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11 NOISE

11.1 INTRODUCTION

11.1.1 This chapter reports the outcome of the assessment of likely significant effects arising from the Proposed Development upon noise and vibration.

11.1.2 This chapter describes the assessment methodology and the baseline conditions relevant to the assessment, as well as the summary of the likely significant effects leading to specific mitigation measures to avoid, prevent, reduce or if possible, offset any likely significant adverse effects, and the likely residual effects and any required monitoring after these measures have been employed.

11.1.3 This chapter (and its associated figures and appendices) has been completed by M-EC and is intended to be read as part of the wider Environmental Statement (ES).

11.1.4 This report is necessarily technical in nature, a glossary of acoustic terminology is presented within **Appendix 11.1- Glossary of Acoustic Terminology**.

11.1.5 A full list of the associated appendices for the Noise chapter are listed below:

- Appendix 11.1- Glossary of Acoustic Terminology
- Appendix 11.2 – Legislation and Guidance
- Appendix 11.3 – Environmental Noise Survey
- Appendix 11.4 – Construction Assessment
- Appendix 11.5 – Noise Model Parameters
- Appendix 11.6 – Operation Assessment
- Appendix 11.7 – Development Generated Traffic Noise Assessment

11.2 ASSESSMENT APPROACH

Assessment of Significance

11.2.1 The approach to determining significant effects addresses the requirement of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) to determine whether any effects would be significant or not.

11.2.2 In addition, noise related planning policy also references the need to consider significance in terms of effect levels as referenced for use in the NPSE¹. To help differentiate between these policy 'effect levels' from EIA significance effects, they are referred to in this chapter as 'NPSE Classification.'

11.2.3 Where it is appropriate to do so, the following subsections also detail how noise impacts are numerically classified against the NPSE effect levels (NPSE Classification) such that compliance with national noise policy is also demonstrated.

11.2.4 The NPSE effect levels are as follows:

¹ Department for Environment, Food and Rural Affairs (March 2010), Noise Policy Statement for England.

- No Observed Adverse Effect Level (NOAEL);
- Lowest Observed Adverse Effect Level (LOAEL); and
- Significant Observed Adverse Effect Level (SOAEL).

11.2.5 In general, a significant effect occurs when the magnitude of impact is considered to be Moderate or Major; however, it will depend on the duration of the predicted impact alongside consideration of relevant noise policy. Any significant effects as part of the Proposed Development are highlighted herein and in the associated appendices.

Methodology

11.2.6 The methodology for assessment is presented within this sub-section and is broken down into each portion of the assessment in turn as follows:

- Construction - Noise
- Construction - Vibration
- Operation – Service Yard Operations
- Operation – Development Generated Road Traffic Noise

Construction Noise

11.2.7 Construction noise will be considered and assessed in accordance with BS 5228-1². The construction predictions have been made using Microsoft Excel spreadsheets, which have been developed in-house (by M-EC) in accordance with BS 5228-1. Construction noise assessment criteria have been determined using the measured baseline noise level, obtained at the nearest sensitive receptors during the baseline noise survey, following the 'ABC Method' as detailed within Annex E, Section E3.2 of BS 5228-1.

11.2.8 Construction noise level predictions have been undertaken for the closest Noise Sensitive Receptors (NSRs). The results have been compared against the assessment criteria and the margin of compliance / exceedance of the assessment criteria has been used to inform whether a significant effect would occur.

11.2.9 The BS 5228-1 calculation methods allow noise levels to be determined for various construction activities. However, the accuracy of such predictions is necessarily limited by assumptions that have to be made regarding the number and type of plant used, their location and detailed operating arrangements. Whilst this information would be clarified as the detailed design progresses and when resources are mobilised, other information (such as exactly where the plant operates and for how long) would remain uncertain, even after works have commenced.

11.2.10 It has therefore been necessary to perform a generic construction phase noise assessment, focussing on key activities, with the aim of identifying whether significant temporary noise effects are likely to arise at the closest sensitive receptors. The plant types, number and utilisations adopted in the completed noise level predictions are detailed in **Appendix 11.4 – Construction Assessment**.

11.2.11 Full details of the assessment are presented in **Appendix 11.4- Construction Assessment**.

Magnitude of Impact and NPSE Classification

² BS 5228-1:2009 +A1:2014 'Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.'

11.2.12 For construction noise, the magnitude of impact and NPSE classification are determined based on the noise level and duration.

11.2.13 The predicted construction noise level is compared against the construction noise threshold, as determined following the ABC Method detailed in BS 5228-1. **Table 11.1** details the resulting impact magnitude and NPSE classification that have been applied.

