# 12.0 Noise and Vibration

## Introduction

12.1 This chapter of the ES assesses the likely significant effects of the Development on the environment in respect of noise and vibration.

12.2 This chapter has been prepared by Vanguardia (see Appendix 1.2 Statement of Expertise for details of experience and qualifications).

12.3 This chapter should be read in conjunction with the following appendices and figures, which have been used to inform the assessment:

- Appendix 12.1 Glossary of Acoustic Terms;
- Appendix 12.2 Noise Survey Details & Results;
- Appendix 12.3 Construction Noise Prediction Methodology & Data;
- Appendix 12.4 Operational Traffic Prediction Methodology & Data;
- Appendix 12.5 Operational Sound Prediction & Assessment Methodology;
- Appendix 12.6 Construction Noise Prediction Results;
- Appendix 12.7 Operational Traffic Noise Prediction Results;
- Appendix 12.8 Operational On-site HGV Activity Noise Prediction Results;
- Appendix 12.9 Operational Traffic Noise Impact in Hickleton;
- Figure 12.1 Noise Sensitive Receptor Locations around Site;
- Figure 12.2 Baseline Noise Survey Monitoring Locations; and
- Figure 12.3 Additional Mitigation: Barrier to North of Plot 1.

## Policy Context

### National Policy

*National Planning Policy Framework (NPPF), 2023*[i]

12.4 The potential impacts of noise are addressed in the following paragraphs of the NPPF:

- *Paragraph 174e: 'Planning policies and decisions should contribute to and enhance the natural and local environment by:*
- *...*

a. 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. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans.'

- *Paragraph 185: 'Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*

a. mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life; and

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'.

12.5 Paragraph 185a includes a direct reference to the Noise Policy Statement for England[ii] for further information regarding the potentially adverse and significant adverse effects of noise.

*Noise Policy Statement for England (NPSE), 2010*

12.6 The overarching Government policy on noise is set out in the NPSE. It seeks to clarify the underlying principles and aims in past and existing policy documents, legislation and guidance in relation to all forms of noise including environmental noise, neighbour noise and neighbourhood noise (but not noise in the workplace).

12.7 It uses the established concepts from toxicology of the No Observed Effect Level (NOEL) and the Lowest Observed Adverse Effect Level (LOAEL). As set out in the explanatory notes, the NPSE extends these by introducing Significant Observed Adverse Effect Level (SOAEL). This is the level above which significant adverse effects on health and quality of life occur.

12.8 The explanatory note to the NPSE states that it is not possible to identify a single objective value to define SOAEL for noise that is applicable to all sources of noise in all situations. It is likely to be different for different noise sources, for different receptors and at different times. The NPSE recognises that *'further research is required to increase 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*.' Consequently, the practitioner must determine the appropriate threshold values to be adopted for the sources and situations being assessed, based on the available evidence.

12.9 The NPSE's vision 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.*

*This long-term vision is supported by the following aims:*

- *Avoid[1] 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 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.'*

12.10 Within the NPSE, the phrase '*within the context of Government policy on sustainable development*' is used. This means that noise must not be treated in isolation. Instead, when implementing the aims of

[1] "Avoid" here does not mean a significant adverse effect cannot ever exist. Instead, it means make every effort so that significant adverse impacts do not occur. The hierarchy set out in the PPG:N confirms this to be the case – see Table 12.1 of this Chapter. The reason is that the NPSE covers all sources and for historical legal reasons, there are certain circumstances (e.g., statutory nuisance legislation) where a significant adverse impact is lawfully allowed to occur.

the policy, consideration should be given to the economic and social benefit of the activity causing the noise as well as the other environmental effects of the development.

12.11 The second aim of the NPSE refers to noise impacts that lie somewhere between LOAEL and SOAEL. The NPSE asserts that, while this means that all reasonable steps should be taken to mitigate and minimise adverse effects, this does not mean that such adverse effects cannot occur.

*Planning Practice Guidance for Noise (PPG:N), 2019*[iii]

12.12 Further government guidance on the consideration of noise for planning has been published as the PPG:N, last revised in July 2019. The PPG:N supports the NPPF by providing a range of advice and includes a noise exposure hierarchy table, and again refers to the NPSE.

12.13 The hierarchy table (reproduced in Table 12.1 below), provides descriptive (i.e., non-numerical) guidance on the potential effects of various degrees of noise exposure with reference to the effect levels referred to in the NPSE, i.e., where noise is above or below the NOEL, LOAEL and SOAEL, as well as featuring the additional effect level of No Observed Adverse Effect Level (NOAEL) and a description of unacceptable adverse effects that should be prevented. The table confirms that adverse effects (between LOAEL and SOAEL, where noise starts to cause small changes in behaviour or attitude) should be mitigated and reduced to a minimum. Increasing noise exposure will cause the SOAEL boundary to be crossed, with there being two levels of adverse effect above it:

- A significant observed adverse effect – noise causes a material change in behaviour, e.g., keeping windows closed or avoiding certain activities at certain times. The planning process should be used to avoid this effect occurring, for example through choice of sites and use of appropriate mitigation. It is undesirable for such exposure to be caused, but as mentioned in the footnote on the previous page, there are circumstances when such effects can occur. Decisions must take account of the economic and social benefit of the activity causing or affected by the noise caused; and

- An unacceptable adverse effect – noise exposure would cause extensive and sustained adverse changes in behaviour and / or health without the ability to mitigate the effects of the noise. Under these circumstances, the impacts on health and quality of life are such that regardless of the benefits of the activity causing the noise this situation must be prevented from occurring.

**Table 12.1 PPG:N Noise Exposure Hierarchy Table**

| Response | Examples of outcomes | Increasing effect level | Action |
|---|---|---|---|
| No Observed Effect Level | | | |
| 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 Effect | No specific measures required |
| No Observed Adverse Effect Level | | | |
| 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. | No Observed Adverse Effect | No specific measures required |

| Response | Examples of outcomes | Increasing effect level | Action |
|---|---|---|---|
| Lowest Observed Adverse Effect Level | | | |
| 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. | Observed Adverse Effect | Mitigate and reduce to a minimum |
| Significant Observed Adverse Effect level | | | |
| 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 |

*Local Planning Policy*

12.14 The Barnsley Metropolitan Borough Council (BMBC) Local Plan[iv] (adopted in 2019) contains the following policies relating to noise and/or vibration.

