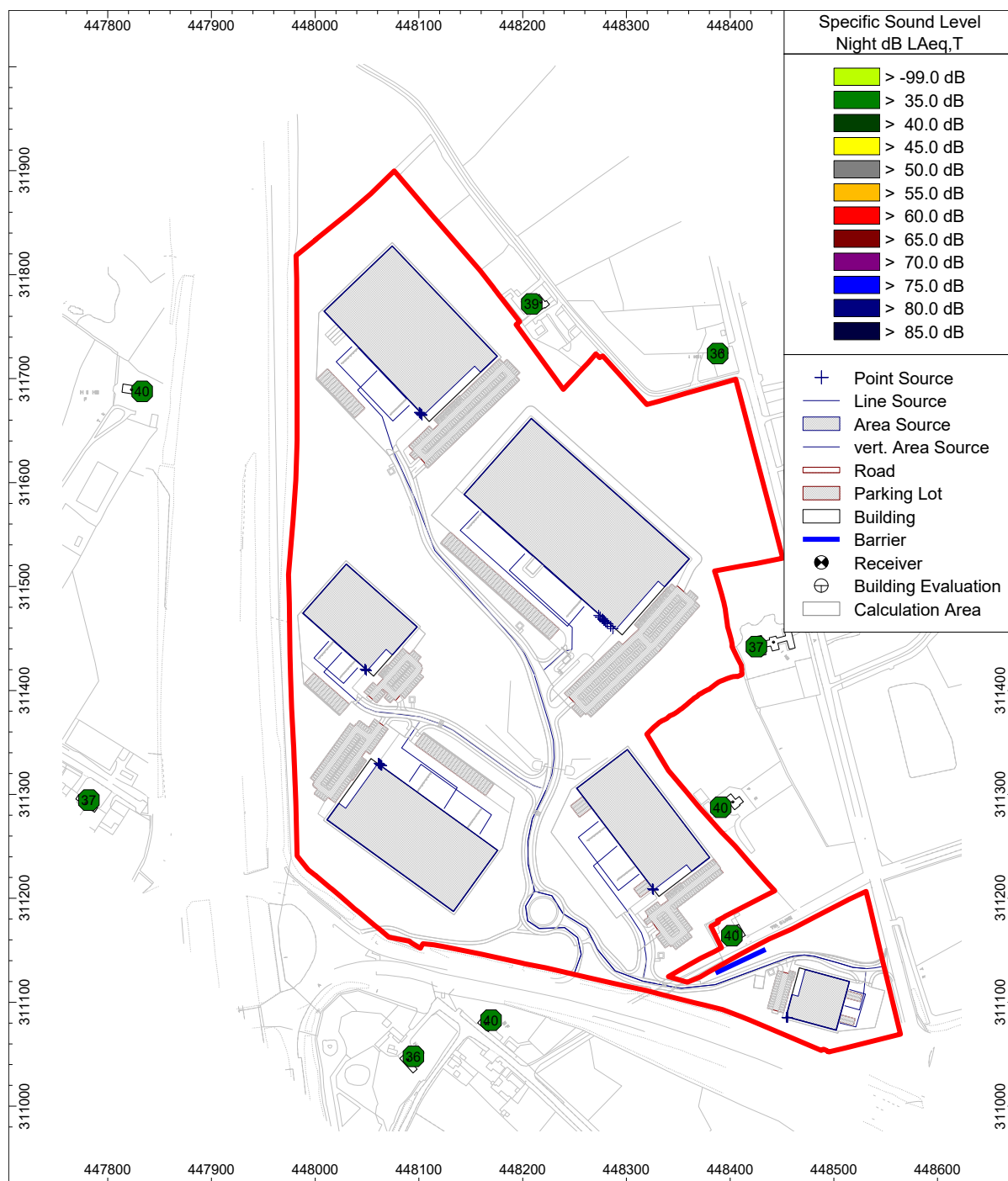


Figure G: Specific Sound Levels, Highest dB $L_{Aeq,T}$ at Building Façades – Night



5.3 BS 4142 Assessment

The following numerical assessments have been provided in Table K below in accordance with BS 4142 to provide a comparison between the rating sound levels of the proposal against the typical sound levels existing prior to development at the receptors indicated to have the highest incident specific sound level based upon the noise models produced.

Table I has provided that NSR F or G would be worst affected in the local area during the daytime, and NSR E or J during the evening and night, which in turn has been viewed as a result of proximity to the proposals. The following assessment of the worst-case has been based on NSR F and E with lowest-representative sound levels taken from Location 3.



Table K: BS 4142 Assessment of Proposed Development – Worst-Case

Results	Day 07:00 – 19:00	Evening 19:00 – 23:00	Night 23:00 – 07:00	Commentary
Residual sound level, dB $L_{Aeq,T}$	57	57	55	Representative residual and background sound levels at Location 3 as shown within Table C. Both worst-case and closest to NSRs E and F.
Background sound level, dB $L_{A90,T}$	55	47	43	
Reference time interval	1-hour	1-hour	15-minutes	
Specific sound level, dB $L_{Aeq,T}$	46	40	40	Highest off-site values from noise modelling results of Table J.
Acoustic feature correction, dB	+ 3	+ 3	+ 3	A 3 dB feature correction has been applied to account for a source that could have intermittent sound characteristics when operational in the residual sound climate. Activity has not been reviewed as either tonal impulsive, or other in character.
Rating level, dB $L_{Ar,Tr}$	49	43	43	Specific sound level plus acoustic feature correction.
Excess of rating over background sound level	- 6	- 4	0	
Assessment indicates likelihood of <i>*depending on context</i>	Low Impact*			Where the rating level does not exceed the background level, this is an indication that the specific sound source will have a low impact, depending on the context. 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.
Uncertainty of the assessment	Not significant			See statement of uncertainty in Section 5.5.

The numerical assessments of Table K have highlighted the potential for low impact during operating hours at the worst-affected NSRs, where rating sound levels have been predicted at or below the representative background sound levels.

In following of the assessment requirements of BS 4142, these numerical predictions have been considered in context in Section 5.4 below.



5.4 Context

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 numerical assessments within Table J have been to review likely noise impacts occurring from new employment use development in a mixed, residential and industrial area, where operation at any time has been outwardly considered.

During operational hours, predictions have provided large differences (i.e. approximately or greater than 10 dB) between the residual sound level over the specific sound level, such that in context, the ambient sound level should not change by a perceptible degree due to the development. It has subsequently been considered in context that these development activities will be largely indistinguishable for most of the time and some level of masking will be afforded by the residual sound level dominated by transportation infrastructure. In context at any time, the character of the specific sound consisting mainly of building breakout would be important against the anonymous climate comprising of road traffic.

The morning, evening and night have been considered particularly sensitive periods of operation where it would normally be appropriate to consider that residents could be resting or sleeping within their homes. During these times, it could be expected that residents may choose to leave windows open, where a level difference of approximately 13 dB would normally be expected inside the dwelling through a partially open window. The nearest NSRs have not been noted to contain any sound insulation provisions that allow occupants to keep windows closed (e.g. mechanical ventilation) therefore an open window assessment has been considered appropriate in context.

For any operational hours, resulting ambient noise levels outside or within the worst affected receptors have been predicted to relate to the residual sound climate where this prevails beyond the specific sound levels of this assessment. During these times, the resulting ambient sound level would not change because of the development and comprise mainly of the residual sound from road traffic and extraneous (existing) industrial activities, rather than that of the development as including new employment use operations.

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

Mitigation has been considered in the employment use development, mainly using appropriate site layout, orientation, façade and boundary controls.

Predicted noise impacts during any time of the day, evening and night have been supported as low when considering the context of the Site.

5.5 Statement of Uncertainty

Uncertainty has been considered as a limit to the accuracy of any noise assessment, including associated steps of measurement, calculation, or prediction. Factors have been considered to include (but not limited to) the following:

- The inherent accuracy limitation of methodology in Standards and guidance.
- Variability in meteorological conditions.
- The accuracy of sound source input data of a calculation.

