

9 Noise and Vibration

9.1 Introduction

- 9.1.1 This chapter of the ES assesses the likely significant effects of the Proposed Development on the environment in respect of Noise and Vibration. In particular, it considers the potential significant environmental effects of noise associated with the proposed operation of warehouse buildings at existing and proposed noise-sensitive receptors.
- 9.1.2 Option 2 is considered to be the 'worst-case scenario' from a noise and vibration perspective, as it is likely to result in the highest quantities of HGV movements.
- 9.1.3 All other potential noise effects have been scoped out of this chapter as conclusions from the 2016 ES are still deemed relevant. This includes the following potential effects:
- Construction noise and vibration
 - Noise increase from road traffic
 - Noise from fixed mechanical plant equipment
- 9.1.4 The chapter has been prepared by Stantec UK Ltd and, as required by Regulation 18(5) of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. The chapter has been written by Patryk Rowinski BSc MIOA, reviewed by Steffan Davies BSc MIOA and Approved by Mubassir Malik MEng, who all have suitable qualifications and experience, to assess noise and vibration effects of the Proposed Development.
- 9.1.5 This chapter is supported by the following appendices and figures:
- **Figure 9.1:** Sound Survey Measurement Locations
 - **Figure 9.2:** Noise Sensitive Receptors
 - **Figure 9.3:** Noise Model
 - **Appendix 9.1:** Sound Survey Results
 - **Appendix 9.2:** LA90 Frequency Distribution Graphs

9.2 Policy Context

- 9.2.1 The assessment has been prepared with reference to the following national, regional and local planning documents, legislation, and guidance.

National Planning Policy

National Planning Policy Framework (NPPF), 2024

- 9.2.2 The revised National Planning Policy Framework (NPPF) was published in December 2024 and amended in February 2025. In respect of noise, paragraph 187 states that in relation to conserving and enhancing the natural environment:

"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 ... noise pollution...*

9.2.3 In relation to ground conditions and pollution, paragraph 198 states that:

“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 impact resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and quality of life;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason...” The NPPF cross-refers to the Noise Policy Statement for England (NPSE) to define the “significant adverse impacts”.

9.2.4 The NPPF indicates that the Noise Policy Statement for England (NPSE) should be used to define the “significant adverse impacts”.

Noise Policy Statement for England

9.2.5 The Noise Policy Statement for England (NPSE) was published in March 2010 and clarifies the underlying principles and aims of existing policy documents that relate to noise. It also sets out the long-term vision of Government noise policy which is: “to promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development”.

9.2.6 The NPSE states that noise should not be considered in isolation of the wider benefits of a scheme or development, and that the intention is to minimise noise and its effects as far as is reasonably practicable having regard to the underlying principles of sustainable development.

9.2.7 Paragraphs 2.20 and 2.21 of the NPSE define ‘significant adverse’ and ‘adverse’ impacts as applied to noise as follows:

“There are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are:

NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected.

Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur.”

9.2.8 Paragraph 2.22 of the NPSE clarifies that:

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

9.2.9 The three aims of the NPSE are defined as follows:

“Avoid significant adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.”

“Mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.” (Note: Applies when the impact lies somewhere between the LOAEL and SOAEL and does not mean that adverse effects cannot occur).”

“Where possible, contribute to the improvement of health and quality of life through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.”

9.2.10 It is necessary to define the LOAEL and SOAEL for the potential source of noise so that the potential impact can be related to the aims and requirements of the NPSE.

National Planning Practice Guidance

9.2.11 The Planning Practice Guide (PPG) was launched in 2014 (with the latest update being in 2019) and provides additional guidance and interpretation to the Government’s strategic policies outlined within the NPPF in a regularly updated, web-based resource.

9.2.12 Paragraph: 001 Reference ID: 30-001-20190722, “When is noise relevant to planning?” states:

“Noise needs to be considered when development may create additional noise or would be sensitive to the prevailing acoustic environment (including any anticipated changes to that environment from activities that are permitted but not yet commenced). When preparing plans, or taking decisions about new development, there may also be opportunities to make improvements to the acoustic environment. Good acoustic design needs to be considered early in the planning process to ensure that the most appropriate and cost-effective solutions are identified from the outset.”