*Policy GD1 – General Development*

12.15 Policy GD1 states that:

> *'Proposals for development will be approved if:*
>
> *There will be no significant adverse effect on the living conditions and residential amenity of existing and future residents;*
>
> *They are compatible with neighbouring land and will not significantly prejudice the current or future use of the neighbouring land;*
>
> *They will not adversely affect the potential development of a wider area of land which could otherwise be available for development and safeguards access to adjacent land…'*

12.16 In further clarifying the phrase '*adverse effects on living conditions*', the Local Plan notes that:

> *'We want to make sure that the living conditions and residential amenity of people are protected, that development is set within high quality landscaping and that land is used efficiently by making sure that new development does not reduce development opportunities on neighbouring land.*
>
> *We will assess impact on living conditions and residential amenity in relation to:*
>
> *Noise, smell, dust, vibration, light, air, surface water, groundwater or other pollution and disturbance from any proposed activity, including traffic related noise and the comings and goings of visitors to premises particularly when late evening activity is involved.*
>
> *Planning conditions will be used to control the construction process…'*

*Policy Poll 1 – Pollution Control and Development*

12.17 Policy Poll 1 states that:

> *'Development will be expected to demonstrate that it is not likely to result, directly or indirectly, in an increase in air, surface water and groundwater, noise, smell, dust, vibration, light or other pollution which would unacceptably affect or cause a nuisance to the natural and built environment or to people.*
>
> *We will not allow development of new housing or other environmentally sensitive development where existing air pollution, noise, smell, dust, vibration, light or other pollution levels are unacceptable and there is no reasonable prospect that these can be mitigated against.*
>
> *Developers will be expected to minimise the effects of any possible pollution and provide mitigation measures where appropriate.'*

12.18 In providing further discussion on the need to minimise effects associated with noise and vibration, the Local Plan notes that:

> *'Noise and vibration can be a serious cause of nuisance. Planning cannot control the noise or vibration from existing development. However it can try to make sure that new noise sensitive development such as housing and schools is not close to existing sources of noise, including industrial uses and noise created by vehicles and other forms of transport. It can also make sure that potential noise creating uses, including industrial processes or some recreational activities, are not in places where they would be likely to cause nuisance.'*

12.19 No specific reference to noise is made within the section of the Local Plan relating to the allocation of the ES10 Site.

## Assessment Methodology

### Consultation

12.20 On 25th May 2022, an email was sent to the BMBC Environmental Health Officer (EHO) setting out the proposed approach, duration and timing of the baseline noise survey. The EHO confirmed by return email on the 26th May 2022 that the proposed approach was appropriate.

12.21 A meeting was held with the EHO on the 1st September 2022 to discuss and agree the survey data that would be used in the assessment and the overall approach to the assessment. It was agreed that it would be the Council's preference for the rating level for operational sound to not exceed the typical background sound level by more than 4 dB as the relevant British Standard (BS 4142[v]) indicates that this is the threshold of an adverse impact (see Assessment Methodology section below). It was discussed that the standard and government policy would also require the assessment to consider the context and overall effect in addition to the difference between the rating level and the background sound level.

12.22 The EIA scoping exercise undertaken is summarised in Chapter 2 of the ES. This chapter has been prepared based on the EIA Scoping Opinion received from BMBC (refer to Appendix 2.2), in accordance with the requirements of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (the 'EIA Regulations')[vi].

12.23 Within the formal EIA Scoping Opinion there were no specific comments relating to noise other than confirming it should be scoped into the assessment. The EHO did confirm in his email correspondence with the planning officer dated 13th October 2022 that the '*details set out in the EIA Scoping Opinion regarding Noise and Vibration are appropriate for the proposed development*'.

12.24 The Pre-App response received from BMBC on 22nd February 2023 stated the following under the Pollution Control section:

> *'Pollution Control have reviewed the submitted documents and considered that, without mitigation, this development has the potential to have an adverse impact on health and the quality of life of those living and/or working in the locality.*
>
> *Noise from road traffic through Hickleton is an issue as increased HGVs, particularly throughout the night, will be a further cause for concern. A noise assessment will need to consider this with a view to possible mitigation such as triple glazing and mechanical ventilation. This will need to be balanced with the fact that Hickleton is a Conservation area.*
>
> *Mitigation would be required to address issues such as times of construction or demolition works, the submission of a noise impact assessment, and that any development in accordance with a Construction Environment Management Plan (CEMP).'*

12.25 In response to these comments, the potential road traffic noise impacts in Hickleton have been predicted and assessed for the operational phase of the Development; this is included as a separate report in Appendix 12.9. There has also been ongoing dialogue with BMBC and City of Doncaster Council (CDC) regarding how such impacts should be mitigated, including meetings with BMBC on 5th September 2023 and CDC on 4th October 2023.

12.26 Potential construction noise effects have been considered, and a CEMP Framework has been submitted with the planning application (with subsequent plot-specific CEMPs produced in accordance with this overarching document submitted as part of any future Reserved Matters Applications).

**Scope of Assessment**

12.27 An assessment has been carried out to establish noise sensitive receptors and the potential effects that the Development might have on them during the construction and operational phases. The Development has the potential to generate noise from the following sources:

- Construction works occurring at the Site;
- Changes in road traffic flows on the surrounding highway network during both the construction and the operational phases; and
- Noise arising from operational activities on the Site, primarily through heavy goods vehicle (HGV) activity, and from use of fixed plant.

12.28 Adverse effects from vibration during the construction phase usually only arise from driven piling methods and certain types of ground compaction. It is understood from the project team that piled foundations may be used but, if so, would likely use auger-based methods. As an alternative to piling, the controlled modulus column (CMC) method of ground improvement may be employed, which uses similar auger-based techniques. In either case, methods based on the use of augers generate minimal vibration. Furthermore, while there will be standard ground compaction using vibratory rollers, this will not occur in close proximity to sensitive receptors. Therefore, an assessment of construction vibration has not been undertaken.

12.29 Once built, it is considered very unlikely that the Development will include any significant sources of vibration, and therefore an assessment of vibration in relation to the operational phase has not been undertaken.

**Noise Sensitive Receptor Locations**

12.30 Noise sensitive receptors are identified as locations where a human or ecological habitat could be adversely affected by increased levels of noise and/or vibration due to the Development. Generally, consideration is given to the noise sensitive receptors closest to the Site on the basis that they represent a worst-case in terms of being affected by construction and operational noise from the Development, with the effects on other, more remote, noise sensitive receptor locations being no worse (and most likely lower) than those considered.

12.31 Regarding road traffic noise, consideration is given to noise sensitive receptors along the road network immediately surrounding the site.

