9 Noise

9.1 Introduction

9.1.1 This chapter of the ES was prepared by Tetra Tech and presents an assessment of the likely significant effects of the Development on Noise. Mitigation measures are identified, where appropriate, to avoid, reduce or offset any significant adverse effects identified and / or enhance likely beneficial effects. The nature and significance of the likely residual effects are reported.

9.1.2 The chapter is supported by the following appendix:

- Appendix 9.1: Noise Assessment.

Competence

9.1.3 The author of the ES chapter and Noise and Vibration Technical Report, Emma Aspinall, has four years' experience in Acoustic Consultancy, a post graduate Diploma in Acoustics and is an Associated Member of the Institute of Acoustics (AMIOA).

9.1.4 The ES chapter and report was reviewed by Ashley Shepherd, who has seven years' experience in Acoustic Consultancy and is a Corporate Member of the Institute of Acoustics (MIOA).

9.1.5 The reviewer and verifier, Nigel Mann, has over 20 years' experience, a post graduate Diploma in Acoustics and is also a Corporate Member of the Institute of Acoustics (MIOA).

9.2 Legislation, Planning Policy and Guidance

Legislation Context

9.2.1 The following legislation is relevant to the Development:

- Environmental Protection Act 1990[1]; and
- Control of Pollution Act 1974[2].

Planning Policy Context

National

9.2.2 The following national planning policy is relevant to the Development:

- National Planning Policy Framework (2021)[3]; and
- Noise Policy Statement for England (2010)[4].

Regional

9.2.3 There is no relevant regional guidance in relation in noise.

Local

9.2.4 The following local planning policy is relevant to the Development:

- Cherwell Local Plan 2011 - 2031 Part 1 Partial Review, Adopted September 2020[5]; and
- Cherwell Local Plan 2011 - 2031 Part 1, Re-adopted December 2016)[6].

Guidance

9.2.5 The following guidance is relevant to the Development:

- BS8233:2014 'Guidance on sound insultation and noise reduction for buildings[7];
- BS4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound[8];
- World Health Organisation (WHO), Guidelines for Community Noise Guidelines[9];
- Planning Practice Guidance (2019) Ministry for Housing, Communities and Local Government (MHCLG) (Live document)[10];
- Design Manual for Roads and Bridges – LA11 Noise and Vibration (2020)[11]; and
- BS5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites: Noise'[12].

9.3 Assessment Methodology

Consultation

9.3.1 An EIA Scoping Report was submitted to CDC on 29th June 2021 (Appendix 3.2). A Scoping Opinion was received on 3rd August 2021. CDC agreed that noise and vibration should be scoped into the ES and were accepting of the methodology of the ES chapter.

Study Area and Scope

9.3.2 There are no nationally adopted standards or guidance documents that define the study area for the assessment of noise effect for developments of this type. Therefore, the study area for the Development are based on professional judgement.

9.3.3 The study area includes the assessment of effects within the boundaries of the Site, in additional to the impact on off-site 'key receptors' as identified below.

9.3.4 The scope includes an assessment of construction plant noise effects. Construction vibration effects were not assessed as the distance between existing sensitive receptors (greater than 30m) and potential construction activities is such that no vibration would be discernible. During the construction phase, the number of construction HGVs on the local road network are expected to be lower than the number of HGVs forecasted when the Development is fully operational. Therefore, the traffic noise assessment for the operational phase is considered to be representative of the potential worst-case effects of construction traffic on the local road network.

9.3.5 For the operational phase, an assessment of noise associated with commercial operations (including servicing and deliveries, vehicle movements within the Site and building services plant noise) was undertaken, as well as an assessment of off-Site operational traffic associated with the Development. For the purpose of the off-Site operational traffic noise assessment, the 'with Development' scenario for the assessment year 2025 assumes the SLR is fully operational along with the Development and as such has the highest level of

traffic generation associated with the scheme in order to represent a worst-case assessment with respect to road traffic noise.

9.3.6 During the construction phase, access will be via the temporary construction route (via Middleton Stoney Road). There is potential that this access route will be used during the completed development phase, before the SLR becomes operational. Whilst traffic data has not been provided for this period a qualitative assessment of potential impacts has been included within Section 9.7 of this report.

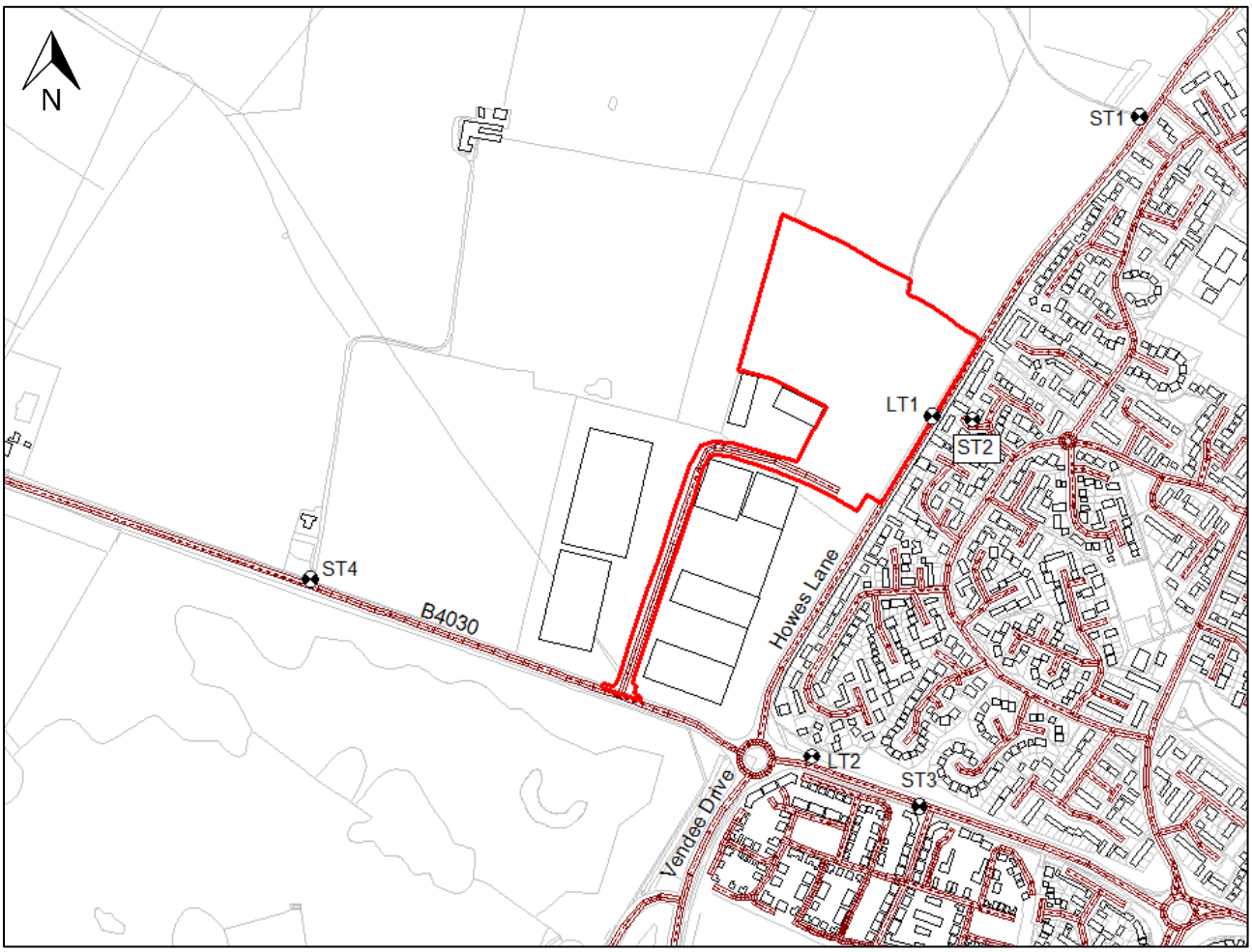
9.3.7 An assessment of vibration during the operational phase was scoped out of the EIA within the Scoping Report (Appendix 3.2). There are no significant sources of vibration proposed for the Site during the operational phase, nor are there any significant sources of vibration in the area which are likely to affect the operational Development. Further assessment was therefore not undertaken.