9.2.13 PPG provides advice on how noise impacts should be determined. Paragraph: 003 Reference ID: 30-003-20190722 states the plan-making and decision makes processes should consider:

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

9.2.14 This paragraph also refers to the NPSE, in stating that the overall effect of the noise exposure (including the impact during the construction phase where applicable) should be identified against the significant observed adverse effect level (SOAEL) and the lowest observed adverse effect level (LOAEL) for the given situation.

9.2.15 It provides more descriptive detail for the definitions of NOEL, LOAEL and SOAEL but refrains from using numerical values. A summary of the advice is provided within the noise exposure hierarchy table in Paragraph: 005 Reference ID: 30-005-20190722 and reproduced in **Table 9.1**.

Table 9.1: Noise Exposure Hierarchy

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

9.2.16 Paragraph: 006 Reference ID: 30-006-20190722 provides guidance factors which influence whether noise could be a concern. It states that “*The subjective nature of noise means there is not a simple relationship between noise levels and the impact on those affected.*”

9.2.17 It goes on to state that the impact will depend on how various factors combine in any particular situation. These factors include:

- Source and absolute level of the noise together with the time of day it occurs.
- How new noise making source relates to the existing sound environment.
- Number and pattern of noise events (for non-continuous sound).
- Frequency content (i.e. whether the noise contains particular high or low frequency content) and general character of the noise (i.e. whether or not the noise contains particular tonal characteristics or other particular features).
- The extent to which the local arrangement of buildings, surfaces and green infrastructure reflects or absorbs noise.

9.2.18 Paragraph: 010 Reference ID: 30-010-20190722 provides advice on how the adverse effects of noise can be mitigated which are dependent on the type of development being considered and the character of the proposed location. Four broad classifications of mitigation are defined as follows:

- 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.

Local Planning Policy

Planning Noise Advice Document: Sussex

- 9.2.19 Horsham District Council refer to the 'Planning Noise Advice Document: Sussex' (2021) for guidance on sound and vibration with regards to future planning applications.
- 9.2.20 The document refers to the NPPF, NPSE, provides generic guidance on producing a valid noise assessment, and sets out specific noise requirements for different types of development.
- 9.2.21 For industrial developments, including storage or distribution uses, the document recommends the use of BS 4142:2014 + A1 2019 'Methods for Rating and Assessing Industrial and Commercial Sound' to assess the following noise sources:
- *Sound from industrial and manufacturing processes*
 - *Sound from fixed installations, which comprise mechanical and electrical plant*
 - *Sound from loading and unloading goods*
 - *Sound from mobile plant and vehicles that are an intrinsic part of the overall sound emanating from the premises or process.*
- 9.2.22 The document states the following with regard to target noise level criteria from industrial types of development:

The rating level of the industrial or commercial sound source should, where practicable, achieve a level no greater than the representative background sound, when measured in accordance with BS 4142:2014 + A1: 2019. There may be instances, for specific sites, where a rating level below background is deemed appropriate. This can be determined through discussion with the Local Planning Authority (LPA). A rating level below background may be required if there are concerns for potential noise creep, for example in a High Street setting. It is considered that meeting this criterion would avoid adverse noise impacts, in the interests of ensuring a good standard of amenity and protecting human health. Where these criteria are not attainable, the noise report should explain why, and how best practicable means will be implemented to control noise in order to satisfy the LPA that the development is acceptable. At all times the reports shall have regard to the context.

Assessment Guidance

British Standard 4142:2014 + A1 2019 'Methods for Rating and Assessing Industrial and Commercial Sound'