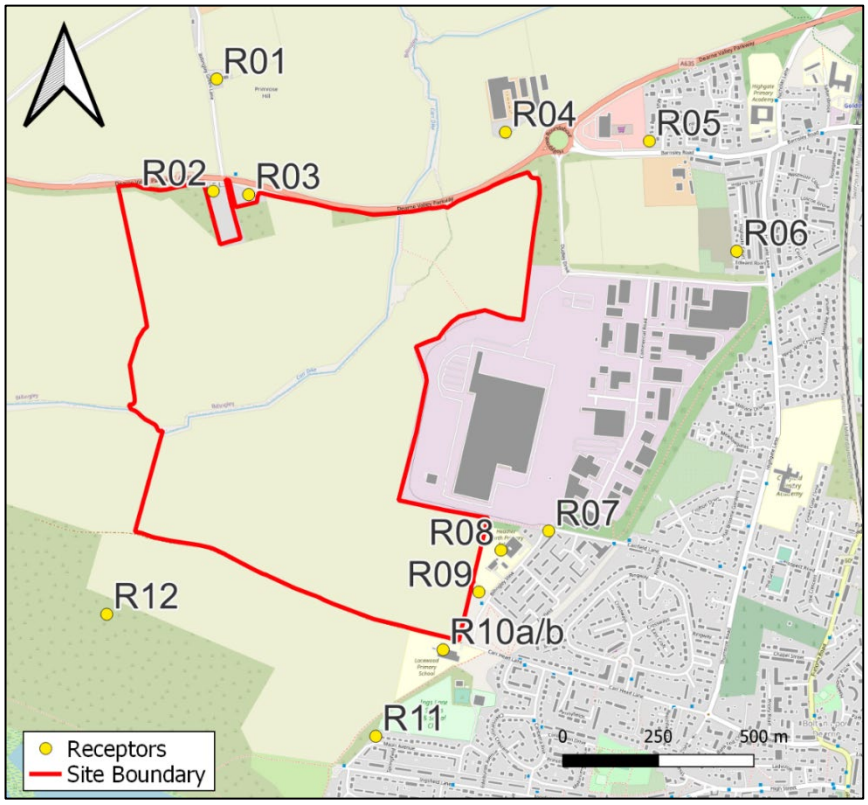
12.32 Details of the noise sensitive receptors included in the assessment are provided in Table 12.2 below which also identifies the types of noise that have been considered at each location, i.e., construction (C), road traffic (T) or operational activity from within the site boundary (O). The receptor locations are presented graphically in Figure 12.1.

**Table 12.2 List of noise sensitive receptors and noise sources considered**

| Receptor ID | Receptor | Noise sources assessed (C = Construction, O = Operation, T = Traffic) |
|---|---|---|
| R01 | Billingley Green Lane | C,O,T |
| R02 | Rose Valley Cottage | C,O,T |
| R03 | Woodbine | C,O,T |
| R04 | Highgate House | C,O,T |
| R05 | Holly Grove | C,O,T |
| R06 | Highgate Court | C,O |
| R07 | Carr Field Lane | C,O |
| R08 | Heather Garth School[1] | C,O |
| R9 | Billingley View | C,O |
| R10a | Lacewood School North[1] | C,O |
| R10b | Lacewood School South[1] | C,O |
| R11 | Maori Ave | C,O |
| R12 | Country Park[1] – Dearne Valley Wetlands | C,O |

[1] Assessed for the daytime period only as not in use during the night.

Figure 12.1 Noise sensitive receptor locations around Site

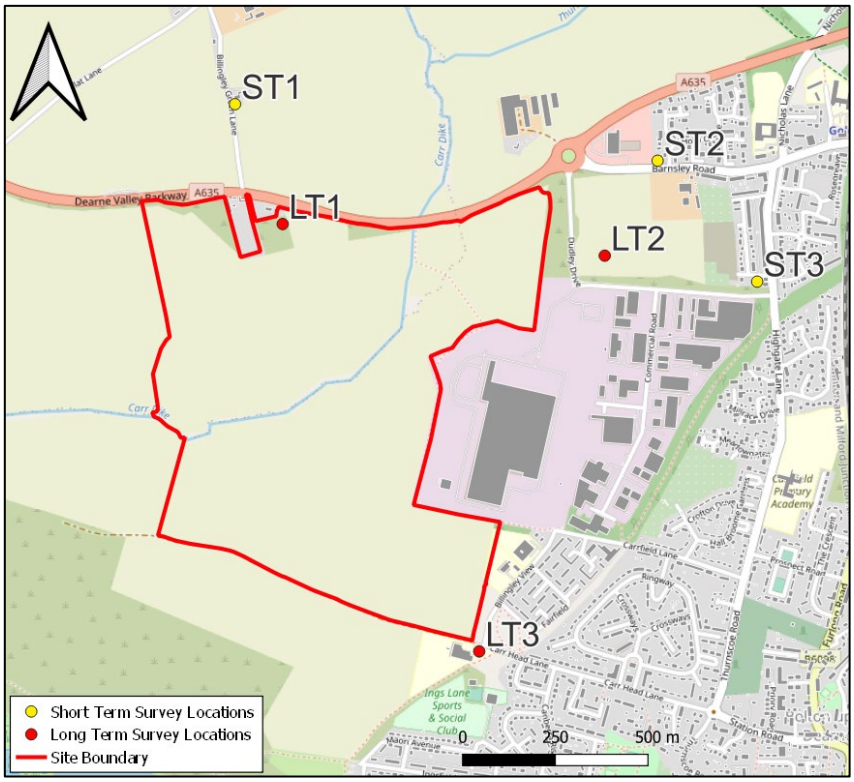



12.33 Most of the identified noise sensitive receptors are residential. The exceptions are schools at R08 and R10a/b and a country park at R12; there is potential for adverse effects from noise at these receptors during the daytime period only (as they are not used during the night) and therefore only daytime effects are considered at these locations. Daytime noise effects have been assessed based on a height of 1.5 m above the ground; during the night, an assessment height of 4.5 m has been used to represent first floor (bedroom) windows.

**Identification of Baseline Conditions**

12.34 To characterise and quantify the existing noise environment around the Site, a baseline noise survey was undertaken at locations selected to be representative of the identified noise sensitive receptors; the survey locations are shown in Figure 12.2.

Figure 12.2 Baseline noise survey monitoring locations




12.35 The noise surveys were conducted primarily between 13th and 22nd June 2022 and comprised three locations in and around the Site where long-term unattended monitoring was undertaken (LT1-LT3), supplemented by positions where short-term attended monitoring was carried out outside the Site (ST1-ST3). Following a review of the measured data, LT1 was redeployed at a position closer to the A635 between 21st July and 1st August 2022, to represent the prevailing noise environment at receptors R02 and R03 more accurately. Further details of the noise survey and results relevant to the assessment are provided in Appendix 12.2.

12.36 Although the baseline monitoring was carried out in 2022, prior to construction of the new roundabout on the A635 adjacent to the Site, it is considered that the results remain representative of the prevailing background sound environment in the area.

**Significance Criteria – General Approach**

12.37 The potential effects of noise are assessed using different methods based on the type of source being considered using the relevant standards and guidance, as advised by national noise policy (see details of NPSE etc above).

12.38 In some cases, such as construction noise, this involves the definition of a LOAEL and SOAEL, with significance being indicated both by exceedance of the SOAEL together with consideration of the duration of the exceedance. However, where a type of noise is already part of an existing environment but is impacted by a development, for example road traffic noise, it can be more appropriate to use the magnitude of change in noise (i.e., the impact) together with whether there is an exceedance of the SOAEL to indicate significance.

12.39 An overview of the assessment methodologies and identification of effects for the different sources of noise considered in the assessment are provided below. Further details are provided in the appendices as noted.