Establishing Baseline Conditions

9.3.8 A baseline monitoring survey was undertaken at six locations from Wednesday 21st July 2021 to Monday 26th July 2021. Attended short term measurements were undertaken at four locations during the day, evening and night-time periods with two additional locations being measured unattended over a 120-hour period. Full details of the noise baseline monitoring survey, reference to monitoring locations and meteorological conditions are provided in the Noise Technical Report within Appendix 9.1.

9.3.9 The monitoring locations are shown illustratively on Figure 9.1.

Figure 9.1 Noise Monitoring Locations



9.3.10 For the purposes of the road traffic noise assessment, a future year of 2025 was assessed. The future baseline noise was predicted using traffic flow data provided by David Tucker Associates. The provided traffic data for the future year is inclusive of cumulative developments within the study area.

Identifying Likely Significant Effects

Construction

9.3.11 The most notable impacts due to increases in noise during construction would be during construction of Site infrastructure and the construction of substructures. In addition to on-site sources, increased noise may be caused by HGV movements travelling to and from the Site during construction.

9.3.12 Exact details regarding the construction techniques and types of plant can only be estimated at present and, therefore, it is difficult to predict accurately the potential magnitude of potential noise effects on local receptors. The effects of construction noise were assessed the using the 'Fixed Limits' method defined in BS5228-1:2009+A1:2014, where the noise limit at which the onset of significant effects can occur is 70dB(A) in rural areas and 75dB(A) in urban areas. For the purposes of this assessment, the more conservative 70dB(A) limit was used. Potential construction noise sources are detailed in Table 9.1.

Table 9.1: Mobile Plant Construction Phase

Mobile Plant	Model Input $L_{Aeq,1hour}$ at 10m
Articulated Dump truck	81 dB
Tracked Excavator- loading truck	85 dB
Tracked Excavator	77 dB
Crane	76 dB
Delivery Trucks	80 dB
Concrete Pumps	75 dB
Hand-held Pneumatic Breaker	83 dB
Piling	92 dB
Road Sweeper	76 dB
Angle Grinding (Power Tools)	80 dB
Concrete Mixer Truck	80 dB
Lifting Platform	67 dB
Water Pump (diesel)	68 dB
Forklift	62 dB

Completed Development

Building Services Plant

9.3.13 CADNA noise mapping software was used for all potential sources of operational noise, as detailed Section 3 of Appendix 9.1. Point sources were used in the model to represent the proposed plant associated with the scheme. The maximum sound pressure levels of the point sources at 1 and 3 metres were estimated in the model as a conditional maximum level that the noise levels at nearby receptors were predicted to meet the BS 4142 assessment criteria. Noise emission limits were specified to ensure that plant noise rating levels are at least 10 dB below existing night-time background noise levels.

Noise Intrusion Assessment (On-site Operational Sources)

9.3.14 CADNA noise mapping software was used for all potential sources of operational noise, as detailed Section 3 of Appendix 9.1. This assessment was undertaken to determine the internal noise levels, at nearby sensitive receptors, from all operational noise sources (including HGV deliveries, staff car parking and building services plant). This was assessed both with windows open and windows closed, in accordance with BS 8233: 2014 'Guidance on sound insulation and noise reduction for buildings' criteria.

9.3.15 The noise assessment criteria is detailed within Table 9.5.

Road Traffic Noise

9.3.16 Road traffic noise assessment model was based on the Department of Transport Calculation of Road Traffic Noise (CRTN)[13].

9.3.17 The traffic data used within the assessment was derived from the traffic flows provided by the project transport consultant (see Appendix 9.1). Based on this traffic data, the assessment compares different scenarios to determine the change in noise levels resulting from the Development.

9.3.18 The following scenario was assessed:

- With Development 2025 vs Without Development 2025.

Cumulative effects

9.3.19 A cumulative noise intrusion assessment was undertaken including Phase 1 and 2 to the south of the Site, using the same methodology as within the 'Noise Intrusion Assessment' above.

9.3.20 Due to the greater distance from the Site, the operational cumulative effects of other sites is unlikely to give rise to significant effects and so have not been considered further.

9.3.21 The traffic modelling undertaken for the Development includes all relevant cumulative development on the adjacent highway network as it is incorporated within the OCC traffic model data supplied by the highway authority. There is no way of disaggregating the individual traffic components of individual developments. The assessment of the completed Development is therefore made in the context of all relevant forecast development and infrastructure.