- 9.2.23 British Standard 4142:2014 + A1 2019 "*Methods for rating and assessing industrial and commercial sound*" (BS4142) describes methods for rating and assessing sound of an industrial and/or commercial nature. The methods described in the standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.
- 9.2.24 The standard is used to determine the rating levels for sources of sound of an industrial and/or commercial nature and the ambient, background and residual sound levels at outdoor locations. These levels could be used for the purposes of investigating complaints; assessing sound from proposed, new, modified or additional source(s) of sound of an industrial and/or commercial nature; and assessing sound at proposed new dwellings or premises used for residential purposes. However, the determination of noise amounting to a nuisance is beyond the scope of the standard.
- 9.2.25 The standard should not be used to assess sound from the passage of vehicles on public roads and railway systems; recreational activities; people among other sources; and other sources falling within the scopes of other standards or guidance. The standard cannot be applied to the derivation of indoor sound levels arising from sound levels outside, or the assessment of indoor sound levels.
- 9.2.26 The procedure contained in BS 4142 assesses the significance of sound which depends upon the margin by which the rating level of the specific sound sources exceeds the background sound level and the context in which the sound occurs/will occur.
- 9.2.27 An initial estimate of the impact of the specific sound is obtained by subtracting the measured background sound level from the rating level and considering the following:
- Typically, the greater this 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; and
 - A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
- 9.2.28 The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.
- 9.2.29 Where the initial estimate of the impact needs to be modified due to the context, the following factors should be considered:
- The absolute level of sound, as BS 4142 notes that the magnitude of the overall impact might be greater where the residual sound level is high than for an acoustic environment where the residual sound level is low;
 - The character and level of the residual sound compared to the character and level of the specific sound;
 - The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions such as:
 - Façade insulation treatment;

- Ventilation and/or cooling that will reduce the need to have windows open so as to provide rapid or purge ventilation; and
- Acoustic screening.

9.3 Assessment Methodology

Scoping

- 9.3.1 Assessment of significance relating to noise and vibration impact from construction works and traffic flow increases is scoped out of this ES, as this is covered in detail in the 2016 ES and is not anticipated to change as a result of the changes to the scheme.
- 9.3.2 Noise impact relating to external building services plant equipment is scoped out of this ES as it is considered this can be controlled through planning conditions when plant information will be available.
- 9.3.3 An informal scoping request was submitted to Horsham District Council in November 2025 which set out the proposed methodology for the noise impact assessment including the effects to be scoped out. At the time of writing this chapter, no response has been received.

Study Area

- 9.3.4 The study area covers the nearest noise sensitive receptors including existing noise sensitive receptors located to the south of the proposed development, as well as future noise sensitive receptors located to the north-west of the development.

Baseline Data Collection

Sound Survey

- 9.3.5 A baseline environmental sound survey was undertaken between 1 and 2 July 2014 to inform the original noise impact assessment included within the original 2016 ES chapter.
- 9.3.6 A summary of the 2014 sound survey methodology and results is presented within the 2016 ES chapter.
- 9.3.7 An additional environmental sound survey was undertaken between 6 and 8 November 2025 to quantify any changes to the baseline sound environment since the original survey was undertaken.
- 9.3.8 **Table 9.2** provides details of the measurement locations for the 2025 sound survey. The survey locations are presented in **Figure 9.1**. Noise Sensitive Receptors (NSRs) are identified in **Figure 9.2**.

Table 9.2: Measurement Positions

Measurement Location	Representative of Receptors	Description
ML1	NSR1	Existing dwellings south of the A264
ML2	NSR2	Proposed dwellings north-east of Proposed Development
	NSR3	Proposed dwellings immediately east of Proposed Development

- 9.3.9 Measurement positions were selected in order to quantify background noise levels at locations representative of the nearest noise-sensitive receptors. As a secure survey location was not available south of the A264, a proxy measurement position was chosen to the north, equidistant from the A264 as the nearest dwellings.
- 9.3.10 A large range of statistical parameters were acquired, but the A-weighted parameters LAeq,T and LA90,T are the most relevant in the context of the noise impact assessment. These are presented in the baseline section of this chapter.
- 9.3.11 **Table 9.3** provides details of the instrumentation used during the survey.