Table 11.1: Construction Noise Criteria

Construction Noise Level (x, dB) vs Receptor Criteria (ABC Method)	Magnitude of Impact	NPSE Classification
x < criteria	Negligible to Minor	NOEL
x > criteria and ≤ 5 dB over criteria	Minor to Moderate	LOAEL to SOAEL
x ≥ 5 dB over criteria	Moderate to Major	Above SOAEL

11.2.14 In **Table 11.1**, where the Magnitude of Impact or NPSE Classification has more than one classification, a single classification will be assigned taking into account duration, national guidance and professional judgement.

Significance of Effect

11.2.15 A significant effect occurs where a moderate or major impact occurs for a duration exceeding 10 or more days of working in any 15 consecutive days, or for a total number of days exceeding 40 in any 6 consecutive months.

Construction Vibration

11.2.16 Construction vibration will be considered in accordance with BS 5228-2³. The vibration predictions have been made using Microsoft Excel spreadsheets, which have been developed in-house (by M-EC) in accordance with BS 5228-2.

11.2.17 Construction vibration level predictions have been undertaken for a sample of the closest sensitive receptors. The results have been compared against the assessment criteria and the margin of compliance / exceedance of the assessment criteria has been used to inform whether a significant effect would occur.

11.2.18 The vibration predictions have been made using empirical data provided in BS 5228-2. However, the accuracy of such predictions is necessarily limited by assumptions that have to be made regarding the number and type of plant used, their location, detailed operating arrangements, and the ground conditions. Whilst this information would be clarified as the detailed design progresses and when resources are mobilised, other information (such as exactly where the plant operates and for how long) would remain uncertain, even after works have commenced.

11.2.19 It has therefore been necessary to perform a generic construction phase vibration assessment, focussing on key activities, with the aim of identifying whether significant temporary vibration effects are likely to arise at the closest sensitive receptors. The plant types, number and utilisations adopted in the completed vibrations level predictions are detailed in **Appendix 11.4- Construction Assessment**.

³ BS 5228-2:2009 +A1:2014 'Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration.'

11.2.20 Full details of the assessment are presented in **Appendix 11.4- Construction Assessment**.

Magnitude of Impact and NPSE Classification

11.2.21 For construction vibration, the magnitude of impact and NPSE classification are determined based on the vibration level and duration.

11.2.22 The predicted construction vibration level is compared against the construction vibration criteria.

11.2.23 **Table 11.2** details the resulting impact magnitude and NPSE classification that have been applied.

Table 11.2: Construction Vibration Criteria

Construction Vibration (x) in PPV (mm/s ⁻¹)	Magnitude of Impact	NPSE Classification
x < 0.3	Negligible to Minor	NOEL
0.3 < x < 1.0	Minor to Moderate	LOAEL to SOAEL
1.0 < x	Moderate to Major	Above SOAEL

11.2.24 In **Table 11.2**, where the Magnitude of Impact or NPSE Classification has more than one classification, a single classification will be assigned taking into account duration, national guidance and professional judgement.

Significance of Effect

11.2.25 A significant effect occurs where a moderate or major impact occurs for a duration exceeding 10 or more days of working in any 15 consecutive days, or for a total number of days exceeding 40 in any 6 consecutive months.

Operation – Service Yard Operations

11.2.26 Operational noise break-out from the Proposed Development has been assessed for service yard/haulage operations and car park use. For existing dwellings, operational site noise has been assessed in accordance with BS 4142⁴, alternative guidance has been sought for non-residential Noise Sensitive Receptors (NSRs) and is presented along with full details of the assessment are presented in **Appendix 11.6- Operation Assessment**.

11.2.27 Drawing upon the results of the background sound survey, daytime and night-time noise assessment criteria has been determined in accordance with the relevant standards.

11.2.28 Operational noise level predictions have been undertaken for two working scenarios. The results have then been compared against relevant data from the noise survey.

11.2.29 To inform the assessment of the operational site noise, a detailed noise model has been prepared for the Proposed Development. This model has been prepared within the CadnaA[®] noise modelling suite and extends to the nearest noise sensitive receptors.

⁴ BS 4142:2014 +A1:2019 'Methods for rating and assessing industrial and commercial sound.'

11.2.30 At this stage, information about the nature of operations and on the requirements for fixed plant and equipment are not known. These would be dependent upon the future occupants of the Proposed Development. The approach has therefore been to assess example operating scenarios including those associated with ambient and partial chilled goods operations. A number of assumptions on the noise generating operations have been made based on the application drawings and M-EC's experience of similar schemes.

11.2.31 The approach adopted in the generation of the noise model is set out in **Appendix 11.5- Operation Assessment**. This appendix also includes the noise source data and details of the scenarios considered in this assessment.

Magnitude of Impact and NPSE Classification

11.2.32 For dwellings, the magnitude of impact and effect level criteria have been determined based upon the guidance contained within BS 4142. This assessment considers the difference between sound from the Proposed Development operations (including any correction(s) for noticeable acoustic characteristics) and the prevailing background sound levels, but also taking into account context and the sound levels in absolute terms.