It has been a requirement of the assessment standard BS 4142 to minimise uncertainty to a level commensurate with the intention of the assessment objective. Measures taken in this assessment to minimise uncertainty have included:



- Baseline sound levels have been measured over a reasonably representative weekday and weekend period and therefore provide a good indication of representative background and residual sound levels.
- These baseline measurements were undertaken in accordance with recognised Standards, using a tall environmental windshield and have accounted for only acceptable weather conditions e.g. low wind speeds and precipitation.
- A direct measurement location was used to provide a representative basis for background sound levels at the nearest receiver locations.
- Field calibration checks were undertaken before and after measurements to record very low levels of equipment drift.
- The calculations have been based on measured data in similar situations, where possible, and provided as conservative in other areas as not to under-predict the resulting impacts.

These measures have been considered to reduce uncertainty to a level considered not to have any significance to the outcome of this assessment.



6.0 Additional Noise Impact Considerations

6.1 Off-Site Development Related Traffic Noise

The potential 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 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 2026 and with the scheme in full operation. The following magnitude of short-term change (or impact) from DMRB has been applied following Table L below.

Table L: 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



6.1.1 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 Hub Transport Planning Limited for the purposes of this section.

The method to assess road traffic noise impacts has followed that outlined in Section 6.1 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 along the closest road links against the change in the baseline noise level in the full 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 level 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 in the local area with growth rates applied from TemPro to define the full opening year. Only those links that have presented valid calculations for CRTN have been considered in following, to explain the worst-case effects on the wider road network.

Table M: Estimated Composition of Road Traffic – Without and With Scheme, 2026

Link Road	Without Scheme, 2026		With Scheme, 2026		CRTN Speed kmh
Location	AAWT	% HGV	AAWT	% HGV	
A511	30,776	15.7	31,856	15.2	80
M1(N)	105,387	15.8	105,833	15.9	108
M1(S)	136,884	16.3	137,616	16.4	108
A50	34,777	8.1	37,215	8.8	97
Whitwick Road	8,188	1.2	9,480	3.9	70
A50(E)	33,217	8.5	33,530	8.7	97
A50 Groby Road	22,335	2.4	22,557	2.6	60
A563 New Parks Way	21,729	2.1	21,751	2.1	50

It has been established that, due to a minor difference in road traffic composition in the local area, that worst-case *negligible adverse* noise impacts would result. This traffic would be disseminated at the connecting road junctions, as to result in *no change* within the wider road network. This has been shown within Table N below.

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 employment use development.



Table N: Estimated Magnitude of Change from Road Traffic Noise

Location	Short Term Noise Change dB $L_{A10,18h}$	Magnitude of Impact
A511	+ 0.1	Negligible adverse
M1(N)	± 0.0	No change
M1(S)	± 0.0	
A50	+ 0.3	Negligible adverse
Whitwick Road	+ 0.6	
A50(E)	± 0.0	No change
A50 Groby Road	± 0.0	
A563 New Parks Way	± 0.0	

6.2 Predicted Noise Impact and Planning

The evaluated noise impacts in this report should be considered mindful of the National Planning Policy Framework and Noise Policy Statement for England, as well as local guidance that define policy and decision-making requirements for planning and noise.

It has been provided within Section 3.0 of this report, that the NPSE suggests noise levels above the SOAEL should be avoided and that if noise levels fall between the LOAEL and SOAEL all reasonable steps should be taken to minimise and mitigate adverse effects, while considering guiding principles of sustainable development.

The range of noise impacts for the proposed development have been deemed acceptable with respect to overarching and local requirements for planning and noise. Resulting impacts with suitable mitigation have been anticipated between the NOEL and LOAEL thresholds of the NPSE.

It is expected that sound from the development would be largely unnoticeable, or just perceptible during the most noise sensitive periods of assessment. If it is possible for the sound to be audible, it is not expected to cause any change in behaviour or attitude. The development could marginally affect the acoustic character of the area but not to the extent that there is a perceived change in quality of life.

Commensurate measures have been considered to *“mitigate and minimise adverse impacts on health and quality of life”*.

It has been considered that suitably worded planning conditions could be used to ensure that commensurate controls have been adopted in the scheme to minimise any adverse impacts on health and quality of life.



7.0 Conclusions

Caddick Developments Limited has commissioned SLR to undertake noise impact assessment for a proposed employment use development at the Land at Junction 22 of the M1, Cliffe Hill Farm.

A noise impact assessment has been carried out in line with BS 4142 methodology by a suitably qualified acoustician. Cumulative rating sound levels have been predicted at nearest sensitive receptors using noise modelling techniques of expected noise emissions.

The numerical assessment in Section 5.0 have predicted worst-case rating levels at or below the representative background sound levels during any time of the day, evening or night. Predicted noise impacts during these operating hours have been supported as low, when considering the context of the site.

It has been established that, due to a minor difference in road traffic composition in the local area, that worst-case *negligible adverse* noise impacts would result. This traffic would be disseminated at the connecting road junctions, as to result in *no change* within the wider road network.

It has been concluded from the findings of this assessment that the range of noise impacts for the proposed employment use development would be acceptable with respect to overarching requirements for planning and so, noise should not present reasonable grounds for planning refusal.

The likely acoustic effects have been established below the LOAEL threshold of the NPSE, such that noise would not cause any change in behaviour or attitude or a perceivable change in the quality of life.

Commensurate noise mitigation has been provided in following of overarching requirements for planning and noise and in the consideration of planning approval.



8.0 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

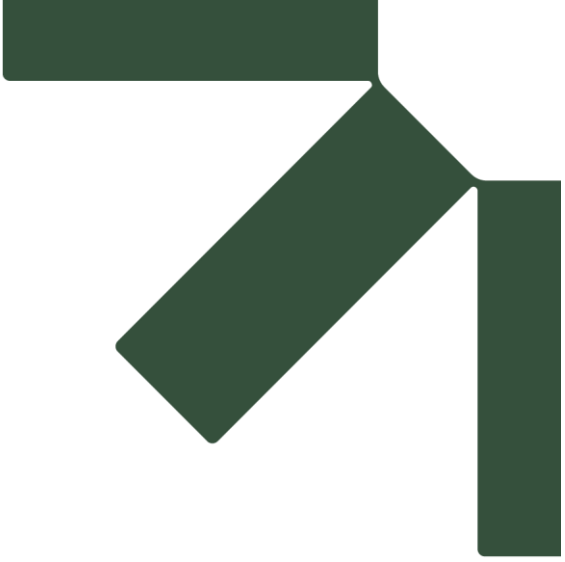


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Appendix A Glossary of Terminology

Employment Use Development Noise Impact Assessment

Land at Junction 22 of the M1, Cliffe Hill Farm

Caddick Developments Limited

SLR Project No.: 410.066282.00001

12 September 2025

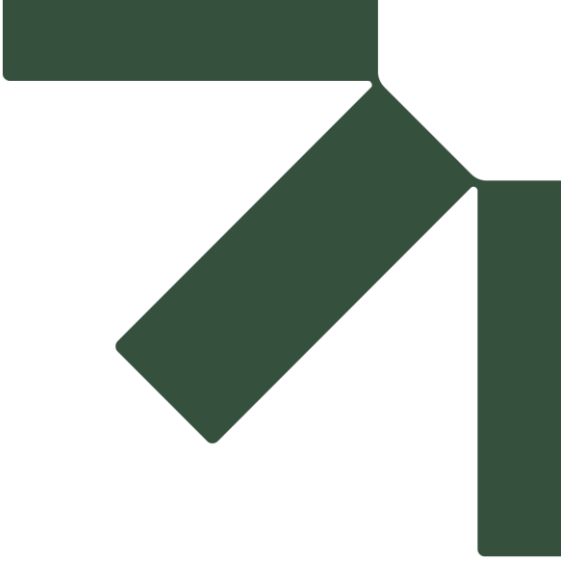
The human ear can detect a very wide range of pressure fluctuations, which are perceived as sound. In order to express these fluctuations in a manageable way, a logarithmic scale called the decibel, or dB scale is used. The decibel scale typically ranges from 0dB (the threshold of hearing) to over 120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

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 μ Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
$L_{Aeq, T}$	$L_{Aeq, T}$ is defined as the notional steady sound level which, over a stated period T, would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.
$L_{A10, T}$ & L_{A90}	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L_{10} is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L_{90} is the 'average minimum level' and is often used to describe the background noise. It is common practice to use the L_{10} index to describe traffic noise.
$L_{Amax(F)}$	$L_{Amax(F)}$ is the maximum A-weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.