Determining Effect Significance

Sensitivity of Receptor

9.3.22 Key receptors to noise generally include individual or groups of residential properties, hospitals and schools. Table 9.2 provides examples of the different sensitivities, which can be assigned to different receptors according to the assessment methodology.

Table 9.2: Receptor Sensitivity Descriptors

Value (Sensitivity)	Descriptor
High	Residential properties (Permanent tenants) and schools and hospitals CPRE rated tranquillity (Zones 8 - 10)

Value (Sensitivity)	Descriptor
Moderate	Transient residential receptors such as users of hotels* CPRE rated tranquillity (Zones 4 – 7)
Low	Commercial premises CPRE rated tranquillity (Zones 1 - 3)

9.3.23 For the purposes of this assessment all identified receptors were considered as having a high sensitivity based on professional judgement of the assessors, as they represent permanent residential receptors.

Magnitude of Impact

9.3.24 The magnitude of impact for each construction and operational receptor was determined by considering the estimated change from baseline conditions both before, and, if required, after mitigation. The scales used for determining the magnitude of an impact for each construction and operational receptor is set out in Tables 9.3-9.5.

Table 9.3: Magnitude of Impact Descriptors (Construction Noise Assessment)

Impact Magnitude	Descriptor (Noise Level Criteria at Receptor)
Negligible	In rural areas noise levels exceed 50dB(A) In urban areas noise levels exceed 55dB(A)
Low	In rural areas noise levels exceed 60dB(A) In urban areas noise levels exceed 65dB(A)
Medium	In rural areas noise levels exceed 70dB(A) In urban areas noise levels exceed 75dB(A)
High	In rural areas noise levels exceed 80dB(A) In urban areas noise levels exceed 85dB(A)

Table 9.4: Magnitude of Impact Descriptors (Building Services Plant)

Impact Magnitude	Descriptor
Negligible	BS4142 score of zero or lower
Low	BS4142 score of between plus 1 and plus 5
Medium	BS4142 score of between plus 6 and plus 10
High	BS4142 score of plus 11 or higher

*BS4142 values are rounded to the nearest whole number

Table 9.5: Magnitude of Impact Descriptors (Noise Intrusion Assessment)

Impact Magnitude	Descriptor
Negligible	Noise levels less than: Bedrooms (night-time) – 30 dB $L_{Aeq,8hours}$ / 45 dB L_{Amax} Living Rooms (daytime) – 30 dB $L_{Aeq,16hours}$
Low	Noise levels exceed: Bedrooms (night-time) – 30 dB $L_{Aeq,8hours}$ / 45 dB L_{Amax} Living Rooms (daytime) – 35 dB $L_{Aeq,16hours}$
Medium	Noise levels exceed: Bedrooms (night-time)– 35 dB $L_{Aeq,8hours}$ / 45 dB L_{Amax} Living Rooms (daytime)– 40 dB $L_{Aeq,16hours}$

Impact Magnitude	Descriptor
High	Noise levels exceed: Bedrooms (night-time)– 35 dB $L_{Aeq,8hours}$ / 45 dB L_{Amax} Living Rooms (daytime)– 40 dB $L_{Aeq,16hours}$

Table 9.6: Magnitude of Impact Descriptors (Road Traffic Noise)

Impact Magnitude	Descriptor (Change in Noise Levels $L_{A10\ 18hr}$)
Negligible	< 1.0 dB
Low	1.0 - 2.9 dB
Medium	3.0 – 4.9 dB
High	5.0 dB

Assessing Significance

9.3.25 The effect significance was determined using the same methodology as presented within Chapter 3: EIA Methodology. For reference this is replicated in Table 9.7.

Table 9.7: Determining Significance

Sensitivity/Value of Receptors	Magnitude of Impact			
	High	Medium	Low	Negligible
High	Major	Major/Moderate	Moderate	Negligible
Medium	Major/Moderate	Moderate	Moderate/Minor	Negligible
Low	Moderate	Moderate/Minor	Minor	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

9.3.26 For the purposes of this assessment, the threshold between significant and not significant has been defined as follows: an effect identified as being major-moderate or major significance is considered to be significant. This equates to the requirements set out in the NPSE (and expanded upon within the NPPF and PPG: noise) to *'identify whether the overall effect of noise exposure is, or would be, above or below the significant observed adverse effect level'* (SOAEL). Effects classified below the SOAEL (effects of moderate, minor or negligible significance) are considered to be not significant for both construction and operational phase effects.

Assumptions and Limitations

9.3.27 The following limitations and assumptions relate to the noise assessment:

- Specific details regarding construction works were not available as the appropriate Contractor who would finalise the detailed design work is not yet commissioned. Where such details are unknown, the assessment undertaken was based on the previous experience or professional judgement of the assessor with regard to similar types of development;
- Traffic data for the assessment was provided using model outputs provided to Tetra Tech by David Tucker Associates and is subject to the limitations and assumptions detailed in Chapter 8: Transport.
- The Development was assessed using three-dimensional noise modelling of source noise levels at a large number of locations both horizontally and vertically. CADNA

noise modelling software was used. This model is based on ISO 9613 noise propagation methodology and allows for detailed prediction of noise levels to be undertaken for large numbers of receptor points and different noise emission scenarios both horizontally and vertically. The modelling software calculates noise levels based on the emission parameters and spatial settings that are entered. Input data, assumptions and model settings are described in detail within Appendix 9.1. Assumptions made within the noise model will affect the overall noise levels presented. However, it should be noted that certain assumptions made represent a worst-case scenario.

- Proposed receptors were assessed in order to represent the proposed development surrounding the Site (planning permission reference: 14/01641/OUT) which is currently under consideration. As there is no detailed layout at this stage for this development, indicative worst-case receptor locations were used.

9.4 Baseline Conditions

9.4.1 The existing noise climate is characterised by road traffic noise and vehicles travelling on along Howes Lane and the B4030. Table 9.8 shows the results of the long-term unattended monitoring, with the full results table shown in Appendix 9.1.