11.2.33 **Table 11.3** details the resulting magnitude of impact and the effect level criteria that have been applied.

Table 11.3: Operational Site Noise Criteria for Dwellings

Difference between Rating Level ($L_{Ar, Tr}$ dB) and Background Sound Level ($L_{A90, T}$ dB) (x)	Magnitude of Impact ⁽¹⁾	NPSE Classification
$x \leq 0$	No Change	NOAEL
$0 < x \leq 3$	Negligible to Minor	LOAEL
$3 < x \leq 8$	Minor to Moderate	LOAEL to SOAEL
$8 \leq x$	Moderate to Major	Above SOAEL

⁽¹⁾ Magnitude of impact can be subject to adjustment to account for context.

Significance of Effect

11.2.34 A significant effect occurs where a moderate or major impact is identified, but also subject to consideration of the following contextual factors:

- Magnitude of change;
- Absolute noise level;
- Whether or not the impact changes the acoustic character; and
- Sensitivity of the receptor.

Consideration of Non-Dwelling Sensitive Receptors

11.2.35 A list of sensitive receptors that are considered as part of the assessment is presented within the next section; however, criteria is specified for non-dwelling sensitive receptors (i.e., schools) in **Table 11.4** given that one identified non-residential receptors is Carrdus School, located within this assessment range of the Site.

Table 11.4: Operational Site Noise Criteria for Non-Residential Receptors

Difference between Operational Sound Level ($L_{Aeq, T}$ dB) (x) and Existing Ambient Sound Level ($L_{Aeq, T}$ dB) (y)	Magnitude of Impact	NPSE Classification
$x \leq (y-10)$	No Change	NOAEL
$(y-10) < x < (y-3)$	Negligible to Minor	LOAEL
$(y-3) < x < y$	Minor to Moderate	LOAEL to SOAEL
$y \geq x$	Moderate to Major	Above SOAEL

Significance of Effect

11.2.36 A significant effect occurs where a moderate or major impact is identified.

Operation – Development Generated Road Traffic Noise

11.2.37 The assessment of development generated road traffic noise is based upon the guidance in LA 111⁵. Details of the traffic data supporting this assessment are given in **Appendix 11.7- Development Generated Traffic Noise Assessment**.

11.2.38 The assessment of development generated road traffic noise during the operational phase has been undertaken based on the Proposed Development traffic data.

11.2.39 The assessment has considered the following scenarios, for which traffic data has been generated

- 2025 do-minimum⁶ opening year⁷ (DMOY);
- 2025 do-something⁸ opening year (DSOY);
- 2040 do-minimum future year⁹ (DMFY); and
- 2040 do-something future year (DSFY).

11.2.40 Basic Noise Level (BNL) calculations have been undertaken in accordance with CRTN¹⁰ for each local road traffic link, and each of the above scenarios. The change in noise level arising as a result of the Proposed Development in (Short-term), and in combination with natural traffic growth (Long-term), have been determined by making the following comparisons:

- Short-term = DSOY – DMOY; and
- Long-term = DSFY – DMOY.

11.2.41 The significance of these noise level changes has then been informed by consideration to whether there are any existing NSRs that are close to the assessed routes (i.e., that could be subject to the identified level changes), and by application of the short-term and long-term impact magnitude scales, as presented in **Table 11.5** and **Table 11.6**.

⁵ Design Manual for Road and Bridges, LA 111, Noise and Vibration, Rev 2, May 2020.

⁶ The 'do-minimum' means a scenario without the Proposed Development.

⁷ First year of operation

⁸ The 'do-something' means a scenario with the Proposed Development.

⁹ Fifteenth year after opening.

¹⁰ Calculation of Road Traffic Noise, Department of Transport Welsh Office, 1988.

Magnitude of Impact and NPSE Classification

11.2.42 For development generated traffic noise, the criteria have been determined based upon the short-term and long-term classification scales detailed within LA 111. The terminology used within these scales have been updated to reflect that being used in this assessment.

11.2.43 The resulting magnitude of impact criteria are detailed in **Table 11.5** and **Table 11.6**.

Table 11.5: Development Generated Road Traffic Noise Criteria, Short-term

Noise Change (L _{A10, 18hr} dB)	Magnitude of Impact
0	No Change
0.1 – 0.9	Negligible
1.0 – 2.9	Minor
3.0 – 4.9	Moderate
≥ 5.0	Major

Table 11.6: Development Generated Road Traffic Noise Criteria, Long-term

Noise Change (L _{A10, 18hr} dB)	Magnitude of Impact
0	No Change
0.1 – 2.9	Negligible
3.0 – 4.9	Minor
5.0 – 9.9	Moderate
≥ 10.0	Major

11.2.44 The NPSE classification have been determined based on the absolute road traffic noise levels in accordance with the scale presented in **Table 11.7**.