Table 9.3: Survey Instrumentation

Measurement Position	Equipment type	Manufacturer	Model	Calibration certificate ref	Date of last calibration
MP1	Sound Level Meter	01dB	Fusion	14526	26/04/2024
	Microphone	GRAS	40CD	470800	
	Preamplifier	01dB	pre22 n°	470800	
	Calibrator	Cirrus	CR:515	96051	02/07/2025
MP2	Sound Level Meter	NTI Audio	XL2-TA	A2A-20607-E0	03/06/2024
	Microphone		MA220	10684	
	Preamplifier		MC230A	A230889	
	Calibrator	Cirrus	CR:515	95714	02/07/2025

- 9.3.12 The sound level meters were mounted on poles with the microphones positioned 1.5 m above ground level during the survey.
- 9.3.13 On-site calibration checks were performed before and after all measurements with no significant deviation being observed.
- 9.3.14 Weather conditions during the survey were generally dry, overcast and mild. Nearby weather station data indicated minor periods of rainfall; however, it does not appear to have had a noticeable effect on the sound levels measured. The data obtained is therefore considered suitable.
- 9.3.15 The surveys were undertaken in general accordance with the requirements in BS 7445: Description and measurement of environmental noise.

Assessment

Noise Model

- 9.3.16 A noise model has been prepared to predict the likely noise impact arising from the operation of the proposed development (Option 2).
- 9.3.17 The noise model was created using Soundplan V9.1, which is 3D acoustic modelling software. The computer acoustic model calculates the propagation of sound from the proposed development in accordance with '*BS ISO 9613-2:2024 Acoustics – Attenuation of Sound During Propagation Outdoors – Part 2: General Method of Calculation*;
- 9.3.18 The site topography, proposed and existing buildings have been included within the model and so corrections for these factors are included within the calculations.
- 9.3.19 Typical operational noise sources for a use-class B8 warehouse/logistics development have been inputted into the noise model, along with specific Heavy Goods Vehicle (HGV) movement data as provided by the transportation consultant.
- 9.3.20 Note that for the purposes of this assessment it is assumed that all loading and unloading activity happens within the warehouses. As such, no modelling of loading or unloading noise has been undertaken as part of the assessment.

Operational Noise Impact

- 9.3.21 Guidance provided within BS 4142 has been utilised to assess predicted noise impact from the operation of the proposed development.
- 9.3.22 BS 4142 describes methods for rating and assessing sound of an industrial and/or commercial nature. The methods described in the standard use outdoor sound levels to assess the likely effects of sound

on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

- 9.3.23 The procedure contained in BS 4142 assesses the significance of sound which depends upon the margin by which the rating level of the specific sound sources exceeds the background sound level and the context in which the sound occurs/will occur.

Significance Criteria

- 9.3.24 **Table 9.4** presents a description of receptors along with their proposed sensitivity rating.

Table 9.4: NSR Sensitivity Ratings

Receptor	Description	Sensitivity
NSR1	Existing dwellings located to the south of the Proposed Development	Medium
NSR2	Future noise sensitive receptors located to the north-east of the Proposed Development	Medium
NSR3	Future noise sensitive receptors located immediately to the east of the Proposed Development	Medium

- 9.3.25 **Table 9.5** illustrates the adopted scale of significance for receptors, which are all considered 'medium' sensitivity for the purpose of this assessment. Being residential dwellings, they meet the "Medium" description of sensitivity as set out in the IEMA Guidelines for Environmental Noise Impact Assessment, and the descriptions within the Noise Exposure Hierarchy in PPG-Noise:

"Receptor/resource has moderate capacity to absorb change without significantly altering its present character. For example, residential dwellings, offices, schools, and play areas. Locally designated nature conservation sites which are also known to contain noise sensitive species (i.e. noise may change breeding habits or threaten species in some other way)."

Table 9.5: Magnitude of Impact

Magnitude	Description
Major Adverse	Rating level is 10dB(A) or more above the background sound level
Significant Observed Adverse Effect Level (SOAEL)	
Moderate Adverse	Rating level is between 5 and 10 dB(A) above the background sound level
Lowest Observed Adverse Effect Level (LOAEL)	
Minor Adverse	Rating level is between 0 and 5 dB(A) above the background sound level
Negligible	Rating level is below the background sound level

- 9.3.26 Major and moderate adverse impacts are considered to be 'significant' in terms of the EIA Regulations.

Limitations and Assumptions

- 9.3.27 It has been assumed that the traffic flows during the sound survey were representative of normal movements.
- 9.3.28 The site engineer noticed nothing unusual in terms of the sound climate at the times of the attended surveys. This chapter refers, within the limitations stated, to the environment of the application site in the context of the surrounding area.

- 9.3.29 The assessment of operational activity is based on the illustrative masterplan, land use parameter plan, and typical usage scenarios as no specific user details are known at this stage.