Table 9.8: Baseline Noise Monitoring Results Summary

Period	Duration (T)	Monitoring Date and Times	Location	$L_{Aeq,T}$ (dB)	$L_{Amax,T}$ (dB)	$L_{Amin,T}$ (dB)	$L_{A10,T}$ (dB)	$L_{A90,T}$ (dB)
Weekday Daytime 07:00 - 23:00	31 hours	21/07/2021 – 26/07/2021 07:00 - 23:00	LT1	54.0	78.4	38.4	53.6	44.0
Weekday Night-time 23:00 – 07:00	43 hours	21/07/2021 – 26/07/2021 23:00 - 07:00		71.4	104.7	29.9	75.3	51.0
Weekend Daytime 07:00 - 23:00	24 hours	21/07/2021 – 26/07/2021 07:00 - 23:00		65.0	99.5	19.0	54.9	34.0
Weekend Night-time 23:00 – 07:00	32 hours	21/07/2021 – 26/07/2021 23:00 - 07:00		70.7	115.1	20.5	73.9	50.0
Weekday Daytime 07:00 - 23:00	16 hours	21/07/2021 – 26/07/2021 07:00 - 23:00	LT2	61.1	91.9	21.6	50.6	30.0
Weekday Night-time 23:00 – 07:00	43 hours	21/07/2021 – 26/07/2021 23:00 - 07:00		63.4	98.1	32.7	66.9	45.0

Period	Duration (T)	Monitoring Date and Times	Location	LAeq, T (dB)	LAmax,T (dB)	LAmin,T (dB)	LA10, T (dB)	LA90, T (dB)
Weekend Daytime 07:00 - 23:00	24 hours	21/07/2021 – 26/07/2021 07:00 - 23:00		54.8	87.5	21.6	45.5	34.0
Weekend Night-time 23:00 – 07:00	32 hours	21/07/2021 – 26/07/2021 23:00 - 07:00		62.3	94.1	22.7	65.4	44.0

9.4.2 Further details of the methodology and results of the baseline surveys are provided within Appendix 9.1.

Future Baseline

9.4.3 Existing noise levels at the Site may change as a result of traffic flow changes on the local highway network. Future baseline conditions were assessed in the Without Development Scenario which takes account of any natural growth in traffic on the surrounding road network, including the cumulative impact of cumulative schemes in the locality of the Site.

9.4.4 It is possible that there may be a marginal increase in noise levels, due to the cumulative impact of the proposed schemes in the area, however, any increase is not expected to be significant.

Summary of Receptors and Sensitivity

9.4.5 Sensitive receptors for the building services plant and noise intrusion assessment are shown on Figure 9.2, whilst sensitive receptors for the traffic noise assessment are shown on Figure 9.3. Sensitive receptor details and their sensitivity are provided in Table 9.9 and 9.10. These receptors have been selected to represent the worst-case residential receptors with respect to changes in noise associated with construction and operation of the site due to their proximity.

Table 9.9: Summary of Receptor Sensitivity (Building Services Assessment and Noise Intrusion Assessment)

Receptor		Sensitivity (Value)
Existing		
R01	11 Colwell Close	High
R02	78 Isis Avenue	High
R03	64 Isis Avenue	High
R04	50 Isis Avenue	High
R05	30 Isis Avenue	High
R06	20 Wensum Crescent	High
R07	21 Wensum Crescent	High
R08	21 Beckdale Close	High
R09	29 Beckdale Close	High
R10	51 Beckdale Close	High

Receptor		Sensitivity (Value)
R11	59 Beckdale Close	High
R12	18 Dove Green	High
R13	10 Derwent Road	High
R14	12 Derwent Road	High
R15	11 Colwell Close	High
Future		
P01	Northern Proposed Development	High
P02	Northern Proposed Development	High
P03	Western Proposed Development	High
P04	Western Proposed Development	High
P05	Western Proposed Development	High
P06	Western Proposed Development	High
P07	Western Proposed Development	High
P08	Western Proposed Development	High

Figure 9.2 Sensitive Receptors (Building Services Plant and Noise Intrusion Assessment)