Table 11.7: Development Generated Road Traffic, NPSE Classification

Period	Noise Level	NPSE Classification
Daytime (07:00 – 23:00)	< 55 dB L _{A10, 18hr} façade	NOEL
	≥ 55 dB and < 68 dB L _{A10, 18hr} façade	LOAEL
	≥ 68 dB L _{A10, 18hr} façade	SOAEL
Night-time (23:00 – 07:00)	< 40 dB L _{night, outside free-field}	NOEL
	≥ 40 dB and < 55 dB L _{night, outside free-field}	LOAEL
	≥ 55 dB L _{night, outside free-field}	SOAEL

Significance of Effect

11.2.45 A significant effect occurs where a Moderate or Major impact is identified, but also subject to consideration of the following contextual factors:

- Absolute noise level;
- Proximity to sensitive receptors to the road links;
- Whether or not the impact changes the acoustic character;

- Differing magnitude in short and long term; and
- Likely perception of change by residents.

Legislative and Policy Framework

11.2.46 The relevant policy, in relation to each portion of the assessment, has been presented in the previous sections where standard policy or guidance is applicable.

11.2.47 However, for the non-residential receptor, Carrdus School, bespoke criteria, has been chosen in the absence of specific guidance. Guidance for the acoustic design of schools can be found in BB93¹¹ which indicates internal sound levels should not exceed circa 35 dB L_{Aeq, 30mins}. However, as presented within this chapter, sound levels at the school are already significantly high and dominated by existing road traffic noise and therefore, bespoke criteria based on logarithmic addition is presented to determine if sound levels from the Proposed Development are likely to increase sound levels at the school.

11.2.48 For conciseness, a detailed description of the relevant guidance and policy for the assessment is presented in **Appendix 11.2- Legislation and Guidance**.

Scoping Criteria

Consultation

11.2.49 Scoping consultation was attempted with the Local Planning Authority by M-EC through the following:

- 23 February 2022: Email issued to Cherwell District Council (CDC);
- 23 February 2022: Email issued to West Northamptonshire Council (WNC).

11.2.50 No response was received from Cherwell District Council.

11.2.51 A response from the Principal Planning Officer at WNC stating that WNC were not willing to engage with M-EC on the basis of Environmental Health as a formal pre-app enquiry had not been submitted to WNC and that only a scoping proposal had been put forward.

11.2.52 In the absence of consultation with either Local Authority, the following assessment scope has been determined based upon conversations with the Applicant and M-ECs experience of similar applications.

Assessment Scope

11.2.53 **Table 11.8** presents the elements scoped in and out of the assessment.

Table 11.8: Elements Scoped In and Out of the Assessment

Element	Phase	Scoped In	Scoped Out	Justification
Construction Noise	Construction	✓		Proximity of sensitive receptors which may experience temporary increases in noise during construction.

¹¹ Acoustic design of schools: performance standards, Building Bulletin 93.

Element	Phase	Scoped In	Scoped Out	Justification
Construction Vibration	Construction	✓		Proximity of sensitive receptors which may experience temporary increases in vibration during construction.
Construction Generated Road Traffic Noise	Construction		✓	Construction traffic would predominantly use the M40 and A361 access the Site. It is anticipated that changes in flows on these routes as a result of construction traffic would be small, and not sufficient to give rise to significant noise level changes.
Development Generated Commercial Operations	Operation	✓		Proximity of sensitive receptors which may experience permanent noise impacts from the Proposed Development.
Development Generated Vibration	Operation		✓	The industrial / commercial activities associated with the operational Proposed Development are not expected to generate significant vibration levels.
Development Generated Road Traffic Noise	Operation	✓		Proximity of sensitive receptors which may experience permanent noise impacts due to the Proposed Development.
Development Generated Road Traffic Vibration	Operation		✓	The mechanism for the generation of groundborne road traffic vibration is typically HGVs travelling over uneven surfaces e.g. potholes. The Proposed Development would introduce new smooth road surfaces within the Site and as such significant effects would not arise.
Development Generated Noise on Proposed Industrial/Commercial	Operation		✓	Industrial and commercial units in the Proposed Development are not considered sensitive receptors, and as such

Element	Phase	Scoped In	Scoped Out	Justification
Units				significant effects would not arise.

11.2.54 Giving consideration to the scope outlined above, the following receptors have been considered for all phases:

- Carrdus School (approx. 200m from the Site boundary);
- Dwellings on Banbury Lane (approx. 115m from the Site boundary).

11.2.55 The sensitive receptors are presented on plan in **Figure 11.1**.

11.2.56 In addition, dwellings abutting the road network included in the study area of the **Appendix 8.1 - Transport Assessment** are included as receptors for the Development Generated Road Traffic Network assessment.