**Construction Phase – Construction Activity**

12.40 Noise associated with the construction of the Development has been predicted at the relevant noise sensitive receptors based on the data and methods described in BS 5228-1[vii] together with the information provided in Chapter 5 of the ES. Noise levels have been predicted for the following works phases in proximity to the noise sensitive receptors (i.e., reasonable worst-case assumptions in terms of distance between the works and receptors). Building fit out has not been considered as it is not expected to result in significant levels of external noise:

- Site Preparation, Access Road Construction and Enabling Works;
- Excavation and Sub-Structure Works;
- Drainage works;
- Construction of Superstructure;
- Landscaping; and
- Offsite Roads.

12.41 All works are currently planned to take place during daytime hours. Further details of the information used in the prediction of construction activity noise is provided in Appendix 12.3.

12.42 The potential significance of construction noise at the relevant noise sensitive receptors has been assessed based on the method described in Annex E of BS 5228-1, expressed in terms of LOAEL and SOAEL thresholds, together with the duration of any SOAEL exceedance. This is detailed in Table 12.3 below.

**Table 12.3 Effect level thresholds & significance criteria for construction noise**

| Effect level | Time period | Threshold value (dB LAeq,T dB)2 |
|---|---|---|
| LOAEL | Day (07:00 – 19:00) | 65 |
| SOAEL[1] | Day (07:00 – 19:00) | 75 |
| Identification of effect significance and other notes:<br>[1] Significant effects are indicated if the programme of works indicates that the SOAEL threshold values are likely to be exceeded over a period of at least one month.<br>[2] Values apply to a location one metre from a residential building façade containing a window, ignoring the effect of the acoustic reflection from that façade. | | |

12.43 The criteria defined in Table 12.3 relate primarily to residential receptors, which are of high sensitivity. Therefore, as a cautious approach, they have also been used when assessing the potential effects of construction noise on the other types of noise sensitive receptors considered in this assessment. Where predicted construction noise levels are above the LOAEL but below the SOAEL, then adverse (non-significant) effects are indicated.

12.44 To maintain consistency with the generic method of defining a “level” of significance used in the ES, the effects and potential significance of construction noise have also been defined as follows with reference to the methodology described above:

**Table 12.4 Generic descriptors of construction noise effects and significance levels**

| Relationship of predicted construction noise level to effect level | Duration of construction noise | Level of significance (ES) | Indication of significant effect? |
|---|---|---|---|

| | | | |
|---|---|---|---|
| ≤ LOAEL | N/A | Negligible | No |
| Between LOAEL and SOAEL | N/A | Minor | No |
| > SOAEL | < One Month | Moderate | No |
| > SOAEL | ≥ One Month | Major | Yes |

**Construction Phase – Construction Traffic**

12.45 Changes in road traffic noise due to construction traffic on the roads around the Site has been assessed by predicting the noise from scenarios both with and without the traffic associated with the construction of the Development at the relevant noise sensitive receptors using data provided by the Applicant's transport consultant (see Chapter 13 of the ES) and comparing the results. Predictions have been undertaken using the method described in the technical memorandum Calculation of Road Traffic Noise[viii] (CRTN) for the following traffic flow scenarios:

- Peak year of construction (2025) without Development construction traffic (referred to as the Do-Minimum or DM scenario); and
- Peak year of construction (2025) including the Development construction traffic (referred to as the Do-Something or DS scenario).

12.46 Further details of the information used in the prediction of construction traffic noise, including the traffic flow data for each scenario, is provided in Appendix 12.3.

12.47 The potential significance of any increases in road traffic noise due to traffic associated with construction of the Development have been assessed based on the method described in the relevant section of the Design Manual for Roads and Bridges (DMRB)[ix], which is based on the magnitude of the change in noise levels (impact), in combination with the duration of the impact. This is detailed in Table 12.5 below.

**Table 12.5 Impact magnitudes & significance criteria for construction traffic noise**

| Magnitude of impact | Change in noise level due to construction road traffic (dB) |
|---|---|
| No change | No increase or decrease |
| Negligible | Less than 1.0 |
| Minor | Greater than or equal to 1.0 and less than 3.0 |
| Moderate | Greater than or equal to 3.0 and less than 5.0 |
| Major | Greater than or equal to 5.0 |
| Identification of effect significance:<br>Significant effects are indicated if the programme of works indicates that either a moderate or major impact is indicated over a period of at least one month. | |

12.48 To maintain consistency with the generic method of defining a "level" of significance used in the ES, the effects and potential significance of construction traffic noise have also been defined as follows with reference to the methodology above:

**Table 12.6 Generic descriptors of construction traffic noise effects and significance levels**

| Magnitude of impact of predicted construction traffic noise | Duration of construction traffic noise | Level of significance (ES) | Indication of significant effect |
|---|---|---|---|
| Negligible / Minor | N/A | Negligible | No |

| | | | |
|---|---|---|---|
| Moderate / Major | < One month | Minor | No |
| Moderate | ≥ One month | Moderate | Yes |
| Major | ≥ One month | Major | Yes |

**Operational Phase – Road Traffic Noise**

12.49 Changes in road traffic noise due to operational traffic on the roads in the vicinity of the Site have been assessed by predicting the noise from scenarios both with and without the traffic associated with operation of the Development at the relevant noise sensitive receptors, using data provided by the Applicant's transport consultant (see Chapter 13 of the ES) and comparing the results. Predictions have been undertaken based on the method described in CRTN for the following traffic flow scenarios, which take account of all relevant committed developments:

- Baseline year (2022) without Development, for reference;
- Do-Minimum (DM) scenario for first year of full operation of Development (2026) without operational traffic; and
- Do-Something (DS) scenario for first year of full operation of Development (2026) including operational traffic.

12.50 The annual average weekday traffic (AAWT) has been assessed for both the 16 hour daytime period of 07:00 to 23:00 hours, and the 8 hour night-time period of 23:00 to 07:00 hours. Further details of the information used in the prediction of operational traffic noise, including the traffic flow data for each scenario, is provided in Appendix 12.4.

12.51 As stated above, the potential road traffic noise impacts in Hickleton have been predicted and assessed for the operational phase of the Development, with full details, including the proposed approach mitigation, presented as a separate report in Appendix 12.9.

12.52 The potential significance of any increases in road traffic noise due to traffic associated with operation of the Development have been assessed based on a comparison of the predicted noise level for the DS scenario to the SOAEL threshold for day and night, in combination with the magnitude of change in noise levels (impact) between the results for the DM and DS scenarios.

12.53 The LOAEL and SOAEL thresholds for road traffic noise are presented in Table 12.7 as follows:

**Table 12.7 Thresholds of potential effects of operational road traffic noise at residential receptors**

| Time period, T | Effect level | Threshold value (dB LAeq,T)a |
|---|---|---|
| Day (07:00-23:00) | LOAEL | 50[b] |
| | SOAEL | 63[c] |
| Night (23.00-07.00) | LOAEL | 40 |
| | SOAEL | 55 |

Notes:
[a] Values are for annual average weekday road traffic noise at a position one metre from a residential building façade containing a window, ignoring the effect of an acoustic reflection from that façade.
[b] Equivalent to 55 dB $L_{A10,18hr}$ façade
[c] Equivalent to 68 dB $L_{A10,18hr}$ façade

12.54 If the DS scenario predicted road traffic noise level exceeds the LOAEL, the change between the DM and DS scenario results has been calculated for the day/night-time period and compared to the

magnitude of impact categories presented in Table 12.8 and Table 12.9 for the day and night-time, respectively.