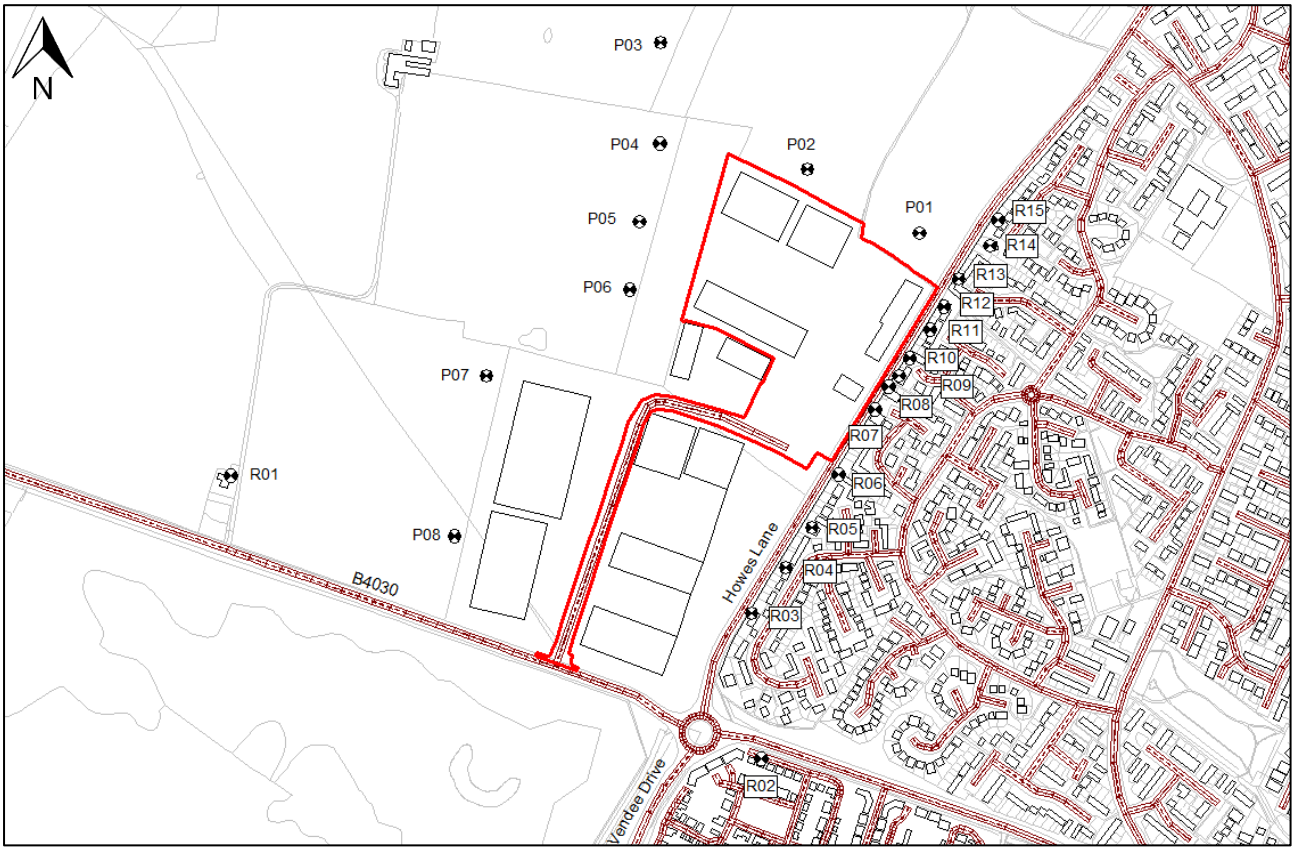
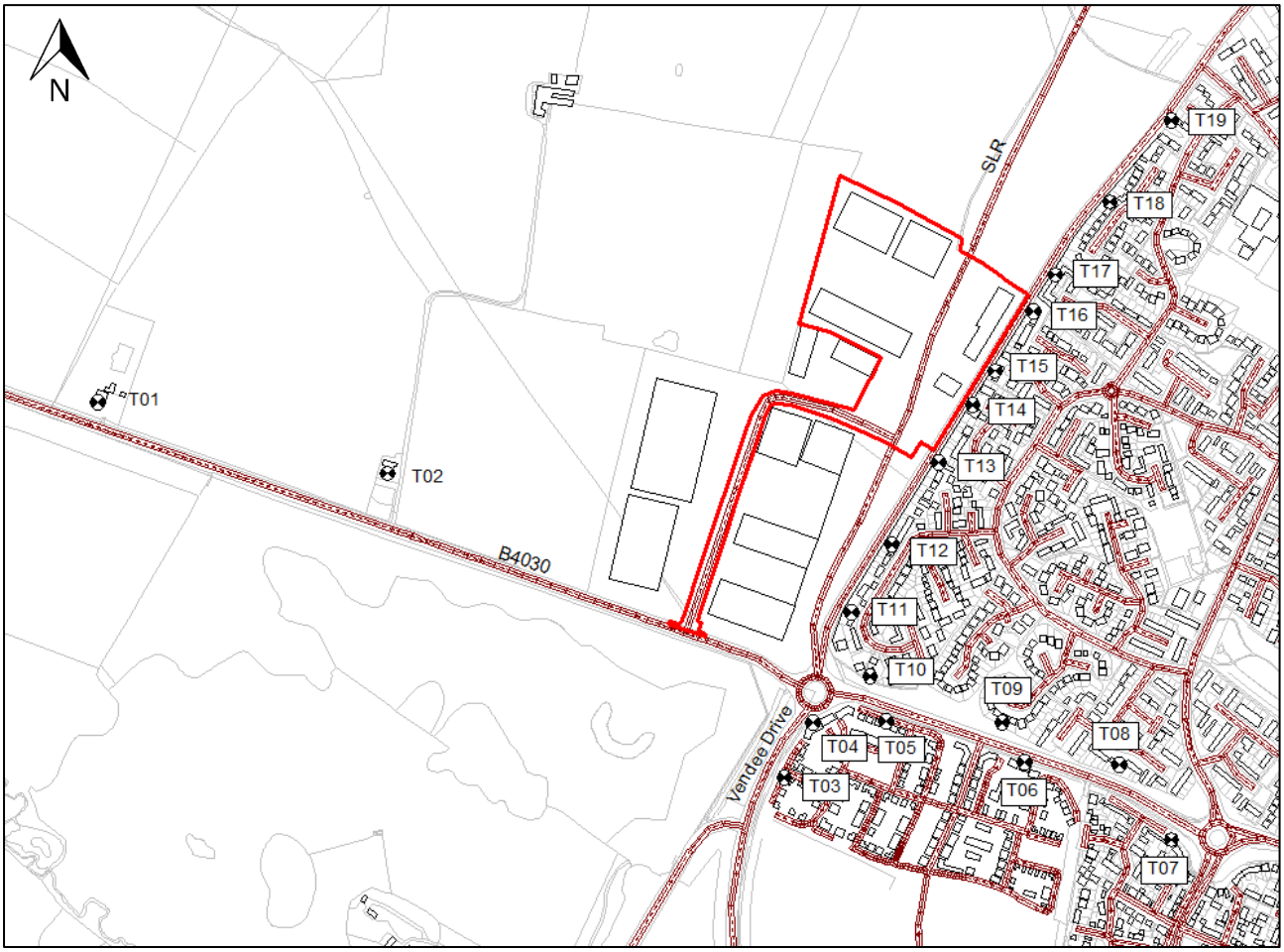


Table 9.10: Summary of Receptor Sensitivity (Road Traffic Noise Assessment)

Receptor		Sensitivity (Value)
Existing		
T01	Lovelynch House, Middleton Stoney Road	High
T02	Himley Farm, Middleton Stoney Road	High
T03	Cala Homes Development	High
T04	Cala Homes Development	High

Receptor		Sensitivity (Value)
T05	7 Colwell Close	High
T06	Cala Homes Development	High
T07	56 Kempton Close	High
T08	46 Shannon Road	High
T09	17 Eden Way	High
T10	96 Isis Avenue	High
T11	84 Isis Avenue	High
T12	64 Isis Avenue	High
T13	30 Isis Avenue	High
T14	20 Wensum Crescent	High
T15	23 Beckdale Close	High
T16	59 Beckdale Close	High
T17	21 Dove Green	High
T18	17 Derwent Road	High
T19	14 Dryden Avenue	High

Figure 9.3 Sensitive Receptors (Road Traffic Noise Assessment)



9.5 Scheme Design and Management

Construction

9.5.1 Measures will be undertaken during the construction phase in order to minimise disruption and manage the impacts of the Development.

9.5.2 The impacts below assume the implementation of a CEMP which will be secured through planning condition. An example of best practice mitigation measures for inclusion within the CEMP are detailed below.