Appendix B Survey Data

Employment Use Development Noise Impact Assessment

Land at Junction 22 of the M1, Cliffe Hill Farm

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Figure B1: Sound Pressure Level Time History Graph – Location 1

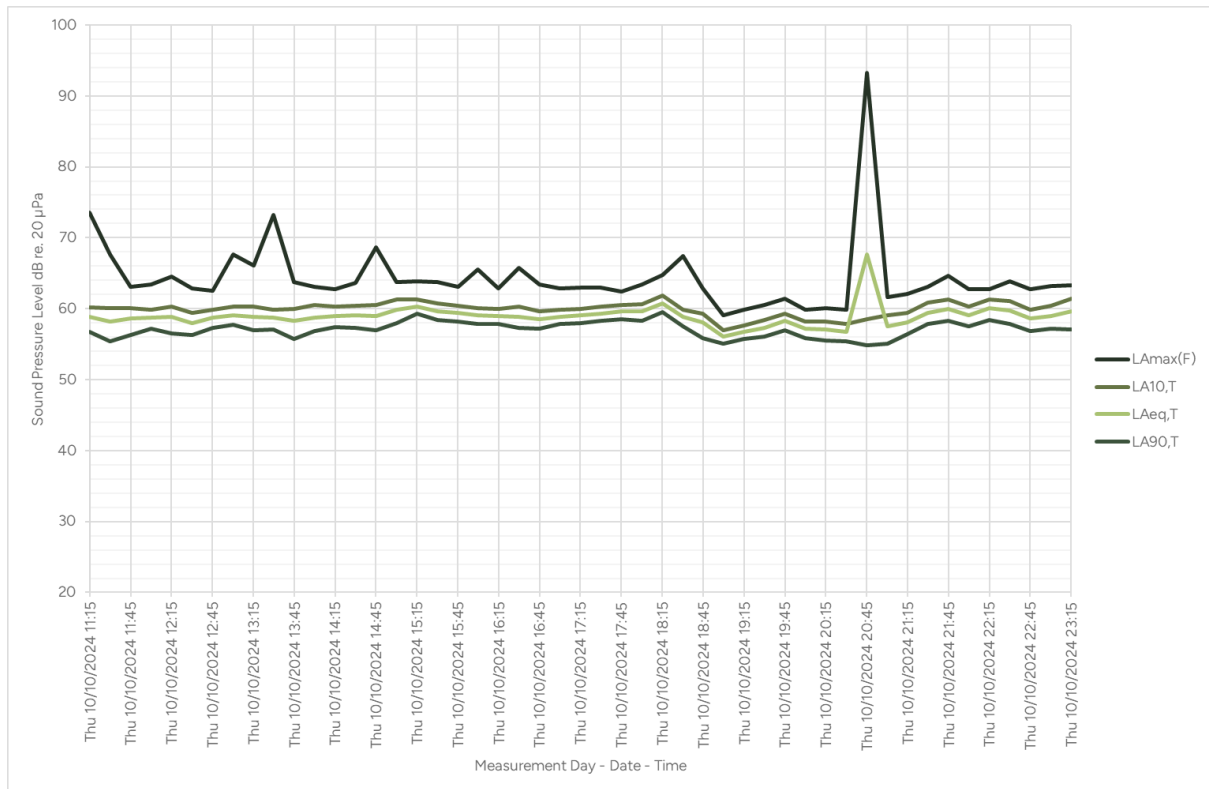


Figure B2: Background Sound Level Histogram – Weather Filtered – Location 1

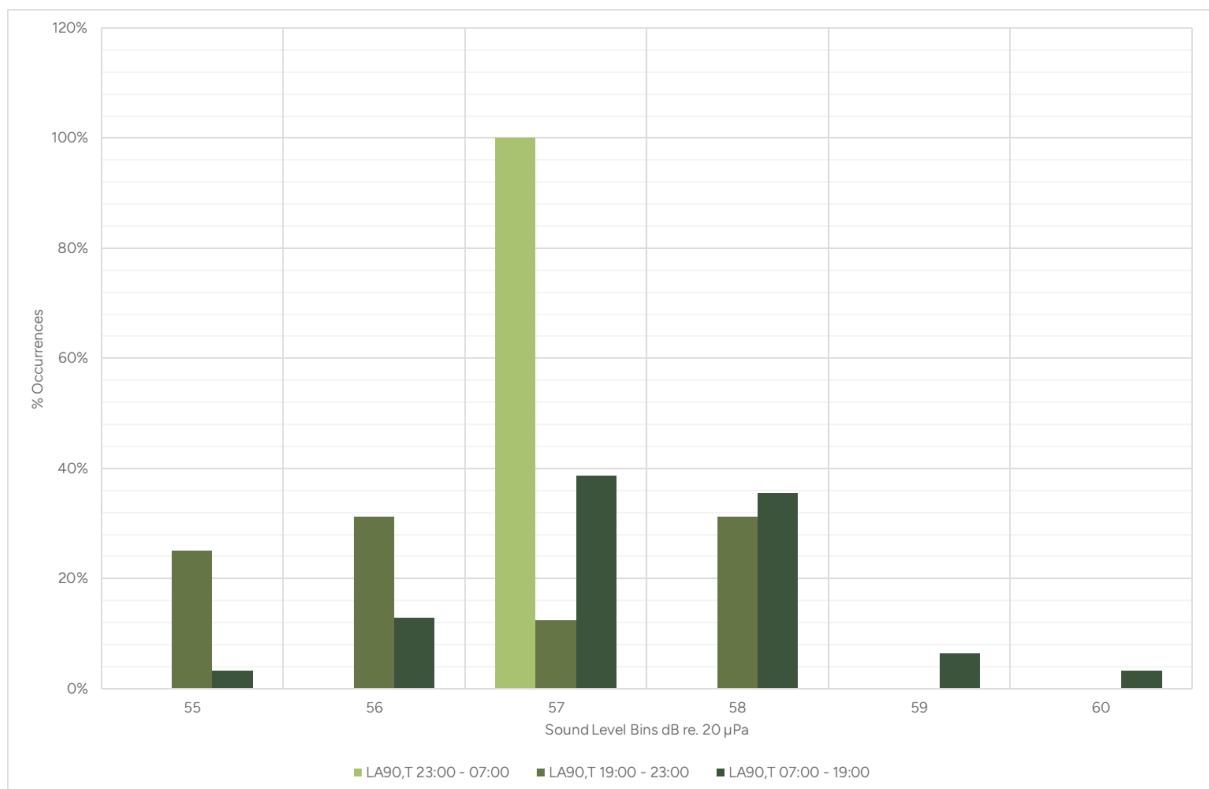


Figure B3: Sound Pressure Level Time History Graph – Location 2

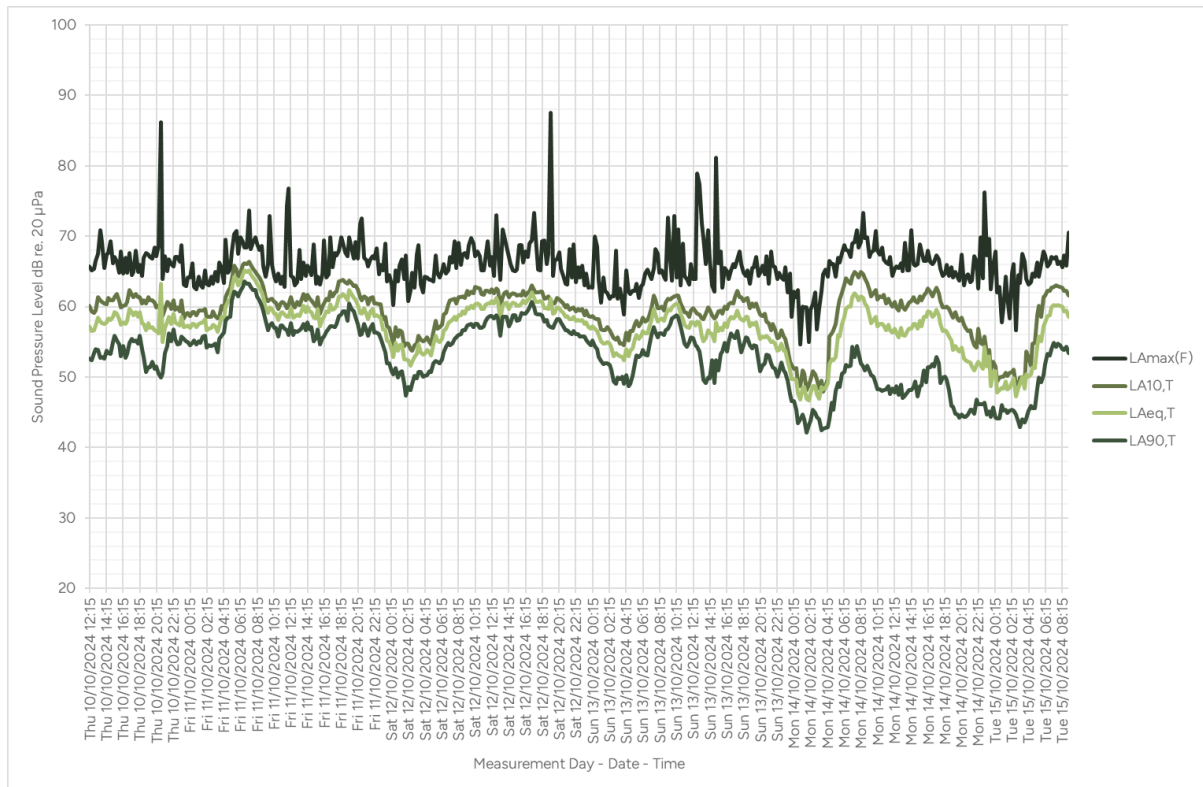


Figure B4: Background Sound Level Histogram – Weather Filtered – Location 2

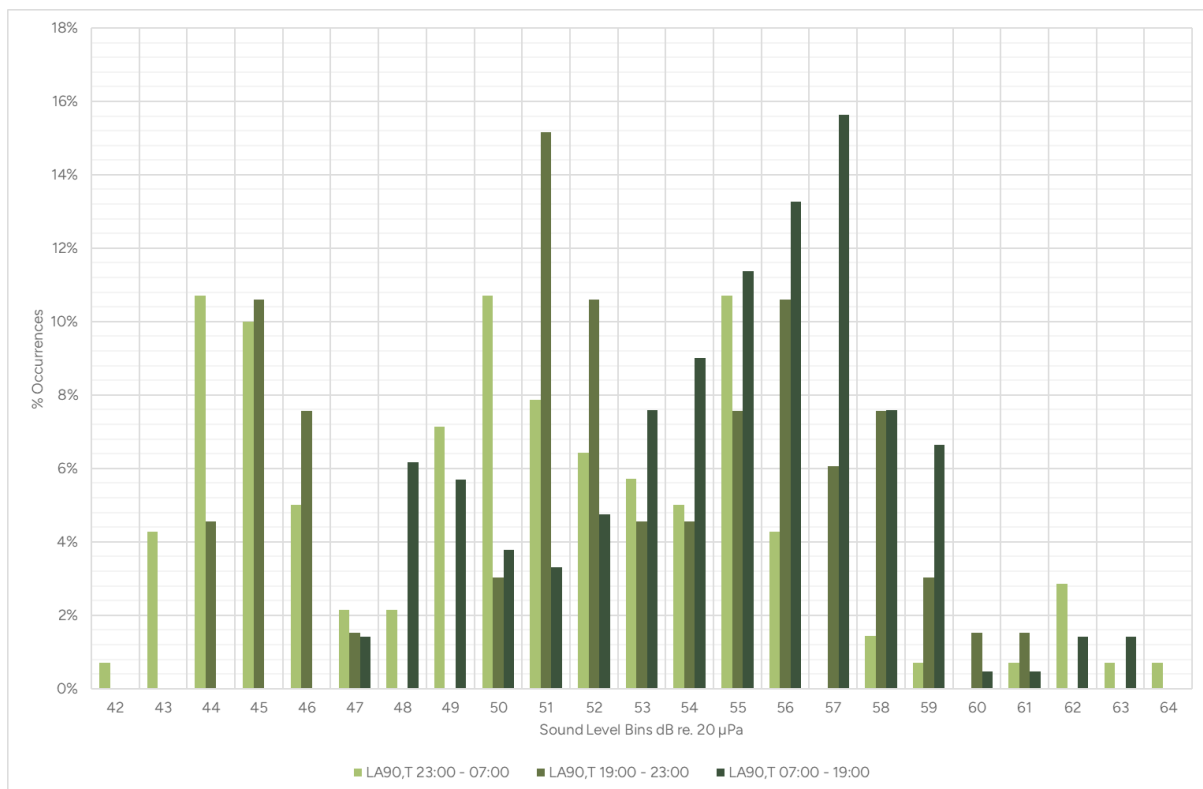


Figure B5: Sound Pressure Level Time History Graph – Location 3