12.55 Where the DS scenario exceeds the SOAEL and the magnitude of impact is minor or greater, then a significant effect is identified (this is indicated by the shaded boxes with bold text in the tables below).

**Table 12.8 Impact magnitude and significance categories for change in road traffic noise during the day**

| Magnitude of impact | Change in road traffic noise exposure (DAY) | |
|---|---|---|
| | If DS scenario result is between LOAEL and SOAEL | If DS scenario result is equal to or greater than SOAEL |
| No Change | 0 | 0 |
| Negligible | Up to 2.9 dB | Up to 0.9 dB |
| Minor | 3.0 – 4.9 dB | 1.0 – 2.9 dB |
| Moderate | 5.0 – 9.9 dB | 3.0 – 4.9 dB |
| Major | 10.0 dB and over | 5.0 dB and over |
| *Identification of effect significance:* *Where predicted road traffic noise level for DS scenario ≥ SOAEL and there is a minor impact or greater (as indicated by the shaded boxes with bold text).* | | |

**Table 12.9 Impact magnitude and significance categories for change in road traffic noise during the night**

| Magnitude of impact | Change in road traffic noise exposure (NIGHT) | |
|---|---|---|
| | If DS scenario result is between LOAEL and SOAEL | If DS scenario result is equal to or greater than SOAEL |
| No Change | 0 | 0 |
| Negligible | Up to 0.9 dB(A) | Up to 0.9 dB |
| Minor | 1 – 2.9 dB(A) | 1.0 – 2.9 dB |
| Moderate | 3.0 – 4.9 dB(A) | 3.0 – 4.9 dB |
| Major | 5.0 dB(A) and over | 5.0 dB and over |
| *Identification of effect significance:* *Where predicted road traffic noise level for DS scenario ≥ SOAEL and there is a minor impact or greater (as indicated by the shaded boxes with bold text).* | | |

12.56 To maintain consistency with the generic method of defining a “level” of significance used in the ES, the effects and potential significance of road traffic noise have also been defined as follows with reference to the methodology above:

**Table 12.10 Generic descriptors of road traffic noise effects and significance levels**

| Magnitude of impact of predicted road traffic noise | Relationship of predicted road traffic noise level to effect level | Level of significance (ES) | Indication of significant effect |
|---|---|---|---|
| Negligible | < SOAEL | Negligible | No |
| Minor / Moderate / Major | < SOAEL | Minor | No |
| Minor / Moderate | ≥ SOAEL | Moderate | Yes |
| Major | ≥ SOAEL | Major | Yes |

*Operational Phase – On-site HGV Activity Noise*

12.57 Noise associated with on-site operational HGV activity has been predicted at the relevant noise sensitive receptors based on measured source levels and the methodology described in ISO 9613-2[x] using an hourly HGV profile provided by the Applicant's transport consultant.

12.58 Predictions have been undertaken for the peak (worst-case) hour of operations during the day and the peak 15 minutes during the night, to align with the assessment periods from BS 4142, as well as individual noise events (e.g., short "bangs") during the night. Further details of the information used in the prediction of on-site operational HGV activity noise is provided in Appendix 12.5.

12.59 While the main layout of the Site is included in the detailed element of the planning application, the areas comprising the four development plots, i.e., the primary locations where operational activities will be undertaken, are being applied for in outline. Following discussions with the Applicant, an indicative layout for the proposed B2/B8 class use within each plot has been referenced for the prediction and assessment of operational noise impacts. This layout is considered to represent a reasonable worst-cast in terms of the potential effects of operational noise in the context of the Parameters Plan (Figure 3.1). It has been agreed by the Applicant that any loading bays on Plot 4 would be on the western elevation of the building.

12.60 The determination of the potential significance of operational noise at the relevant noise sensitive receptors has been based on the method described in BS 4142. This is described fully in Appendix 12.5, but in summary is:

- A typical background sound level for the day and night-time period was identified for each noise sensitive receptor, using the results of the noise survey;
- The predicted noise levels for the peak operational periods of the day and night were compared with the typical background sound levels and corrected for the presence of certain acoustic features if required;
- The difference between the corrected predicted noise level (termed the rating level) and the typical background sound level was used to give an initial estimate of likely impact; where if the rating level is around 10 dB above the typical background sound level it was an indication of a significant adverse impact, with around 5 dB above indicating a potentially adverse impact; and
- If required, context was then considered to arrive at the final assessment of significance, including factors such as the absolute level of sound.

12.61 To maintain consistency with the generic method of defining a "level" of significance used in the ES, the effects and potential significance of on-site HGV activity noise have also been defined as follows:

**Table 12.11 Generic descriptors of on-site HGV activity noise effects and significance levels**

| Initial estimate of impact of predicted operational noise (dB above typical background sound level) | Level of significance (ES) | Indication of significant effect |
|---|---|---|
| Low (<0) | Negligible | No |
| Between Low and Adverse (+1 to +4) | Minor | No |
| Between Adverse and Significant (+5 to +9) | Moderate | No |
| Significant (≥+10) | Major | Yes* |
| * As described in the main text, the final assessment of significance can be modified by context | | |

12.62 Regarding individual noise events from night-time HGV activity, potential significance has been assessed by comparing the predicted levels at the relevant noise sensitive receptors with the thresholds in the World Health Organisation (WHO) document Guidelines for Community Noise[xi], i.e., a significant effect would not occur where the predicted level did not exceed 60 dB $L_{AFmax}$ at the façade of a building.

*Operational Phase – Fixed Plant Noise*

12.63 Sound emission from fixed plant associated with the Development, such as that used for ventilation and cooling of the warehouses and associated office spaces, is considered a component of operational sound. At present, no specific information regarding the type, number or siting of these units is available. Prior to installation, it is proposed that details of any fixed plant would be submitted to, and approved by, BMBC as secured by a suitably worded planning condition.

12.64 As part of this process, sound from the proposed plant installations would be assessed and, if required, mitigated, to demonstrate compliance with relevant policy and avoid significant effects. The assessment would use the methodology in BS 4142 and the background sound levels at noise sensitive receptors presented in this Chapter of the ES. Items of plant would be selected and located to minimise operational sound as far as reasonably practicable, with further options being available for standard mitigation including local screening, enclosures and in-duct attenuators.

*Assumptions and Limitations*

12.65 In general, assumptions used in the assessment have been discussed in the relevant sections within this chapter and/or the supporting appendices (see text in the Assessment Methodology section relating to site layout and fixed plant in the context of the assessment of operational noise).

12.66 The noise survey was undertaken at several locations intended to be representative of multiple noise sensitive receptors as it is not practicable to undertake separate measurements at every potential receptor. However, the data collected and processed as required is considered to provide a robust basis for characterising the existing noise levels at the relevant receptors.