Limitations

Construction Phase

11.2.57 At this stage, the type and number of construction plant items, the programme and working methodologies to be applied are not known; these would be dependent upon the Contractor, who would be appointed after planning approval. To inform this assessment, it has been necessary to make assumptions regarding the plant likely to be used, their number and 'on-time' (i.e. the percentage of time in operation). These assumptions are based on professional experience of similar developments.

Operation Phase

11.2.58 Noise levels generated by the operation of the proposed industrial/commercial units will depend upon their future occupants. Different occupants may have different operating hours and working patterns depending upon the nature of their business. For example, the use of HGV trailer chillers would be limited to occupants requiring the storage and distribution of chilled goods. For other 'ambient temperature' operators, HGV trailer chillers would not be required.

11.2.59 At this stage, the future occupants are not known, to model noise emissions from service yard operations, HGV movements and unloading/loading activities have been assumed based on professional experience and accounting for the size of the service yard areas and parking as well as consideration against relevant emerging masterplans.

Study Area

11.2.60 Construction noise arising from the Proposed Development is assessed at selected sensitive receptors within a study area of 300m of the Site Boundary.

11.2.61 Construction vibration arising from the Proposed Development is assessed at selected sensitive receptors within a study area of 100m of the Site Boundary.

11.2.62 Operational noise from commercial activities and fixed plant is assessed at selected sensitive receptors within a study area of 300m from the Site Boundary.

11.2.63 Development generated road traffic noise is assessed for the existing road network. The adopted study area includes all routes in the traffic model developed for the Transport Assessment submitted in support of the planning application.

11.3 BASELINE CONDITIONS

Site Description and Context

11.3.1 The Sensitive Receptors outlined in the previous section are those appropriate for this assessment chapter.

11.3.2 The Site is adjacent to previously accepted similar usage developments.

11.3.3 The Site boundary abuts the Carrdus School ownership boundary; however, emerging masterplans indicate an approximate distance of 450m from the closest HGV haulage route or docking bay due to a significant green buffer within the Site boundary.

Baseline Survey Information

Desk Study

11.3.4 A desktop review has identified the existing key noise sources in the vicinity of the Site and the closest noise sensitive receptors.

11.3.5 The following data sets were reviewed:

- Ordnance Survey 1:50,000 Land Ranger mapping;
- Ordnance Survey 1:25,000 Explorer mapping;
- Defra MAGIC online mapping resource including 1:10,000 mapping;
- Google and ESRI online mapping and aerial photography; and
- Street-view photography.

Site Visit and Surveys

11.3.6 A baseline noise level survey was undertaken at the Site, starting on 11 February 2022 and ending on 15 February 2022, the survey ran continuously for five days.

11.3.7 Additional supplementary attended measurements were undertaken during the daytime on 11 February 2022; and during the night-time on 15 February 2022.

11.3.8 The survey was undertaken to establish the prevailing levels and noise environment at locations selected as representative of the closest existing noise-sensitive receptors. Microphones were positioned at 1.5m above ground level, in free-field conditions and fitted with windshields.

11.3.9 The equipment used, the measurement locations chosen and the results of the survey are presented in **Appendix 11.3- Environmental Noise Survey**

Baseline Conditions Summary

11.3.10 The results of the noise survey have been used to determine the daytime ambient noise levels for construction noise assessment purposes ($L_{Aeq, T}$), the adopted levels are presented in **Table 11.9**.

Table 11.9: Summary of Ambient Noise Levels

Receptor	Weekday Daytime (07:00 – 19:00) $L_{Aeq, 12hr}$ dB	Saturday Daytime (07:00 – 13:00) $L_{Aeq, 6hr}$ dB
Carrdus School	65	66

Receptor	Weekday Daytime (07:00 – 19:00) $L_{Aeq, 12hr}$ dB	Saturday Daytime (07:00 – 13:00) $L_{Aeq, 6hr}$ dB
Dwellings on Banbury Lane	65	65

11.3.11 As Carrdus School does not fall under the scope of BS 4142 assessments, the ambient sound levels presented above (65 dB $L_{Aeq, T}$) is also adopted and attributed to the value of “y” (**Table 11.4**) for operation assessment purposes.

11.3.12 In addition, the survey results have been used to determine the prevailing daytime and night-time background sound levels for use in the operational noise assessment ($L_{A90, T}$), the adopted levels are presented in **Table 11.10**.

Table 11.10: Summary of Adopted Background Sound Levels

Receptor	Daytime (07:00 – 23:00) $L_{A90, 1hr}$ dB	Night-time (23:00 – 07:00) $L_{A90, 15mins}$ dB
Dwellings on Banbury Lane	64	52

11.3.13 Site notes indicate that the prevailing acoustic environment at the nearest sensitive receptors was “loud with noise dominated by the M42 and A422”.