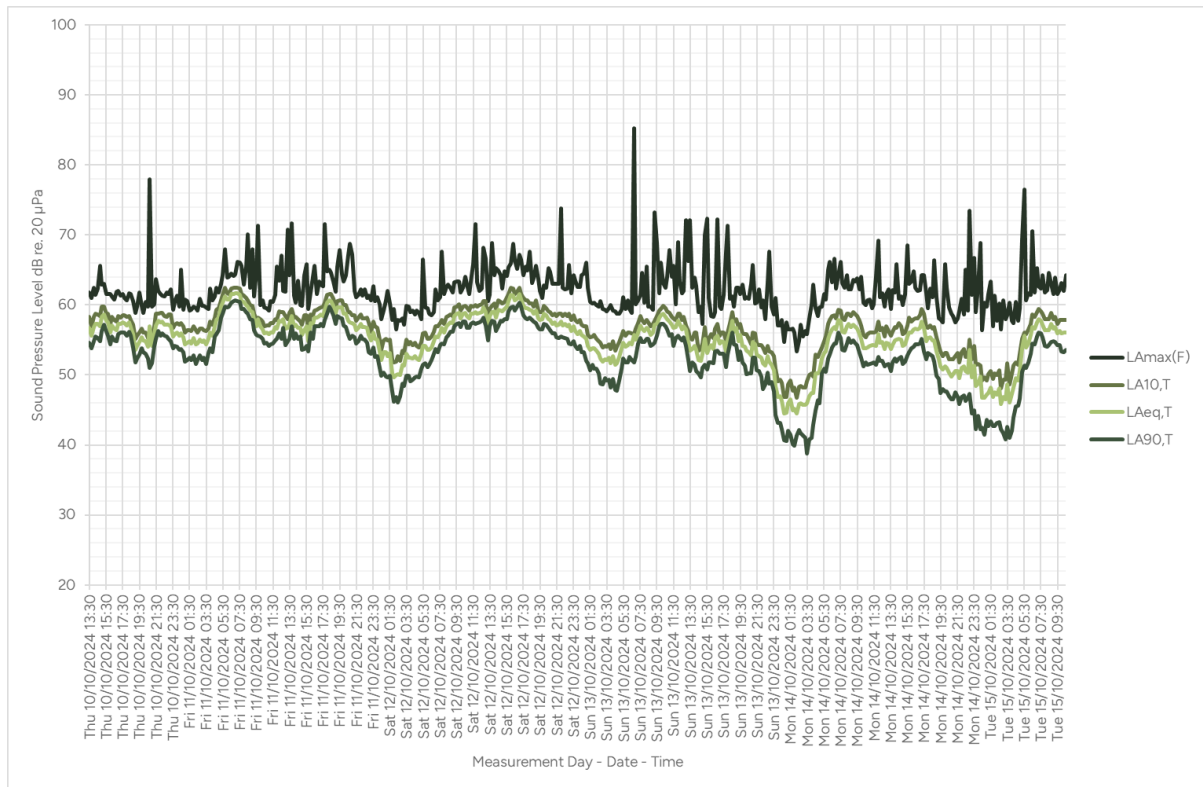


Figure B6: Background Sound Level Histogram – Weather Filtered – Location 3

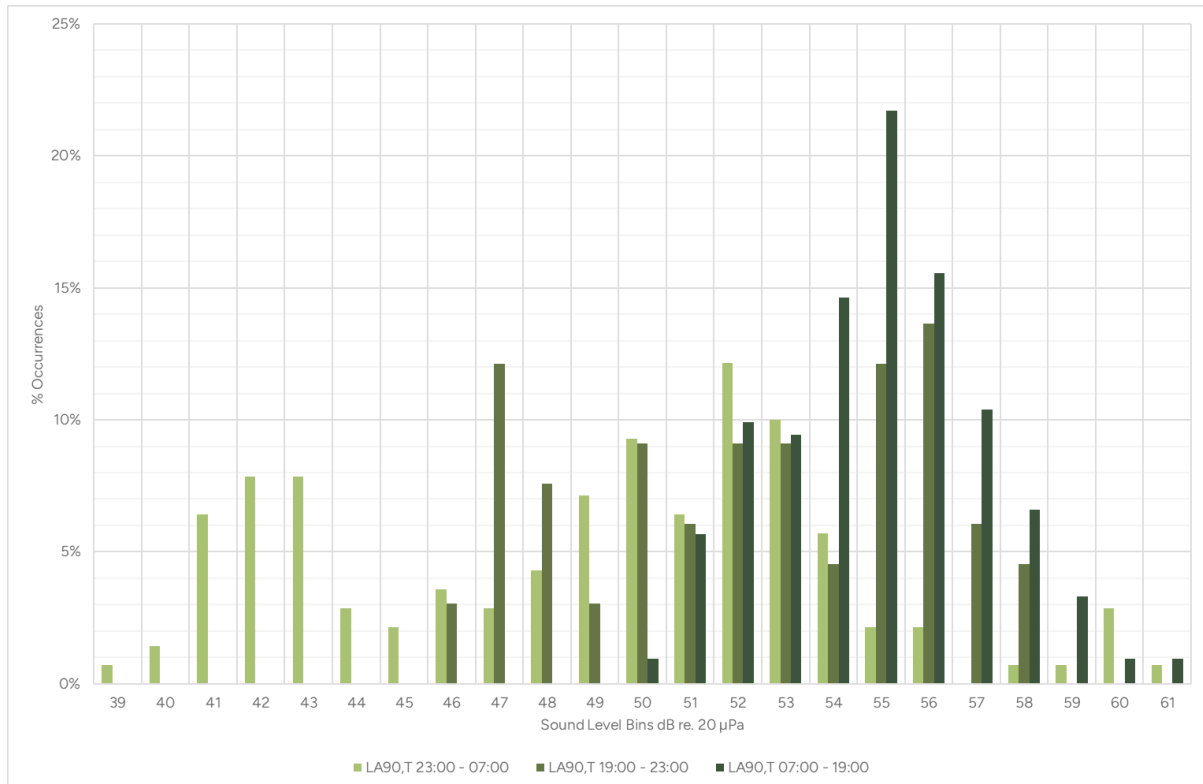


Figure B7: Sound Pressure Level Time History Graph – Location 4

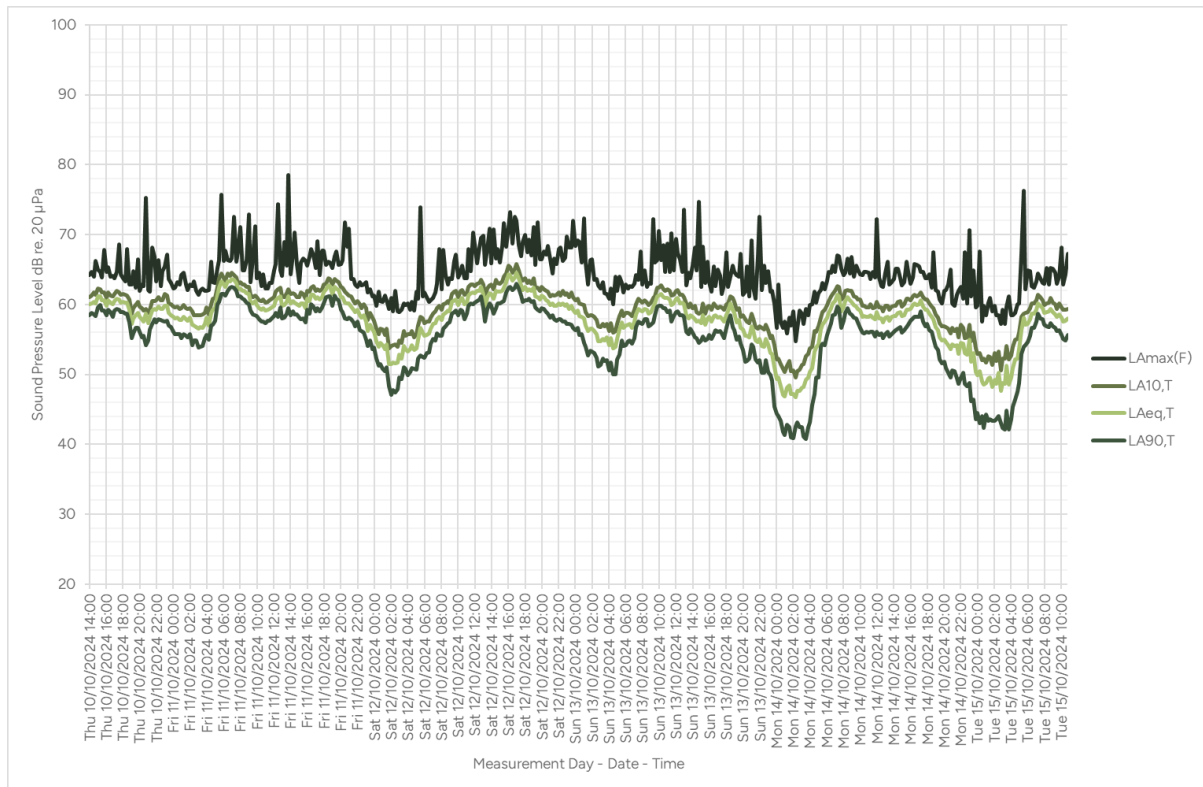


Figure B8: Background Sound Level Histogram – Weather Filtered – Location 4

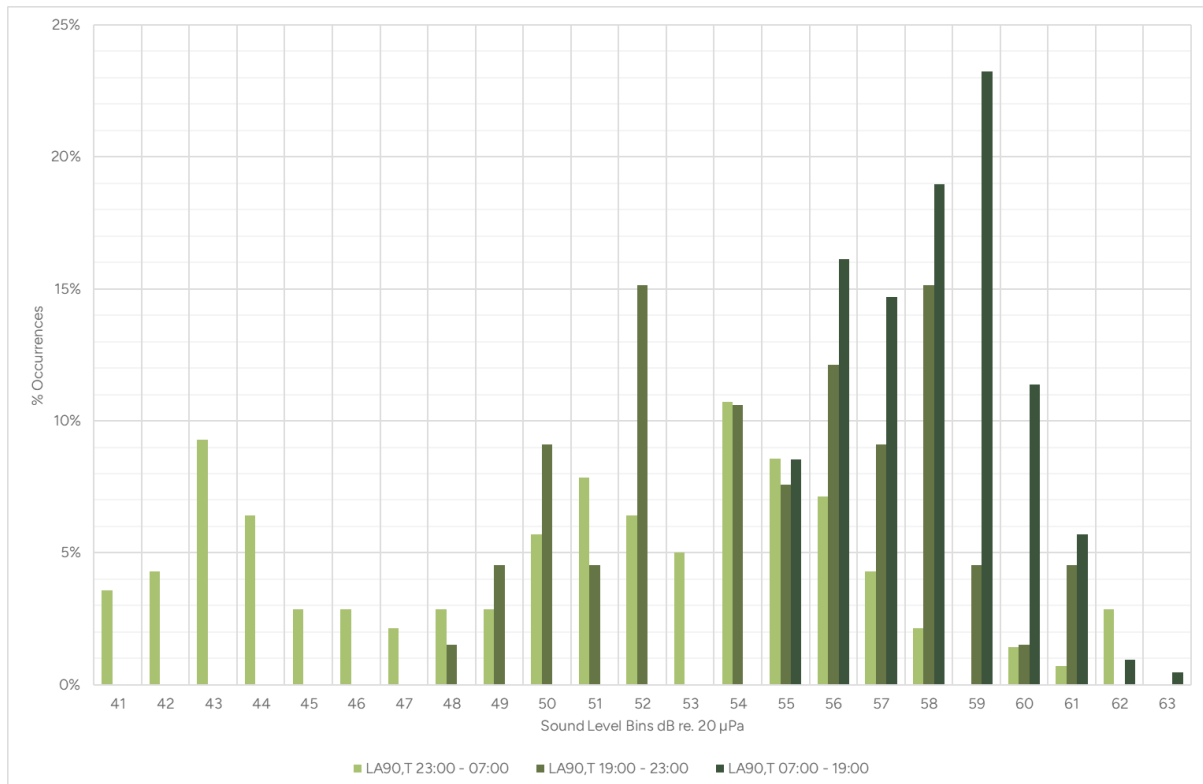


Figure B9: Sound Pressure Level Time History Graph – Location 5

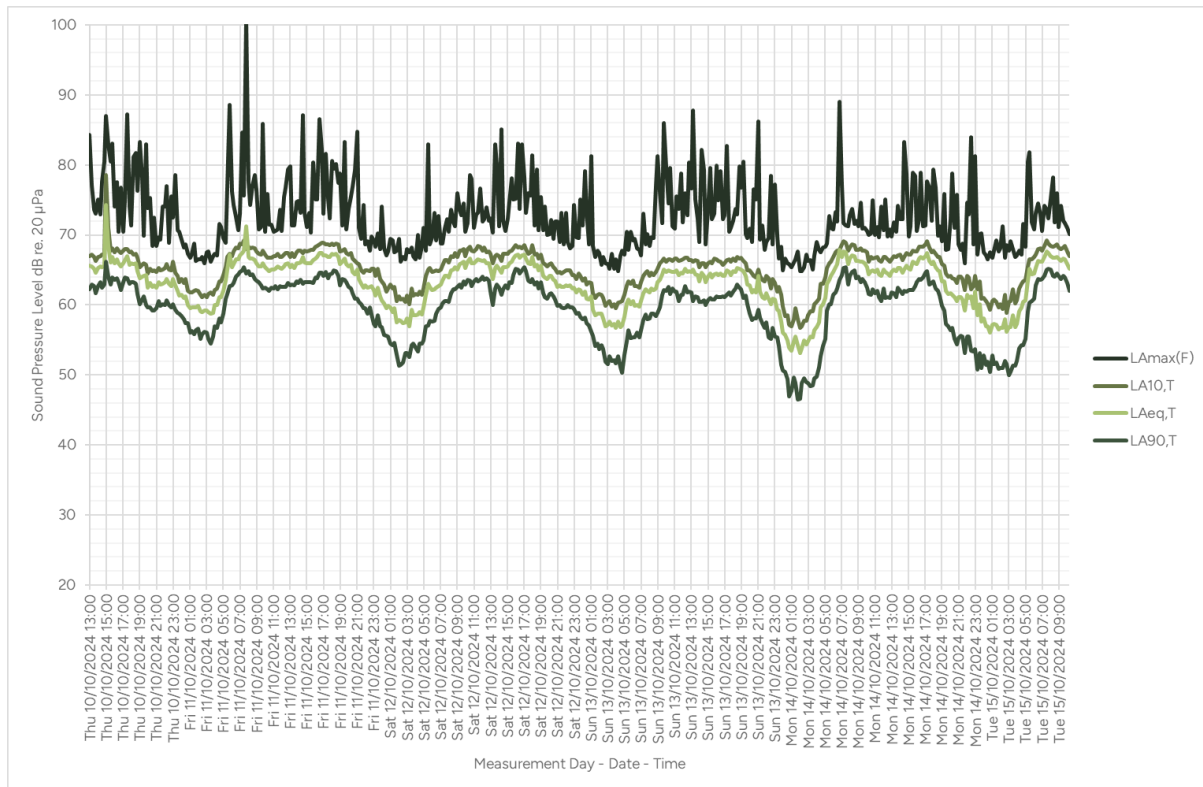


Figure B10: Background Sound Level Histogram – Weather Filtered – Location 5

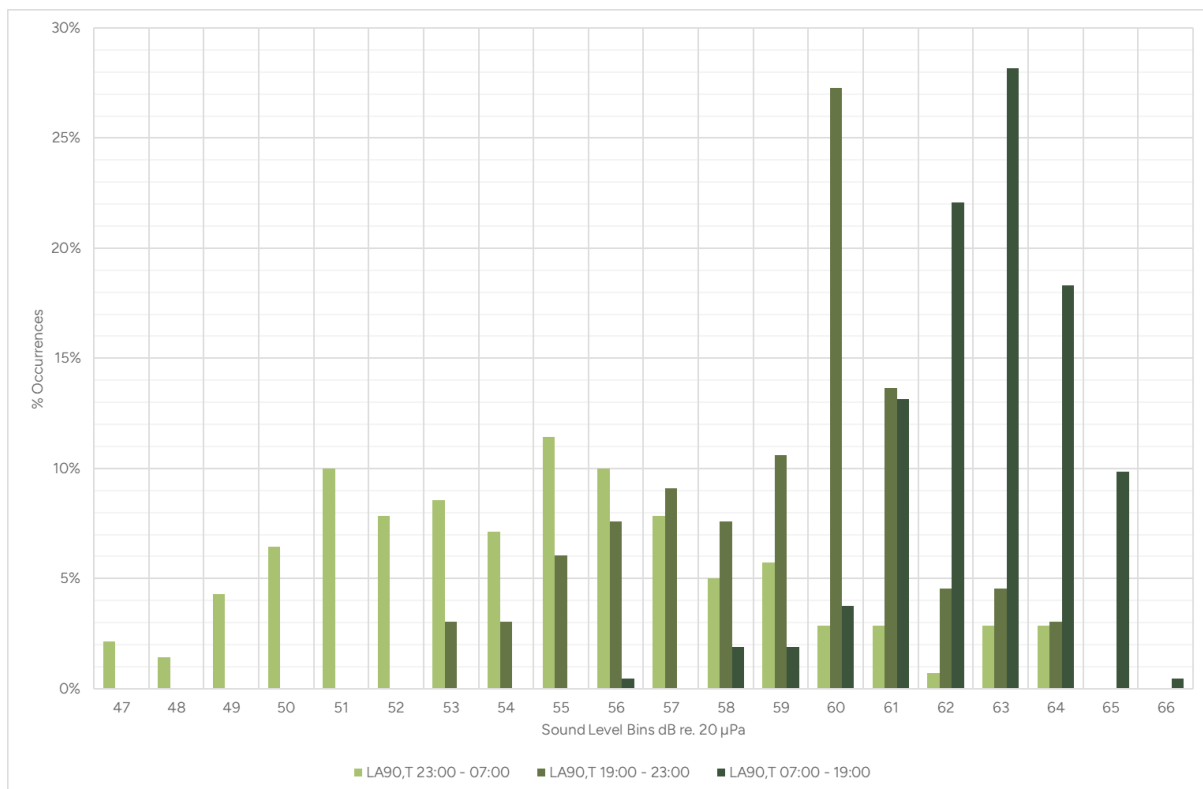


Figure B11: Sound Pressure Level Time History Graph – Location 6