- Careful selection of working methods and programme;
- Selection of quietest working equipment available (e.g. electric/battery powered equipment which is generally quieter than petrol/diesel powered equipment);
- Positioning equipment behind physical barriers, e.g. existing features and hoarding, or provision of lined and sealed acoustic covers for equipment that could potentially contribute to a noise nuisance;
- Positioning of noise generating equipment, such as any blending plant in areas which minimise noise as far as practicable;
- Directing noise emissions away from plant including exhausts or engines away from sensitive locations;
- Ensuring that regularly maintained and appropriately silenced equipment is used;
- Shutting down equipment when not in use, i.e. maintain a 'no idling policy';
- Handling all materials in a manner which minimises noise;
- Restricting hours of site operation in agreement with CDC. If there is the requirement to undertake work outside of the agreed hours, further consultation would be undertaken with CDC; and
- Leaflet drops at all existing houses likely to be affected by noisy construction activities notifying them of works in advance and detailing the nature often works and their likely duration.

Completed Development

9.5.3 Primary mitigation is included as part of the Development in the form of a 4.0m barrier between Units 10 and 11. The location of the barrier is shown illustratively within Appendix 9.1 and on the Proposed Site Plan (Appendix 5.1). The barrier will be of solid timber construction, with no gaps, with a minimum surface density of 10kg/m^2.

9.6 Construction

Assessment of Effects

9.6.1 Noise levels from potential construction activity associated with the development of the Site have been assessed in accordance with BS 5228-1 2009+A1 2014 criteria which indicate if a significant effect is likely to occur at noise sensitive properties. Point sources representing all likely items of plant have been represented in the model and in the case of mobile plant these have been placed in worst case locations with respect to nearby noise sensitive receptors. Table 9.11 shows predicted levels of construction noise at existing receptors for

comparison with the recommended fixed noise limit criteria of 70dB(A), (as defined in Table 9.3).

Table 9.11: Construction Phase Noise Assessment Results (Fixed Limits Method)

Ref.	Predicted Construction Noise Level (dB(A))	Criteria (dB(A))	Within Fixed Noise Limits
R01	42.2	70.0	Yes
R02	42.5	70.0	Yes
R03	49.4	70.0	Yes
R04	52.6	70.0	Yes
R05	53.6	70.0	Yes
R06	58.9	70.0	Yes
R07	65.7	70.0	Yes
R08	65.2	70.0	Yes
R09	64.3	70.0	Yes
R10	64.3	70.0	Yes
R11	63.7	70.0	Yes
R12	62.3	70.0	Yes
R13	54.1	70.0	Yes
R14	53.6	70.0	Yes
R15	52.1	70.0	Yes

9.6.2 The results of the noise assessment by the fixed limits method shown in Table 9.11 above indicate that noise levels at R01-R06 and R13-R15 will fall below 60dB(A), which equates to a negligible magnitude of impact. As the receptors are assessed as having high sensitivity, there will be a negligible adverse significance.

9.6.3 The results of the noise assessment by the fixed limits method shown in Table 9.11 above indicate that noise levels at R07-R12 will fall below the recommended fixed noise limit criteria of 70dB(A), which equates to a low magnitude of impact. As the receptors have been assessed as having high sensitivity, there will be a moderate adverse significance (not significant).

9.6.4 Through the effective use of the mitigation in the form of a CEMP, noise effects from the construction phase are local, temporary, indirect, secondary, short-term and are of moderate adverse significance (not significant).

Mitigation, Monitoring and Residual Effects

9.6.5 During the construction phase, no further mitigation is proposed beyond the CEMP and therefore the residual effect of construction noise remains the same as identified previously.

9.7 Completed Development

Assessment of Effects

Building Services Plant

9.7.1 With regard to internal and external noise levels at existing sensitive receptor locations, the assessment has been undertaken to establish the maximum external noise levels from indicative proposed roof mounted building services plant.

9.7.2 A series of predictions were made by defining different sound power levels at a point source. When the sound pressure levels are set as shown in Table 9.12 (which are considered to be achievable), the noise levels at all existing and proposed receptors are predicted to be at least 10 dB below existing background levels during the daytime and night-time as shown in Table 9.13.

Table 9.12: Proposed Emission Limits for Building Services Plant

BSP Location	Noise Emission Limit - Sound Pressure Level (Each Unit)	
	Daytime	Night-time
9 x Building Services Plant	71.5 dB(A) at 1m OR 61.9 dB(A) at 3m	55.1 dB(A) at 1m OR 45.5 dB(A) at 3m

Table 9.13: BS4142 Assessment of Building Services Plant

Ref.	Measured Average Background L_{A90}		Rating Level from Operational Noise (including +2dB Correction)		BS4142 Score	
	Daytime	Night time	Daytime	Night time	Daytime	Night time
R01	44	36	16	2	-28	-34
R02	44	34	18	4	-26	-30
R03	44	34	22	7	-22	-27
R04	50	34	24	9	-26	-25
R05	50	34	26	11	-24	-23
R06	50	34	30	15	-20	-19
R07	50	34	39	24	-11	-11
R08	50	34	39	24	-11	-10
R09	50	34	39	24	-11	-10
R10	50	34	38	23	-12	-11
R11	50	34	40	24	-10	-10
R12	50	34	39	24	-11	-11
R13	50	34	35	20	-15	-14
R14	50	34	30	16	-21	-18
R15	50	34	27	14	-23	-20
P01	50	34	33	18	-17	-16
P02	50	34	34	18	-16	-16
P03	50	34	23	8	-27	-27
P04	50	34	26	10	-24	-24
P05	50	34	28	13	-22	-22
P06	50	34	29	14	-21	-20
P07	44	36	22	6	-23	-30
P08	44	36	14	2	-30	-34

9.7.3 The results of the building services plant noise assessment using the methodology of BS4142:2014+A1:2019 indicate receptors will have a negligible magnitude of impact. As the receptors have been assessed as having high sensitivity there will be a negligible adverse significance.

9.7.4 Noise effects from building services plant are local, permanent, direct, secondary, long-term and of negligible adverse significance.