11.4 ASSESSMENT OF LIKELY SIGNIFICANT EFFECTS

Construction

11.4.1 Assessments of potential effects arising as a result of construction noise can be found in **Appendix 11.4- Construction Assessment**, with a summary of the results presented in **Table 11.11**.

Table 11.11: Potential Effects during Construction

Receptor	Potential Effects
Carrdus School	<p><u>Construction Noise</u></p> <p>This receptor is unlikely to be subject to construction noise.</p> <p>Predicted construction noise levels do not exceed BS 5228-1 thresholds during all of the assumed phases and activities.</p> <p>It is recognised that the final noise levels at Carrdus School would be dependent upon the final masterplan brought forward. Therefore, notwithstanding, the margins of compliance have been identified between -27 dB and -22 dB dependent upon the phase of construction.</p> <p>As the margin of compliance is significant against the criteria, no site-specific mitigation measures have been considered outside general good practice measures outlined in Appendix 11.4- Construction Assessment</p> <p>The degree of significance from Construction Noise on Carrdus School is determined as 'negligible/ no change' in terms of</p>

Receptor	Potential Effects
	<p>residual effects.</p> <p><u>Construction Vibration</u> This receptor is unlikely to be subject to construction vibration.</p> <p>Predicted vibration levels do not exceed BS 5228-2 thresholds based on the minimum separation distances between the receptor and the assumed phases and activities highlighted in Appendix 11.4- Construction Assessment</p> <p>Therefore, no site-specific mitigation measures have been considered outside general good practices measures outlined in Appendix 11.4- Construction Assessment</p> <p>The degree of significance from Construction Vibration on Carrdus School is determined as 'negligible/ no change' in terms of residual effects.</p>
Dwellings on Banbury Lane	<p><u>Construction Noise</u> This receptor is unlikely to be subject to construction noise.</p> <p>Predicted construction noise levels do not exceed BS 5228-1 thresholds during all of the assumed phases and activities.</p> <p>It is recognised that the final noise levels at Dwellings on Banbury Lane would be dependent upon the final masterplan brought forward. Therefore, notwithstanding, the margins of compliance have been identified between -21 dB and -16 dB dependent upon the phase of construction.</p> <p>As the margin of compliance is significant against the criteria, no site-specific mitigation measures have been considered outside general good practice measures outlined in Appendix 11.4- Construction Assessment</p> <p>The degree of significance from Construction Noise on Dwellings on Banbury Lane is determined as 'negligible/ no change' in terms of residual effects.</p> <p><u>Construction Vibration</u> This receptor is unlikely to be subject to construction vibration.</p> <p>Predicted vibration levels do not exceed BS 5228-2 thresholds based on the minimum separation distances between the receptor and the assumed phases and activities highlighted in Appendix 11.4- Construction Assessment</p> <p>Therefore, no site-specific mitigation measures have been considered outside general good practices measures outlined in</p>

Receptor	Potential Effects
	<p>Appendix 11.4- Construction Assessment</p> <p>The degree of significance from Construction Vibration on Dwellings on Banbury Lane is determined as 'negligible/ no change' in terms of residual effects.</p>

Operation – Service Yard Operations

11.4.2 Assessments of potential effects arising as a result of noise generated by Service Yard Operations can be found in **Appendix 11.6- Operation Assessment**, with a summary of the results presented in **Table 11.12**.

Table 11.12: Potential Effects during Service Yards Operations

Receptor	Potential Effects
Carrdus School	<p><u>Industrial / Commercial Noise from the Development</u> This receptor is unlikely to be subject to operational noise.</p> <p>Noise levels have been assessed based upon bespoke criteria as baseline conditions were significantly high.</p> <p>It is recognised that the final noise levels at Carrdus School would be dependent upon the final masterplan that is brought forward. Therefore, notwithstanding the above, the following predicted sound levels have been modelled:</p> <p>Scenario 1: 29 dB Scenario 2: 39 dB</p> <p>The levels are between -37 dB and -27 dB lower than the baseline ambient and thus would have no impact upon the receptor.</p> <p><u>Fixed Plant and Equipment</u> Typical fixed plant and equipment sound levels are included in the above predicted sound levels.</p> <p>The degree of significance from Service Yard Operation Noise on Carrdus School is determined as 'negligible/ no change' in terms of residual effects.</p>
Dwellings on Banbury Lane	<p><u>Industrial / Commercial Noise from the Development</u> This receptor is unlikely to be subject to operational noise.</p> <p>Noise levels have been assessed in accordance with BS 4142.</p> <p>It is recognised that the final noise levels at Carrdus School would be dependent upon the final masterplan that is brought forward. Therefore, notwithstanding the above, the following</p>