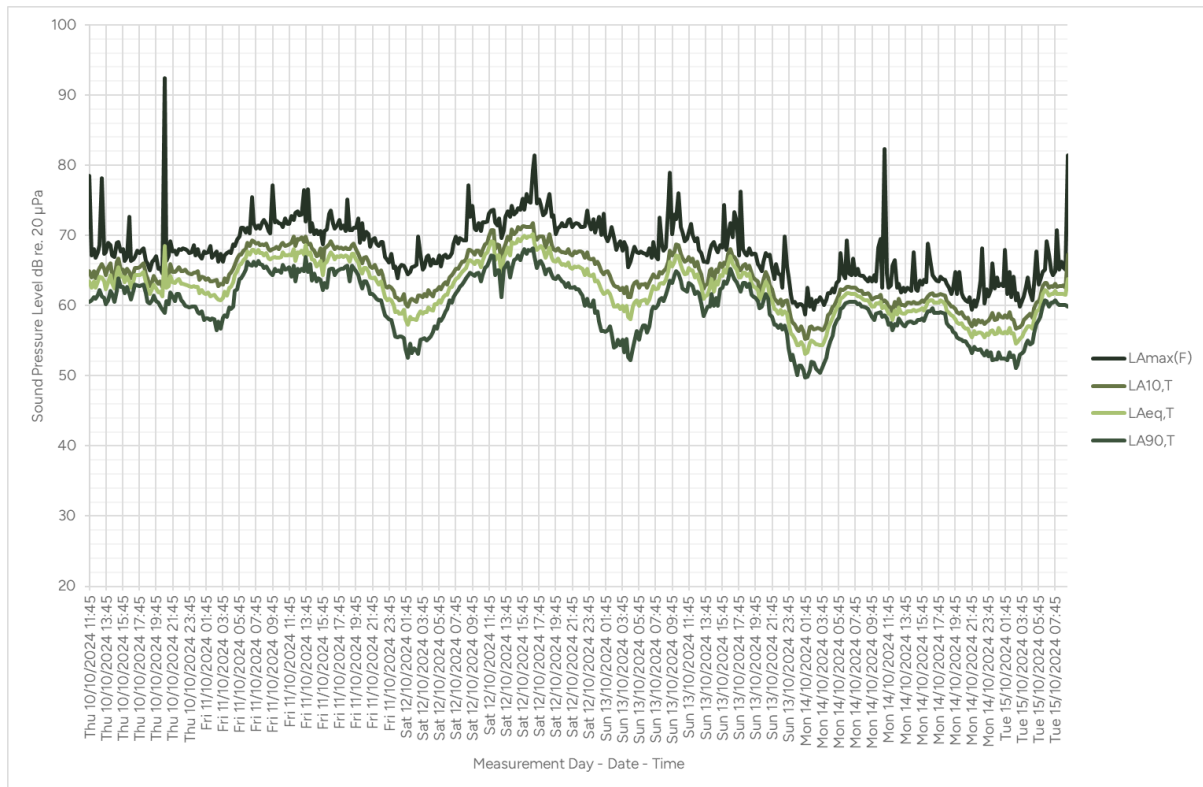


Figure B12: Background Sound Level Histogram – Weather Filtered – Location 6

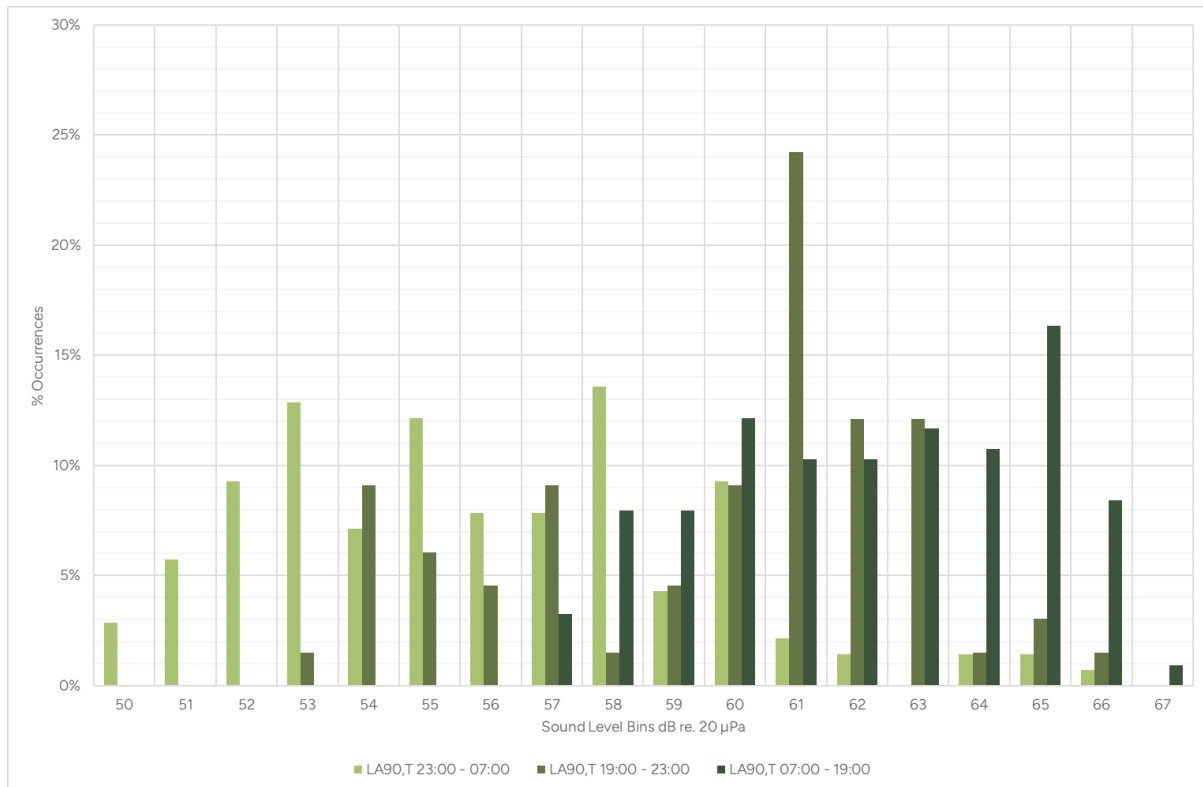


Figure C13: Weather Time History Graph

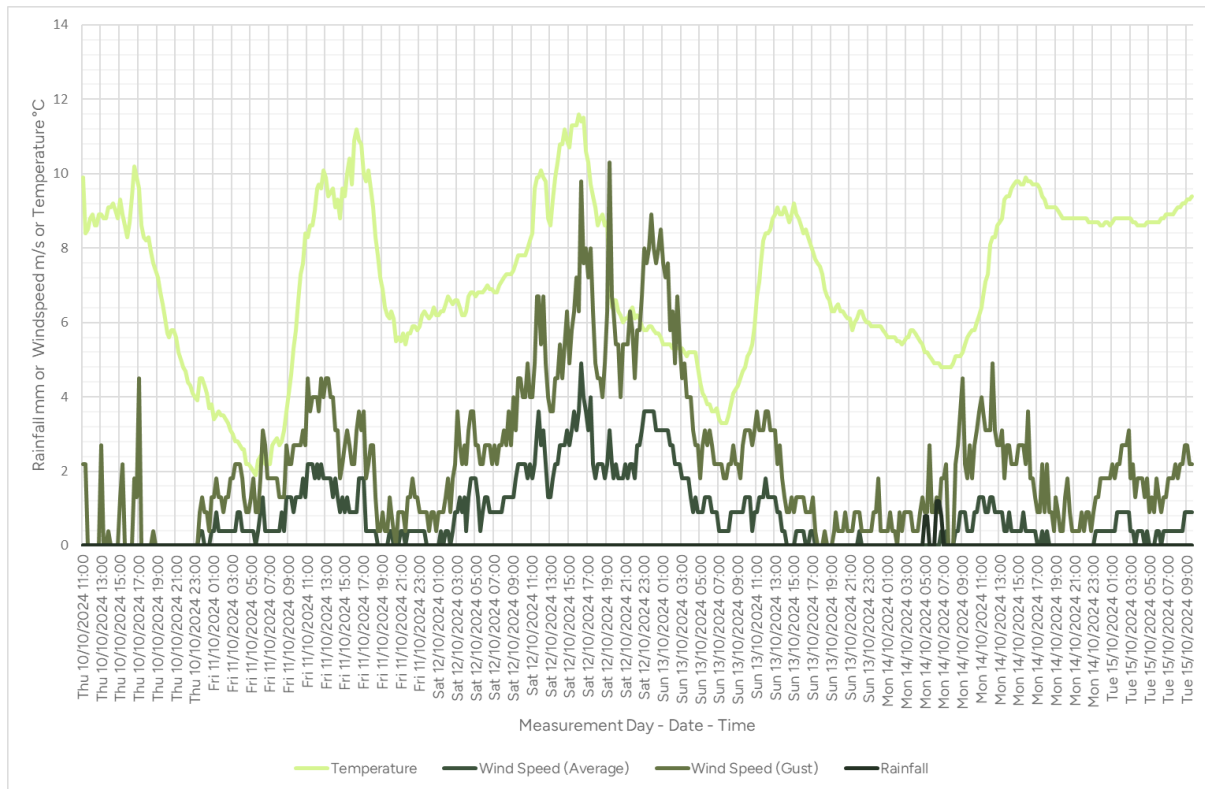
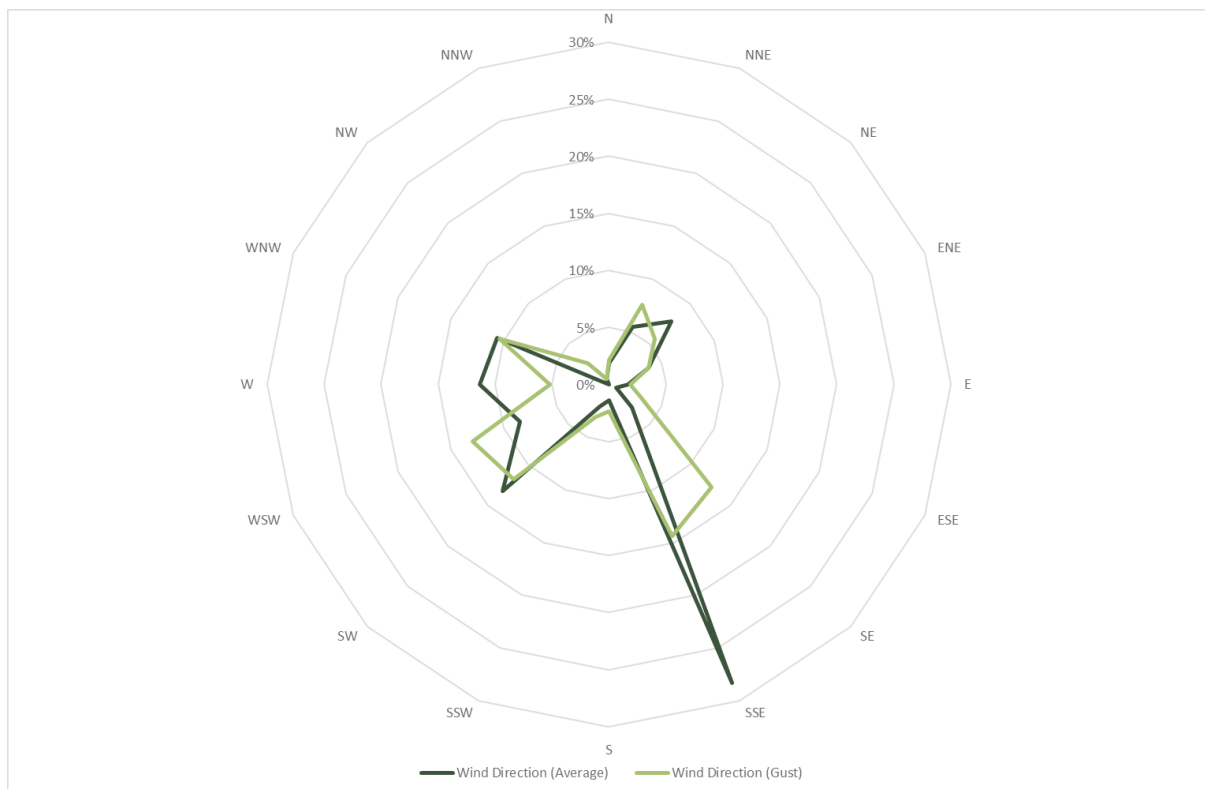
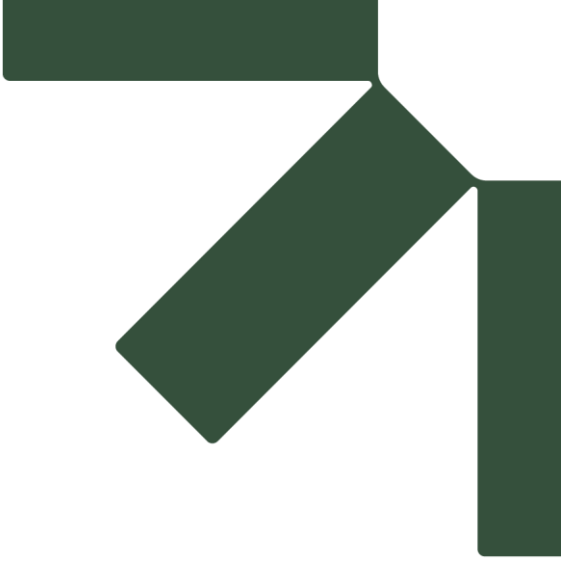


Figure C14: Wind Direction Polar Plot





Appendix C Model Input Data

Employment Use Development Noise Impact Assessment

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Caddick Developments Limited

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12 September 2025

Table D1: Octave Band Data Used in Noise Modelling