12.67 Similarly, noise has not been assessed at every potential noise sensitive receptor (i.e., every individual property). The receptors selected for the assessment are considered to be those most exposed to noise, therefore representing the worst-case of all possible receptor locations.

12.68 Regarding the assumptions for used construction plant and methodology taken from Chapter 5 of the ES, it is stated in that chapter that the information it contains is necessarily broad at this stage and may be subject to modification, but that it allows assessment of the realistic worst-case construction phase effects.

12.69 As discussed above, the layout used for the assessment of operational noise from on-site HGV activity provides a robust and realistic worst-case basis for the identification of significant effects in the context of the Parameters Plan. However, to account for any changes that may occur in the final design, it is proposed that further assessments of operational noise are undertaken prior to each phase of the Development, taking the latest design information into account and implementing suitable mitigation as required to comply with local and national policy on noise.

## Baseline Conditions

12.70 The baseline noise environment, as observed during the noise survey, was dominated by road traffic noise from nearby roads, particularly the A635.

12.71 As detailed in Appendix 12.2, the results of the baseline noise survey have been processed to identify the typical background sound levels for the day and night-time periods at each of the three long-term monitoring locations (LT1-LT3).

12.72 Based on these, together with the results of the short-term monitoring and other factors, the typical background sound levels representative of those experienced at each noise sensitive receptor where the effects of operational noise, have been considered have been identified, together with any corresponding sensitivity test background sound level, as discussed in Appendix 12.2. These are presented in Table 12.12.

**Table 12.12 Typical and sensitivity test representative background sound levels at relevant noise sensitive receptors**

| Receptor ID | Receptor | Background sound level (dB $L_{A90,15min}$) | | | |
|---|---|---|---|---|---|
| | | Day | | Night | |
| | | Typical | ST[1] | Typical | ST[1] |
| R01 | Billingley Green Lane | 45 | 41 | 38 | - |
| R02 | Rose Valley Cottage | 52 | 48 | 38 | - |
| R03 | Woodbine | 52 | 48 | 38 | - |
| R04 | Highgate House | 43 | - | 38 | - |
| R05 | Holly Grove | 38 | - | 40 | 37 |
| R06 | Highgate Court | 38 | - | 40 | 37 |
| R07 | Carr Field Lane | 35 | - | 34 | - |
| R08 | Heather Garth School | 35 | - | N/A | N/A |
| R09 | Billingley View | 35 | - | 34 | - |
| R10a | Lacewood School North | 35 | - | N/A | N/A |
| R10b | Lacewood School South | 35 | - | N/A | N/A |
| R11 | Maori Ave | 35 | - | 34 | - |
| R12 | Country Park | 35 | - | N/A | N/A |
| [1]*Sensitivity test background sound level* | | | | | |

*Future Baseline Conditions*

12.73 It is expected that road traffic noise will continue to dominate the future baseline noise environment in the absence of the Development. As part of the assessment of road traffic noise, predictions were undertaken for both a baseline year (2022) and future year (2026) without the Development (see Assessment Methodology section above). A comparison of the results indicated that road traffic noise is anticipated to marginally increase.

## Likely Significant Effects

### Construction Phase

*Construction Activity*

12.74 The predicted noise levels for the different construction phases are presented in Appendix 12.6. The results indicate that the highest predicted noise level from a construction phase at any of the relevant noise sensitive receptors is 68 dB $L_{Aeq,T}$. This does not exceed the SOAEL and therefore no significant effects from construction activity noise are indicated.

12.75 The noise level of 68 dB LAeq,T is predicted for three of the construction phases at three of the relevant receptors. This does exceed the LOAEL of 65 dB(A) so some adverse effects are indicated, although as they do not exceed the SOAEL, they would not be considered significant.

12.76 In terms of the “levels” of significance for construction activity noise, the results indicate a negligible level of significance at all receptors for all phases, except for the three phases at the three receptors as discussed in the previous paragraph where the level of significance is indicated as minor. As stated above no significant effects have been identified.

*Construction Traffic*

12.77 The predicted construction traffic noise levels are presented in Appendix 12.6. The results indicate that the greatest increase in road traffic noise at the relevant noise sensitive receptors, when considering the

additional vehicles associated with the construction of the Development is 0.2 dB. This is classified as a negligible magnitude of impact. A significant effect for construction traffic noise requires a moderate magnitude of impact or greater.

12.78 In terms of the "levels" of significance for construction traffic noise, the results indicate a negligible level of significance at all receptors. Therefore, no significant effects have been identified.

**Operational Phase**

*Road Traffic Noise*

12.79 The predicted operational road traffic noise levels are presented in Appendix 12.7. The results indicate that at all the relevant noise sensitive receptors the change in road traffic noise associated with the additional vehicles serving the Development during the daytime is classified as a negligible magnitude of impact.

12.80 In terms of the "levels" of significance for operational road traffic noise during the daytime, the results indicate a negligible level of significance at all receptors. Therefore, no significant effects are identified.

12.81 During the night-time, no significant effects are indicated at receptors R01 and R05 as neither of the corresponding predicted road traffic noise levels for the do-something scenario both exceed the SOAEL while also resulting in an adverse impact. At R04 (Highgate House), while both the SOAEL is exceeded and a minor adverse impact is predicted, the potentially significant effect that would otherwise arise at this receptor will be avoided by the provision and installation of enhanced noise insulation measures to the receptor, secured via a private legal agreement between the Applicant and the owner. At receptors R02 (Rose Valley) and R03 (Woodbine), the predicted noise level for the do-something scenario exceeds the SOAEL and the changes in road traffic noise due to the additional vehicles associated with the operation of the Development indicate a minor adverse impact. Therefore, significant effects are indicated at these two receptors.

12.82 In terms of the "levels" of significance for operational road traffic noise during the night-time, the results indicate a negligible level of significance at R04 (due to the enhanced mitigation) and at R05, and a minor level of significance at R01. At R02 and R03, the results predict a moderate level of significance (which indicates a significant effect).

*On-site HGV Activity Noise*

12.83 The predicted noise levels for on-site HGV activity noise are presented in Tables 1 and 2 of Appendix 12.8. The results indicate that, at most of the relevant noise sensitive receptors, the rating level of the on-site HGV activity is below both the typical and, where present, sensitivity test background sound levels for both the day and night-time periods. This indicates that no adverse or significant adverse effects would occur at those receptors.

12.84 During the day (Table 1 of Appendix 12.8), the rating level exceeds the typical background sound level by 4 dB at receptor R10a (the first floor of the north façade of Lacewood School); this may indicate an adverse effect, although it would not be considered significant. However, in the context of the noise level itself, the rating level is predicted to be 39 dB $L_{Ar,Tr}$, and, on that basis, no adverse or significant adverse effects are indicated.

12.85 In terms of the "levels" of significance for on-site HGV activity noise during the daytime, the results indicate a negligible level of significance at all receptors, except at R10a where a minor level of significance is indicated.