Receptor	Potential Effects
	<p>predicted excess over rating levels have been identified:</p> <p>Scenario 1: -25 dB and -17 dB for daytime and night-time respectively; and</p> <p>Scenario 2: -15 dB and -7 dB for daytime and night-time respectively.</p> <p>The levels are sufficiently lower than the prevailing background sound levels such that the rating level would be inaudible at the receptor.</p> <p><u>Fixed Plant and Equipment</u></p> <p>Typical fixed plant and equipment sound levels are included in the above predicted sound levels.</p> <p>The degree of significance from Service Yard Operation Noise on Dwellings on Banbury Lane is determined as 'negligible/ no change' in terms of residual effects.</p>

Operation – Development Generated Road Traffic Noise

11.4.3 Assessments of potential effects arising as a result of Development Generated Road Traffic Noise can be found in **Appendix 11.7- Development Generated Traffic Noise Assessment**, with a summary of the results presented in **Table 11.13**.

Table 11.13: Potential Effects due to Development Generated Road Traffic

Receptor	Potential Effects
Carrdus School	<p><u>Development Generated Traffic Noise</u></p> <p>This receptor is unlikely to be impacted by development generated traffic on the existing road network.</p> <p>The degree of significance from Development Generated Traffic Noise on Carrdus School is determined as 'negligible/ no change' in terms of residual effects.</p>
Dwellings on Banbury Lane	<p><u>Development Generated Traffic Noise</u></p> <p>This receptor is unlikely to be impacted by development generated traffic on the existing road network.</p> <p>The degree of significance from Development Generated Traffic Noise on Dwellings on Banbury Lane is determined as 'negligible/ no change' in terms of residual effects.</p>
Receptors along the Road Network	<p><u>Development Generated Traffic Noise</u></p> <p>The Development Generated Road Traffic Noise assessment has identified that the worst-case changes on the existing road network in the short-term are minor (+1.1 dB at Middleton Cheney) and long-term are Negligible (+1.6 dB at Middleton Cheney).</p>

Receptor	Potential Effects
	<p>Therefore, no mitigation measures are required as the Magnitude of Impact results in a not significant effect.</p> <p>The degree of significance from Development Generated Traffic Noise on Receptors along the Road Network is determined as 'negligible' in terms of residual effects.</p>

11.5 MITIGATION AND ENHANCEMENT

Mitigation by Design

11.5.1 Whilst there are no acoustic barriers included in the initial design of the Site, the assessment of significant effects identifies that all nearby receptors are unlikely to be impacted by either temporary construction noise or permanent operational noise.

11.5.2 The significant green buffer within the Site boundary assists with the significantly low noise levels experienced from the development. Therefore, providing the developable area does not encroach significantly to either receptor; no mitigation is required for noise.

Enhancements

11.6 CUMULATIVE AND IN COMBINATION EFFECTS

11.6.1 A similar industrial development has been approved and is under construction located to the west of the Site under the name 'Frontier Park, Banbury' (reference 21/02467/F).

11.6.2 Whilst there is limited acoustics data available for the adjacent site, if noise levels at the site boundary of the adjacent development are similar to that modelled for the Site, there would be **no change** in the results of the assessment presented within this chapter.

11.6.3 Therefore, presented in **Table 11.13, Table 11.14 and Table 11.15** are the cumulative effects of the proposed development and nearby previously approved or operational developments for Construction and Operation phases respectively.

Construction

Table 11.13: Cumulative Construction Effects

Receptor	Potential Effects
Carrdus School	<p>The predicted sound levels during all phases of construction are not predicted to give rise to the chosen threshold levels.</p> <p>Therefore, a direct, temporary, local impact of no change is predicted for this receptor.</p> <p>This effect is not significant.</p> <p>At this stage, there are no requirements for monitoring at this receptor.</p>
Dwellings on Banbury	The predicted sound levels during all phases of construction are

Receptor	Potential Effects
Lane	<p>not predicted to give rise to the chosen threshold levels.</p> <p>Therefore, a direct, temporary, local impact of no change is predicted for this receptor.</p> <p>This effect is not significant.</p> <p>At this stage, there are no requirements for monitoring at this receptor.</p>

Operation – Service Yard Operations

Table 11.14: Cumulative Operation Effects for Service Yard Operations

Receptor	Potential Effects
Carrdus School	<p>Where newly introduced sound levels encroach baseline conditions by -10 dB or greater, the newly introduced sound levels will give rise to baseline conditions.</p> <p>The assessment results indicate that this will not be the case for Carrdus School and therefore for both daytime and night-time periods, for both scenario 1 and scenario 2, a direct, permanent, local impact of no change is predicted for this receptor.</p> <p>This effect is not significant.</p> <p>At this stage, there are no requirements for monitoring at this receptor.</p>
Dwellings on Banbury Lane	<p>A conservative background sound level has been chosen for this receptor, which is lower than the arithmetic and logarithmic averages, therefore, the assessment is considered to be robust.</p> <p>For both daytime and night-time periods, for both scenario 1 and scenario 2, a direct, permanent, local impact of no change is predicted for this receptor.</p> <p>This effect is not significant.</p> <p>At this stage, there are no requirements for monitoring at this receptor.</p>