Description	Data	Sound Level dB per Octave Band Centre Frequency Hz								Sum A
		63	125	250	500	1000	2000	4000	8000	
HGV 10 mph	dB L_w	95.4	91.8	89.5	88.1	88.4	86.9	81.3	70.0	93.0
HGV reversing	dB L_w	95.5	90.8	88.0	84.1	84.9	82.2	79.6	74.3	89.6
Forklift	dB L_w	97.5	88.6	85.4	84.9	82.6	79.8	77.6	74.5	88.0
Car 10 mph	dB L_w	91.0	82.4	77.2	74.9	74.6	74.5	67.7	60.6	80.2
Internal	dB $L_{p,rev}$	67.3	66.8	66.7	66.1	65.5	63.0	60.5	59.6	70.4
Wall (noise attenuation)	dB R	18	23	35	44	49	50	61	55	45 R_w
Roof (noise attenuation)	dB R	16	16	32	45	49	50	60	52	40 R_w

Table D2: Trip Generation Used in Noise Modelling (B2 Use Buildings)

Time	LGVs (B2 Use)		HGVs (B2 Use)	
	Inbound	Outbound	Inbound	Outbound
00:00 - 01:00	2	4	0	0
01:00 - 02:00	2	4	0	0
02:00 - 03:00	2	4	0	0
03:00 - 04:00	2	4	0	0
04:00 - 05:00	2	4	0	0
05:00 - 06:00	11	2	1	1
06:00 - 07:00	17	6	1	1
07:00 - 08:00	42	12	2	2
08:00 - 09:00	111	44	5	5
09:00 - 10:00	38	26	4	3
10:00 - 11:00	31	27	4	4
11:00 - 12:00	31	29	4	4
12:00 - 13:00	31	36	4	4
13:00 - 14:00	37	34	3	3
14:00 - 15:00	27	36	3	3
15:00 - 16:00	25	34	3	3
16:00 - 17:00	25	47	2	3
17:00 - 18:00	42	103	2	2
18:00 - 19:00	11	20	1	1
19:00 - 20:00	9	16	1	0



Time	LGVs (B2 Use)		HGVs (B2 Use)	
	Inbound	Outbound	Inbound	Outbound
20:00 - 21:00	4	9	0	0
21:00 - 22:00	2	4	0	0
22:00 - 23:00	2	4	0	0
23:00 - 00:00	2	4	0	0

Table D3: Trip Generation Used in Noise Modelling (B8 Use Buildings)

Time	LGVs (B8 Use)		HGVs (B8 Use)	
	Inbound	Outbound	Inbound	Outbound
00:00 - 01:00	4	4	2	3
01:00 - 02:00	4	4	2	3
02:00 - 03:00	4	4	2	3
03:00 - 04:00	4	4	2	3
04:00 - 05:00	4	4	2	3
05:00 - 06:00	41	14	6	8
06:00 - 07:00	25	27	6	9
07:00 - 08:00	45	14	11	16
08:00 - 09:00	216	97	6	47
09:00 - 10:00	25	15	15	13
10:00 - 11:00	19	19	17	16
11:00 - 12:00	18	20	15	12
12:00 - 13:00	19	24	16	12
13:00 - 14:00	32	24	14	15
14:00 - 15:00	19	38	16	14
15:00 - 16:00	16	29	16	15
16:00 - 17:00	15	37	15	12
17:00 - 18:00	43	117	18	10
18:00 - 19:00	8	22	9	10
19:00 - 20:00	10	11	4	8
20:00 - 21:00	8	7	4	7
21:00 - 22:00	4	4	2	3
22:00 - 23:00	4	4	2	3
23:00 - 00:00	4	4	2	3





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