12.86 During the night (Table 2 of Appendix 12.8), the rating level exceeds the typical background sound level by 4 dB at receptors R02 and R05 (Rose Valley Cottage and Holly Grove respectively), which may indicate an adverse, although not significant adverse, effect. In context, at night, the internal noise level within bedrooms is of primary importance (i.e., where people are sleeping). Assuming that any bedrooms had a partially open window as a reasonable worst-case, the external rating level of 42 dB $L_{Ar,Tr}$ would equate to 30 dB(A) internally. Compared to the relevant guideline values (see Appendix

12.5), this would not exceed the lower threshold for desirable noise levels inside bedrooms and therefore no significant or adverse effects are indicated.

12.87 During the night at receptor R03 (Woodbine), the rating level exceeds the typical background sound level by 6 dB which may indicate an adverse, although not significant adverse, effect. Considering the potential internal noise levels as in the previous paragraph, this would equate to 32 dB(A); this would exceed the lower threshold for desirable noise levels inside bedroom, again indicating a potentially adverse, although not significant, effects.

12.88 In terms of the "levels" of significance for on-site HGV activity noise during the night-time, the results indicate a negligible level of significance at all receptors, except at R02 and R04 where a minor level of significance is indicated, and at R03 where a moderate level of significance is predicted.

12.89 Regarding individual noise events from night-time HGV activity, none of the predicted noise levels presented in Table 3 of Appendix 12.8 exceed the WHO threshold of 60 dB $L_{AFmax}$ at the façade of the relevant buildings, indicating that there would be no significant effects.

*Fixed Plant Noise*

12.90 As stated in the Assessment Methodology section above, noise from fixed plant cannot be assessed at this time as no specific information is available. However, it is proposed that details of any fixed plant would be submitted to, and approved by, BMBC, including details of how significant effects would be avoided. The "level" of significance would be considered negligible at all receptors. On this basis, no significant effects are indicated from fixed plant noise.

## Mitigation Measures

**Construction Phase**

12.91 No Whilst no significant effects from either construction activity or construction traffic noise have been predicted at the relevant sensitive receptors, the CEMP Framework that has been submitted with the planning application includes details of the measures that would be taken to manage and mitigate construction noise and, hence, minimise any adverse effects. The subsequent plot-specific CEMPs would provide further details, as required, and be submitted as part of any future Reserved Matters Applications.

**Operational Phase**

*Road Traffic Noise*

12.92 Following a review of the available options for mitigation, the Applicant has committed to offer to provide and install noise insulation measures (e.g., enhanced glazing and alternate methods of providing ventilation in relevant habitable rooms where suitable) to the noise sensitive receptors where significant effects from road traffic noise associated with operation of the Development have been predicted. Two properties fall into this category due to road traffic noise during the night, namely R02, Rose Valley Cottage, and R03, Woodbine, and the mitigation would be subject to the agreement of the owners of the properties.

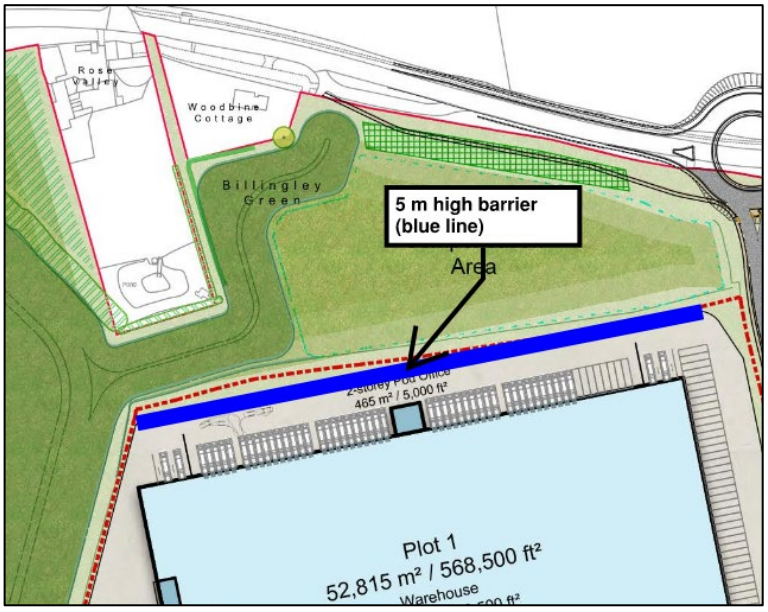
12.93 As previously mentioned, at night, the internal noise level within bedrooms is of primary importance, and noise insulation measures would help reduce this impact. Furthermore, this approach is consistent with the Pre-App response from BMBC on 22nd February 2023 in terms of potential mitigation measures (i.e., the installation of enhanced noise insulation). The commitment would be secured through the Section 106 Agreement.

*On-site HGV Activity Noise*

12.94 Whilst no significant effects from on-site HGV Activity Noise have been predicted at the relevant sensitive receptors, based on the indicative layout used for the assessment (which, as a worst-case, assumes loading bays on the northern side of Plot 1), the Applicant will install a 5 m high barrier to the north of Plot 1, primarily to reduce the potential operational noise levels at receptors R02 and R03

(Rose Valley Cottage and Woodbine) during the night. The location of this barrier in the context of the indicative layout of Plot 1 is shown in Figure 12.3.

Figure 12.3 Additional mitigation: Barrier to north of Plot 1




12.95 As previously stated, it is proposed that further assessments of operational noise are undertaken prior to each phase of the Development, taking the latest design information into account and implementing suitable mitigation as required to comply with local and national policy on noise.

## Residual Effects

### Construction Phase

12.96 No additional mitigation measures are required. Therefore, the original conclusions remain unchanged, i.e., no significant adverse effects are indicated from construction activity or construction traffic.

### Operational Phase

*Road Traffic Noise*

12.97 The Applicant's commitment to offer to provide and install noise insulation to the affected habitable rooms of the noise sensitive receptors R02 and R03 mitigates the predicted significant adverse effects from operational road traffic noise during the night-time period. With this mitigation in place, no significant effects are indicated from this source and the "level" of significance is considered negligible at these receptors. All other results remain unchanged.

*On-site HGV Activity Noise*

12.98 With the 5m high barrier to the north of Plot 1 in place, the difference between the rating level and the typical background sound level during the night reduces from exceedances of 4 dB and 6 dB without the barrier at R02 and R03 respectively, to -2 dB at both receptors. This removes the potential adverse (non-significant) effect at these properties and complies with BMBC's preference for the rating level to exceed the typical background level by no more than 4 dB at any receptor (as discussed under the Consultation section of this Chapter). The results with this mitigation in place are presented in Tables 4 to 6 of Appendix 12.8.

12.99 In terms of the residual "levels" of significance for on-site HGV activity noise at R02 and R03, these would reduce to a negligible level at both receptors. All other results remain unchanged.

12.100 As previously stated, the assessment of on-site HGV activity noise is based upon a reasonable worst-case in terms of the Development layout and, therefore, this may change as the design evolves within the specified parameters. As part of this process, any measures to mitigate significant effects, and to comply with government and local policy on noise, will be reviewed and finalised as part of the reserved matters applications made in respect of each phase or plot.