9.4 Baseline Conditions

- 9.4.1 A summary of the environmental sound survey results is presented in **Table 9.6**.
- 9.4.2 Time-history graphs detailing the full results of the unattended sound survey are contained in **Appendix 9.1**. The background sound level LA90 frequency distribution graphs are provided in **Appendix 9.2**.

Table 9.6: Measured Noise Levels

Measurement Position	Representative of Receptors	Ambient Sound Level $L_{Aeq,T}$ (dB)		Typical Background Sound Level* $L_{A90,15min}$	
		Daytime 07:00 – 23:00	Night-time 23:00 – 07:00	Daytime 07:00 – 23:00	Night-time 23:00 – 07:00
MP1	NSR1	57	50	55	36
MP2	NSR2 NSR3	55	50	50	41

* Calculated based on the statistical distribution of background sound levels during the measurement period in general accordance with guidance in BS 4142:2014+A1:2019

Future Baseline

- 9.4.3 The baseline sound environment around the site has the potential to change due to natural increases in traffic growth and consented schemes.

9.5 Potential Significant Impacts

Operational Noise Impact

- 9.5.1 The assessment of operational activity noise on the Site has been based on sound generated by HGVs at respective units.
- 9.5.2 There is no standardised database of sound levels with respect to delivery vehicle noise and loading activities. However, Stantec has previously undertaken sound measurements of delivery vehicle noise and loading activities on other developments of a similar nature. From these measurements we have compiled a database of sound levels for these activities which have been successfully applied to similar assessments.
- 9.5.3 Calculations have been undertaken of noise events associated with HGV vehicles arriving, parking, reversing and departing the Proposed Development for a one-hour period during the daytime period (07:00 – 23:00 hours) and a 15-minute period during the night-time period (23:00 – 07:00 hours).
- 9.5.4 **Table 9.7** outlines the sound level data used within the assessment.

Table 9.7: Sound Levels Used in Assessment

Noise Source	Sound Level Data
	Sound Exposure Level (SEL) dBA at 1m
Lorry arriving	90
Reversing Alarm	94
HGV Engine Starting/Idling	89

- 9.5.5 The above Sound Exposure Levels were corrected for time, number of movements, and distance travelled, to determine input values into the noise model. The quantum of HGV movements, as supplied by the Transport Consultant, is presented in **Table 9.8** for the worst-case day and night period.
- 9.5.6 The specific sound level of a delivery to a unit has been calculated by considering each noise generating activity as an individual sound event, which is then combined to obtain the associated specific sound level for the assessment period (one hour during the daytime and 15-minutes during the night-time).
- 9.5.7 The sound level data presented above, along with terrain and building data, has been input into SoundPLAN v9.1 modelling software to calculate noise emissions at the NSRs.
- 9.5.8 Line sources have been used for HGV noise on the roads leading to the warehouses, while point sources were used for on-site HGV related noise, i.e. reversing alarm, engine starting and idling.

Table 9.8: HGV Movements

Plot	Building	Day period (hh:mm)	HGV movements		
			Arrivals	Departures	Total
1	1	Day (07:00 – 08:00)	7	14	21
		Night (05:00 – 06:00)	15	8	23
2	1	Day (07:00 – 08:00)	2	3	5
		Night (05:00 – 06:00)	4	2	6
3	1	Day (07:00 – 08:00)	2	5	7
		Night (05:00 – 06:00)	5	3	8
	2	Day (07:00 – 08:00)	2	5	7
		Night (05:00 – 06:00)	5	3	8
	3	Day (07:00 – 08:00)	2	4	6
		Night (05:00 – 06:00)	5	3	7
	4	Day (07:00 – 08:00)	2	3	5
		Night (05:00 – 06:00)	4	2	6
	5	Day (07:00 – 08:00)	2	3	4
		Night (05:00 – 06:00)	3	2	5

Primary and Tertiary Mitigation

- 9.5.9 No mitigation has been assumed as part of the Proposed Development assessment.