Noise Intrusion Assessment (On-Site Operational Sources)

9.7.5 Noise levels from site operations are predicted to result in internal noise levels at existing sensitive receptors which are predicted to fall below 23.5dB, which meet the internal criteria of 35 dB $L_{Aeq,1hour}$ during the daytime. Internal night-time noise levels are predicted to fall below 24.2 dB, which meet the internal criteria of 30 dB $L_{Aeq,15minutes}$ and fall below 39.2dB, which meet the internal criteria of 45 dB L_{Amax} during the night-time. With reference to Table 9.6, this equates to a negligible magnitude of impact and therefore a negligible adverse significance.

9.7.6 The effects on existing sensitive receptors from site operations are local, permanent, direct, secondary and long term and of negligible adverse significance.

9.7.7 An assessment has also been undertaken upon proposed future sensitive receptors surrounding the Site associated with the NW Bicester development (planning permission ref: 14/01641/OUT). Noise levels from site operations are predicted to result in internal noise levels at proposed sensitive receptors which are predicted to fall below 25.2dB, which meet the internal criteria of 35 dB $L_{Aeq,1hour}$ during the daytime. Internal night-time noise levels are predicted to be up to 30.8 dB, which marginally exceeds the the internal criteria of 30 dB $L_{Aeq,15minutes}$ and fall below 42.4dB, which meets the internal criteria of 45 dB L_{Amax} during the night-time. With reference to Table 9.6, this equates to a low magnitude of impact and therefore a moderate adverse significance.

9.7.8 The effects on proposed sensitive receptors from site operations are local, permanent, direct, secondary and long term and of moderate adverse significance.

Road Traffic Noise

9.7.9 The assessment of the change in road traffic noise is presented within Table 9.14.

Table 9.14: Difference between DM2025 and DS2025 (change in road traffic noise)

Location	Traffic Noise Without Development 2025 ($L_{A10,18hr}$ dB)	Traffic Noise With Development 2025 ($L_{A10,18hr}$ dB)	Difference
T01	68.1	68.1	0.0
T02	63.2	63.2	0.0
T03	70.5	70.6	0.1
T04	73.5	73.5	0.0
T05	70.7	70.7	0.0
T06	74.4	74.5	0.1
T07	67.9	67.9	0.0
T08	67.9	67.9	0.0
T09	68.8	68.8	0.0

Location	Traffic Noise Without Development 2025 ($L_{A10,18hr}$ dB)	Traffic Noise With Development 2025 ($L_{A10,18hr}$ dB)	Difference
T10	68.7	68.7	0.0
T11	67.3	67.3	0.0
T12	67.6	67.6	0.0
T13	70.9	70.9	0.0
T14	69.7	69.4	-0.3
T15	71.0	70.8	-0.2
T16	70.0	69.8	-0.2
T17	61.8	61.5	-0.3
T18	59.6	59.5	-0.1
T19	71.1	71.1	0.0

9.7.10 As shown in the table above, for all existing sensitive receptors, the change in noise levels are predicted to be less than 1 dB. With reference to Table 9.6, this results in negligible magnitude of impact and therefore a negligible adverse significance.

9.7.11 Considering the negligible effects associated with the changes to road traffic noise once the operational phase, the changes to road traffic noise during the construction phase and the initial operational phase (prior to the SLR being constructed) are not expected to result in a significant increase to noise levels. It should also be noted that increased noise levels prior to the use of the SLR from construction traffic and initial operational noise will be temporary

9.7.12 The effects from off-site operational road traffic are local, permanent, direct and cumulative and result in a negligible adverse effect.

9.7.13 The effects from temporary construction and operational road traffic (without the SLR) are local, temporary, direct and cumulative and are expected to result in a negligible or minor adverse effect.

Mitigation, Monitoring and Residual Effects

Building Services Plant

9.7.14 The details of proposed building services plant would be subject to agreement with CDC, although the assessment of building services plant identified no significant effects arising from the Development assuming the emission limits for plant are set no higher than those detailed in Table 9.12, which can be secured through a suitably worded planning condition. As such, the residual effect of building service plant noise remains the same as identified previous.

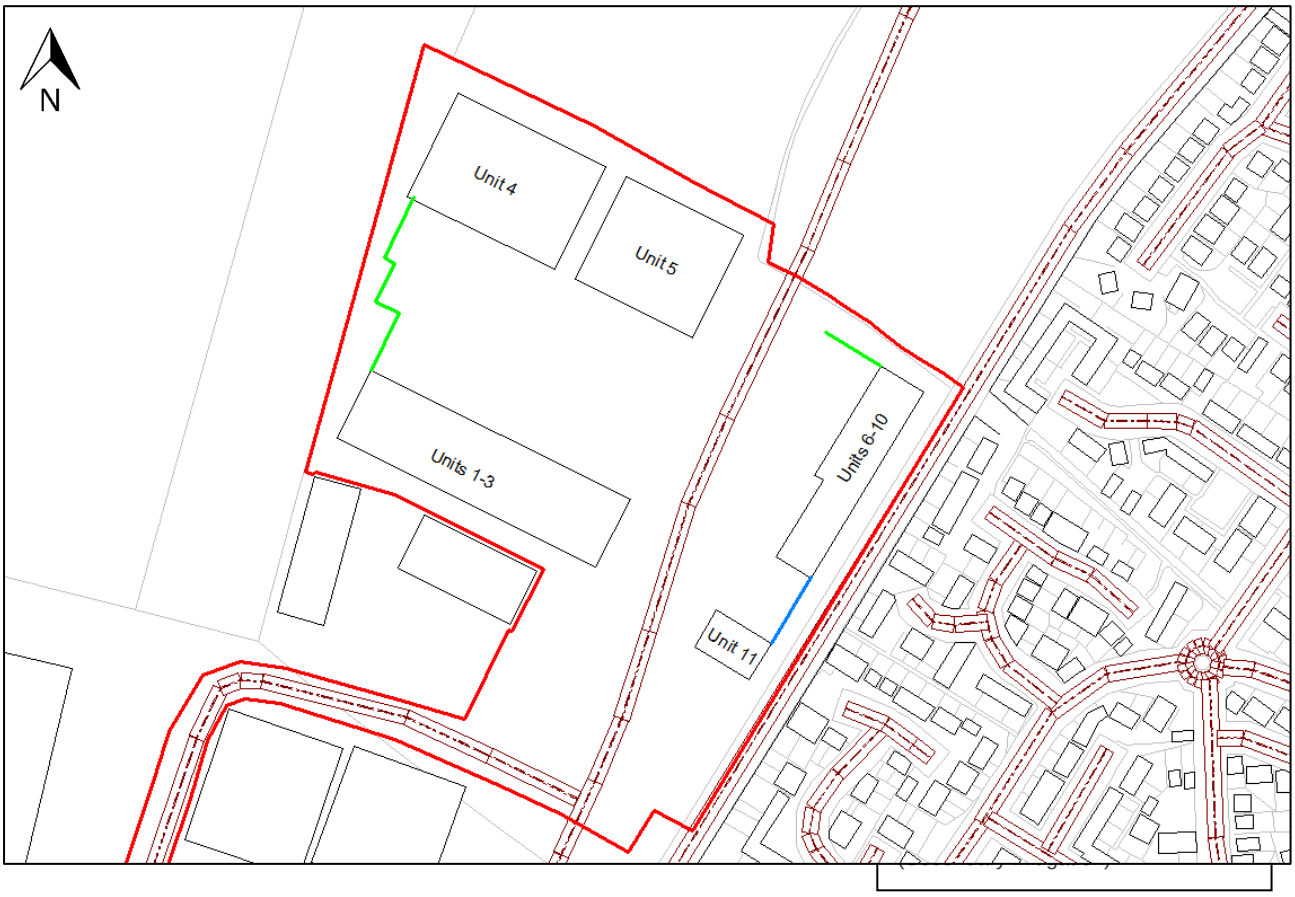
Noise Intrusion Assessment (On-Site Operational Sources)