12.101 Accordingly, it is anticipated that any necessary noise mitigation measures relating to on-site HGV activity on any of the Plots will be finalised during the future reserved matters stages that will be subject to further determination by BMBC.

## Cumulative Effects

### Construction Phase

12.102 All existing and approved schemes are at least 1.3 km away from the Site. At this distance, no significant effects resulting from cumulative noise relating to on-site construction activities from multiple schemes are indicated.

### Operational Phase

12.103 All existing and approved schemes have been included in the road traffic scenarios used for the assessment of operational road traffic noise and, therefore, any cumulative effects are already considered within the main assessment.

12.104 All existing and approved schemes are at least 1.3 km away from the Site. At this distance, no significant effects resulting from cumulative noise relating to on-site operational activities from multiple schemes are indicated.

## Summary

12.105 An assessment has been carried out of the potential noise effects arising during the construction and operational phases of the Development. It is anticipated that noise impacts could arise from: construction activity/traffic, changes in road traffic on the surrounding network and operational activities at each plot.

12.106 The potential effects of each of these sources have been predicted and assessed using the relevant British Standards and other guidance documents in the context of Government policy on noise as well as any relevant local policies and discussions with officers at BMBC. The baseline noise environment, as observed during the noise survey, was dominated by road traffic noise from nearby roads, particularly the A635.

12.107 To characterise and quantify the baseline noise environment, baseline noise surveys were undertaken between June 2022 and August 2022. This included a combination of long-term unattended monitoring and short-term spot measurements, which were discussed and agreed with the Council's EHO. The baseline noise environment, as observed during the noise survey, was dominated by road traffic noise from nearby roads, particularly the A635. It is considered that the results remain representative of the prevailing background sound environment.

12.108 Construction activity is not predicted to give rise to any significant adverse effects. Some adverse (non-significant) effects may arise but the measures to manage and mitigate construction noise are included in the CEMP Framework that has been submitted with the planning application, and subsequent plot-specific CEMPs would provide further details as required submitted as part of any future Reserved Matters Applications. Noise from construction traffic on the local road network is predicted to be negligible. Therefore, no significant effects are indicated.

12.109 During the operational phase of the Development, most receptors are predicted to experience a negligible impact in terms of road traffic noise during both the day and night-time periods. Therefore, no significant effects are expected at these locations. However, during the night-time period, significant adverse effects are indicated at two receptors (R02 Rose Valley Cottage and R03 Woodbine).

12.110 The potential road traffic noise impacts in Hickleton have been predicted and assessed for the operational phase of the Development, with full details, including the proposed approach to mitigation, presented as a separate report in Appendix 12.9.

12.111 Noise from on-site HGV activities is not indicated to give rise to any adverse effects at most receptors during the day or night-time period. At one receptor (R03 Woodbine) during the night-time, a potentially adverse (non- significant) effect is predicted.

12.112 Noise from fixed plant has not been assessed as no specific information is available at this stage. However, it is proposed that details of any fixed plant would be submitted to, and approved by, BMBC, including details of how significant effects will be avoided. On this basis, no significant effects are indicated from fixed plant noise.

12.113 The only additional mitigation measures that would be implemented are;

- The Applicant's offer to provide and install noise insulation (e.g., enhanced glazing and alternative methods of providing ventilation in relevant habitable rooms) to receptors R02 and R03 to mitigate the significant adverse effect from operational road traffic noise during the night-time, secured through the Section 106 Agreement; and

- A 5m high barrier to the north of Plot 1 to reduce the noise impact at the rear of R02 and R03;

12.114 With the mitigation measures in place, there are no residual adverse or significant adverse noise effects from the Development.

12.115 No cumulative noise effects have been identified as part of the assessment.

12.116 Table 12.14 contains a summary of the likely significant effects of the Development.

**Table 12.14: 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 | B | L | |
| *Construction* | | | | | | | | | | | |
| Disturbance from construction noise | Temporary | Negligible to Minor Adverse (not significant) | Applicant has submitted a CEMP framework with the planning application, and subsequent plot-specific CEMPs will be submitted as part of any future Reserved Matters Applications | | | | | | | * | Negligible to Minor Adverse (not significant) |
| Disturbance from construction traffic noise | Temporary | Negligible (not significant) | N/A | | | | | | | * | Negligible (not significant) |
| *Completed Development* | | | | | | | | | | | |
| Daytime noise disturbance from road traffic associated with the Development – all receptors | Permanent | Negligible (not significant) | N/A | | | | | | | * | Negligible (not significant) |
| Night-time noise disturbance from road traffic associated with the Development – all receptors except R02 and R03 | Permanent | Negligible to Minor Adverse (not significant) | N/A | | | | | | | * | Negligible to Minor Adverse (not significant) |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Night-time noise disturbance from road traffic associated with the Development – R02 and R03 | Permanent | Moderate Adverse (significant) | Applicant will offer to provide and install noise insulation and alternative ventilation to affected habitable rooms, secured through the Section 106 Agreement | | | | | | | * | Negligible (not significant) |
| Daytime noise disturbance from on-site HGV activities – all receptors | Permanent | Negligible to Minor Adverse (not significant) | N/A | | | | | | | * | Negligible to Minor Adverse (not significant) |
| Night-time noise disturbance from on-site HGV activities – all receptors except R03 | Permanent | Negligible to Minor Adverse (not significant) | N/A | | | | | | | * | Negligible to Minor Adverse (not significant) |
| Night-time noise disturbance from on-site HGV activities – R03 | Permanent | Moderate Adverse (not significant) | Applicant will install a 5 m high barrier on the northern boundary of Plot 1 | | | | | | | * | Negligible (not significant) |
| *Cumulative Effects* | | | | | | | | | | | |
| *Construction* | | | | | | | | | | | |
| None identified | - | - | - | | | | | | | | - |
| *Completed Development* | | | | | | | | | | | |
| None identified | - | - | - | | | | | | | | - |

* Geographical Level of Importance

I = International; UK = United Kingdom; E = England; R = Regional; C = County; B = Borough; L = Local

## References

[i] Department for Levelling-Up, Housing and Communities (2023), National Planning Policy Framework.

[ii] Department for Environment, Food & Rural Affairs (DEFRA) (2010), Noise Policy Statement for England.

[iii] Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2019), Planning Practice Guidance: Noise.

[iv] Barnsley Metropolitan Borough Council (2019), Barnsley Local Plan.

[v] BSI Standards Limited (2019), BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound.

[vi] Town and Country Planning (Environmental Impact Assessment) Regulations 2017 SI 2017/571, as amended by SI 2018/695.

[vii] BSI Standards Limited (2014), BS 5228-1:2009+A1:2014 Code of Practice for noise and vibration control on construction and open sites, Part 1 Noise.

[viii] Department of Transport Welsh Office (1988), Calculation of Road Traffic Noise.

[ix] Highways England (2020), Design Manual for Roads and Bridges – LA 111 Noise and Vibration, Revision 2.

[x] International Organization for Standardization (1996), ISO 9613-2:1996 Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation.

[xi] World Health Organization (1999), Guidelines for Community Noise.