Operation –Development Generated Road Traffic Noise

Table 11.15: Cumulative Operation Effects for Development Generated Road Traffic Noise

Receptor	Potential Effects
Carrdus School	The assessment results indicate a magnitude of no change in

Receptor	Potential Effects
	<p>the short-term and no change in the long-term.</p> <p>This effect is not significant.</p> <p>At this stage, there are no requirements for monitoring at this receptor.</p>
Dwellings on Banbury Lane	<p>The assessment results indicate a magnitude of no change in the short-term and no change in the long-term.</p> <p>This effect is not significant.</p> <p>At this stage, there are no requirements for monitoring at this receptor.</p>
Receptors along Road Network	<p><u>A422 – Middleton Cheney</u></p> <p>The assessment results indicate a magnitude of minor in the short-term and negligible in the long-term. However, the calculations do not consider the significant banking that occurs between the noise sensitive receptor and the road link and thus the magnitude is likely to be further reduced in reality.</p> <p>This effect is not significant.</p> <p>At this stage, there are no requirements for monitoring at this receptor.</p>

11.7 SUMMARY

Introduction

11.7.1 This assessment has been undertaken in order to determine the potential impact on sensitive receptors, with respects to noise and vibration, during the construction and operation phase of the proposed development at J11, M40, Banbury.

11.7.2 This assessment has been undertaken in support of the outline planning application for the construction of up to 140,000sqm of Employment floorspace (use class B8 with ancillary offices and facilities) and servicing and infrastructure including new site accesses, internal roads and footpaths, landscaping including earthworks to create platforms and bunds, drainage features and other associated works including demolition of the existing farmhouse. All matters of detail reserved.

Baseline Conditions

11.7.3 Baseline sound surveys have been undertaken which have determined the prevailing acoustic environment is dominated by road traffic noise from the strategic road network.

11.7.4 Site notes indicate that noise levels experienced around the site, including at all identified receptors, are significantly high, this is backed up by relevant measured data.

Likely Significant Effects

11.7.5 The assessment demonstrated that noise and vibration during the construction phase was unlikely to have any impact on the nearest sensitive receptors due to the high baseline sound levels and increased distance between the Site and nearby receptors. The significance of the residual effects during the construction phase is determined as '**negligible/ no change**'.

11.7.6 The assessment demonstrated that noise during the operation phase was unlikely to have an impact on the nearest sensitive receptors due to the high baseline sound levels and increased distance between the Site and nearby receptors. The significance of the residual effects during the operation phase is determined as '**negligible/ no change**'.

11.7.7 During all phases of the development that have been assessed (construction and operation), no significant effects have been identified and all are considered to be negligible.

Mitigation and Enhancement

11.7.8 As no significant effects have been identified, no mitigation measures are warranted.

Conclusion

11.7.9 It is considered that due to the significant setback distance between all receptors and the high baseline sound levels that the Application Site is acceptable and there would be no adverse significant residual effects.

Table 11.17: Summary of Effects, Mitigation and Residual Effects

Receptor/ Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation/ Enhancement Measures	Residual Effects
Construction								
Carrdus School	Not Significant	Temporary Direct	Not Applicable	Not Applicable	Local	Negligible / No Change	Not Applicable	Negligible / No Change
Banbury Lane	Not Significant	Temporary Direct	Not Applicable	Not Applicable	Local	Negligible / No Change	Not Applicable	Negligible / No Change
Operation								
Carrdus School	Not Significant	Permanent Direct	Not Applicable	Not Applicable	Local	Negligible / No Change	Not Applicable	Negligible / No Change
Banbury Lane	Not Significant	Permanent Direct	Not Applicable	Not Applicable	Local	Negligible / No Change	Not Applicable	Negligible / No Change
Middleton Cheney (Road Traffic Only)	Not Significant	Permanent Direct	Not Applicable	Not Applicable	Local	Negligible / No Change	Not Applicable	Negligible / No Change
Cumulative and In-combination								
Carrdus School	Not Significant	Permanent Direct	Not Applicable	Not Applicable	Local	Negligible / No Change	Not Applicable	Negligible / No Change
Banbury Lane	Not Significant	Permanent Direct	Not Applicable	Not Applicable	Local	Negligible / No Change	Not Applicable	Negligible / No Change
Middleton Cheney (Road Traffic Only)	Not Significant	Permanent Direct	Not Applicable	Not Applicable	Local	Negligible / No Change	Not Applicable	Negligible / No Change