9.7.15 With regards to existing sensitive receptors, the residual effect of on-site operational source noise remains the same as identified previous.

9.7.16 With regards to proposed sensitive receptors, the night-time L_{Aeq} criteria has the potential to be marginally exceeded. As such, to protect future sensitive receptors surrounding the Site, mitigation in the form of two 2.5m high acoustic barriers between units 3 and 4 and upon unit 6. The locations of these barriers is shown below on Figure 9.4, along with the

4.0m high acoustic barrier which forms the primary mitigation for the scheme. The location of all the barriers are shown in the detailed planning drawings for approval (Appendix 5.1).

Figure 9.4 Proposed Barrier Locations



9.7.17 With the inclusion of the two 2.5m high acoustic barriers, the residual effect of on-site operational sources upon proposed receptors equates to a negligible magnitude of impact and therefore a negligible adverse significance.

9.8 Cumulative Effects

Construction

Assessment

9.8.1 In the event that there is any overlap between the operational phase of the Development, with construction work occurring in other committed developments, it is expected that mitigation within each separate consent will ensure significant cumulative effects do not arise.

Completed Development

Assessment

Noise Intrusion Assessment (On-site Operational sources)

9.8.2 Cumulative predicted noise levels from site operations from the Development and Phases 1 and 2 are predicted to result in noise levels which are no more than 35 dB $L_{Aeq,1hour}$ during

the daytime, 30 dB $L_{Aeq,15minutes}$ during the night-time and 45 dB L_{Amax} during the night-time. With reference to Table 9.5, this results in a negligible impact and therefore a negligible adverse significance.

Table 9.15: Summary of Residual Effects

Effect	Receptor (Sensitivity)	Geographic Scale	Temporal Scale	Magnitude of Impact	Mitigation and Monitoring	Residual Effect
Construction						
Construction Noise	High	Local	Temporary	Low	Adherence to the CEMP	Moderate Adverse (not significant)
Completed Development						
Building Services Plant Noise	High	Local	Permanent	Negligible	Appropriate Conditions	Negligible Adverse
Noise Intrusion (On-site Operational Noise) – Existing Receptors	High	Local	Permanent	Negligible	n/a	Negligible Adverse
Noise Intrusion (On-site Operational Noise) – Proposed Receptors	High	Local	Permanent	Low	Two 2.5m High Acoustic Barriers	Negligible Adverse
Road Traffic Noise	High	Local	Permanent	Negligible	n/a	Negligible Adverse
Road Traffic Noise (before SLR is constructed)	High	Local	Temporary	Negligible / Low	n/a	Negligible / Minor Adverse
Cumulative Effects						
Construction Noise	High	Local	Temporary	Low	Adherence to the CEMP	Moderate Adverse (not significant)
Noise Intrusion (On-site Operational Noise) – Existing Receptors	High	Local	Permanent	Negligible	n/a	Negligible Adverse
Noise Intrusion (On-site Operational Noise) – Proposed Receptors	High	Local	Permanent	Low	Two 2.5m High Acoustic Barriers	Negligible Adverse
Road Traffic Noise	High	Local	Permanent	Negligible	n/a	Negligible Adverse

References

[1] The Stationary Office (TSO), 1990. *The Environmental Protection Act, 1990*.

http://www.legislation.gov.uk/ukpga/1990/43/contents

[2] TS, 1974. *The Control of Pollution Act*. 1974
http://www.legislation.gov.uk/ukpga/1974/40/contents

[3] Ministry of Housing, Communities & Local Government, (Updated 2021). *National Planning Policy Framework*. Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2 Last accessed July 2021.

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

[5] Cherwell District Council, Adopted September 2020. Cherwell Local Plan 2011 - 2031 Part 1 Partial Review. Available at: https://www.cherwell.gov.uk/info/83/local-plans/215/adopted-cherwell-local-plan-2011-2031-part-1-partial-review---oxfords-unmet-housing-need Last accessed July 2021.

[6] Cherwell District Council, Re-adopted December 2016. Cherwell Local Plan 2011 - 2031 Part 1. Available at: https://www.cherwell.gov.uk/info/83/local-plans/376/adopted-cherwell-local-plan-2011-2031-part-1 Last accessed July 2021.

[7] BSI (2014). BS8233:2014 Guidance on sound insultation and noise reduction for buildings.

[8] BSI (2019). BS4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound.

[9] World Health Organisation, 1999. *Guidelines for Community Noise*

[10] Department for Communities and Local Government (MHCLG) (live document). Planning Practice Guidance (PPG). Available at: https://www.gov.uk/government/collections/planning-practice-guidance Last accessed July 2021.

[11] Standards for Highways (2020). Design Manual for Roads and Bridges – LA11 Noise and Vibration.

[12] BSI (2014). BS5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites: Noise.

[13] Calculation of Road Traffic Noise, 1988, Department of Transport