9.6 Likely Significant Effects**Operational Phase**

- 9.6.1 The modelling results for the three NSRs are presented in **Table 9.9**. These are split into its constituent elements, i.e. movement on site roads, activity within the warehouse zone, and the reversing alarm as a separate item. A 2 dB character correction has been applied to the reversing alarm in line with BS 4142 guidance. Other elements are not deemed to require character corrections as the character of the noise, i.e. HGVs idling and manoeuvring, is unlikely to be distinguishable from very similar noise emanating from the local road network.
- 9.6.2 The values have been rounded to the nearest integer.

Table 9.9: Calculated Noise Levels at NSRs

NSR	Partial Specific Noise Level at Receptor, $L_{Aeq,15min}$			Total Rating Level at Receptor, $L_{Ar,T}$ (T= 1h day, 15min night)
	Road movement	Warehouse zone activity excl. reversing alarm	Reversing alarm only (incl. character correction)	
1	24	33	23	34
2	31	24	7	32
3	32	24	5	33

9.6.3 The Rating Levels are compared against the Background Sound Levels in **Table 9.10** and **Table 9.11**.

Table 9.10: Operational Activity Noise Preliminary Assessment Results - Day

Results	Typical Background Sound Level dB $L_{A90, 15mins}$	Rating Level dB $L_{Ar,T}$ (T= 1h day, 15min night)	Excess of Rating Level over Background Sound Level (dB)
Background sound level	NSR1 – 55 dB L_{A90}	34	-21
	NSR2 – 51 dB L_{A90}	32	-19
	NSR3 – 51 dB L_{A90}	33	-18

Table 9.11: Operational Activity Noise Preliminary Assessment Results - Night

Results	Typical Background Sound Level dB $L_{A90, 15mins}$	Rating Level dB $L_{Ar,T}$ (T= 1h day, 15min night)	Excess of Rating Level over Background Sound Level (dB)
Background sound level	NSR1 – 36 dB L_{A90}	34	-2
	NSR2 – 41 dB L_{A90}	32	-9
	NSR3 – 41 dB L_{A90}	33	-8

9.6.4 The numerical BS 4142:2014 assessment indicates that the rating level at all receptors will be between 18 dB and 21 dB below the typical background sound level during the day, and between 2 dB and 9 dB below the typical background sound level at night, which is a positive indication of a negligible impact, and is therefore Not Significant.

9.7 Secondary Mitigation

Operational Phase

9.7.1 The assessment indicates no secondary mitigation is required for the scheme.

9.8 Residual Effects

Operational Phase

9.8.1 The residual effects are likely to be negligible, which would be considered not significant.

9.9 Cumulative Effects

9.9.1 The assessment is limited in scope to assessing noise impact from operational noise relating to HGV movements. Based on the distances between the committed developments and the nearest receptors it is unlikely that any comparable noise sources from the committed schemes will impact the same receptors, therefore no specific assessment of cumulative effects has been undertaken in relation to noise.

9.10 Summary

- 9.10.1 A noise assessment has been undertaken to determine the likely significant effects from the Proposed Development
- 9.10.2 An unattended environmental sound survey was undertaken to determine the current sound climate at a location representative of the nearest noise sensitive receptor located to the site.
- 9.10.3 An acoustic model based on traffic data provided by the Transport Consultants has been created to predict the likely noise impact arising from the operation of the Development.
- 9.10.4 The assessment of potential noise impact on existing and proposed noise-sensitive receptors indicates that activity noise from the Proposed Development is likely to be below the existing background sound levels during the daytime and night-time. Therefore, residual effects are negligible and not significant. **Table 9.12** provides a summary of the effects of the Proposed Development.

Table 9.12: Table of Significance – Noise and Vibration

Potential Effect	Nature of Effect (Permanent/ Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/ Negligible)	Mitigation / Enhancement Measures	Geographical Importance*						Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/ Negligible)	
				I	UK	E	R	C	L		
Construction											
N/A											
Completed Development											
NSR1	Permanent	Negligible	N/A					x	x	Negligible	
NSR2	Permanent	Negligible	N/A					x	x	Negligible	
NSR3	Permanent	Negligible	N/A					x	x	Negligible	
Cumulative Effects											
Construction											
N/A											
Completed Development											
N/A											

* Geographical Level of Importance

I = International; UK = United Kingdom; E = England; R = Regional; C = Council; L = Local