

## **APPENDIX 7.1: Legislation, Policy and Guidance**

### **Legislative Framework**

There is no applicable legislation of relevance to this assessment.

### **Planning Policy**

Planning Policy at the national, regional and local level and its relevance to environmental design and assessment is discussed in the Planning Statement submitted as part of this planning application.

Policies relevant to Noise and Vibration are discussed below.

An assessment is required to consider any potentially noise sensitive areas of the Proposed Development, i.e. the proposed residential area. The potential effects of the existing and future sources of noise on the proposed residential area of the Proposed Development have been assessed with reference to the following guidance:

- National Planning Policy Framework, (2018);
- Noise Policy Statement for England (2010);
- Planning Practice Guidance – Noise (2014);
- World Health Organisation’s (WHO) Guidelines for Community Noise 1999;
- British Standard 8233: 2014 “Sound insulation and noise reduction for buildings – Code of practice” (BS8233);
- BRE Controlling particles, vapour and noise pollution from construction sites, Parts 1 to 5, 2003;
- British Standard 5228 -1:2009 “Code of Practice for noise and vibration control on construction and open sites – Part 1: Noise” (BS5228-1);
- British Standard 5228-2:2009 “Code of Practice for noise and vibration control on construction and open sites – Part 2: Vibration” (BS5228-2);
- British Standard BS6472: 2008 “Guide to Evaluation of human exposure to vibration in buildings. Part 1: Vibration sources other than blasting” (BS6472-1); and,
- Department of Transport’s memorandum, “Calculation of Road Traffic Noise” (CRTN), 1988.

#### *National Planning Policy Framework*

In July 2018 a revised ‘National Planning Policy Framework’ (NPPF) was published to provide the Government’s planning policies and how they are expected to be applied.

Paragraph 180 of the NPPF states;

‘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;
- 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;’

Paragraph 182 of the NPPF states;

*‘Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or ‘agent of change’) should be required to provide suitable mitigation before the development has been completed.’*

With regard to “adverse impacts” the NPPF refers to the ‘Noise Policy Statement for England’ (NPSE), which defines three categories, as follows:

- NOEL – No Observed Effect Level  
This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise
- LOAEL – Lowest Observed Adverse Effect Level  
This is the level above which adverse effects on health and quality of life can be detected
- SOAEL – Significant Observed Adverse Effect Level  
This is the level above which significant adverse effects on health and quality of life occur’

The first aim of the NPSE states that significant adverse effects on health and quality of life should be avoided. The second aim refers to the situation where the impact lies somewhere between LOAEL and SOAEL, and it requires that all reasonable steps are taken to mitigate and minimise the adverse effects of noise. However, this does not mean that such adverse effects cannot occur.

The Planning Practice Guidance (PPG) provides further detail about how the effect levels can be recognised. Above the NOEL noise becomes noticeable, however it has no adverse effect as it does not cause any change in behaviour or attitude. Once noise crosses the LOAEL threshold it begins to have an adverse effect and consideration needs to be given to mitigating and minimising those effects, taking account of the economic and social benefits being derived from the activity causing the noise. Increasing noise exposure further might cause the SOAEL threshold to be crossed. If the exposure is above this level the planning process should be used to avoid the effect occurring by use of appropriate mitigation such as by altering the design and layout. Such decisions must be made taking account of the economic and social benefit of the activity causing the noise, but it is undesirable for such exposure to be caused. At the highest extreme the situation should be prevented from occurring regardless of the benefits which might arise. Table 7.1 summarises the noise exposure hierarchy.

<b>Table 7.1 Noise Exposure Hierarchy</b>			
<b>Perception</b>	<b>Examples of Outcomes</b>	<b>Increasing Effect Level</b>	<b>Action</b>
<b>Not noticeable</b>	No Effect	No Observed Effect	No specific measures required
<b>Noticeable and not intrusive</b>	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
		Lowest Observed Adverse Effect Level	
<b>Noticeable and intrusive</b>	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; closing windows for some of the time because of the noise. Potential for non-awakening sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum

		Significant Observed Adverse Effect Level	
<b>Noticeable and disruptive</b>	The noise causes a material change in behaviour and/or attitude, e.g. having to keep windows closed most of the time, avoiding certain activities during periods of intrusion. 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
<b>Noticeable and very disruptive</b>	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

### ***Noise from earthworks and Construction Phase Activities***

The activities associated with the earthworks and construction phase of the Proposed Development will have the potential to generate noise and create an impact on the surrounding area.

Guidance on the prediction and assessment of noise from development Sites is given in British Standard 5228 -1:2009 “Code of Practice for noise and vibration control on construction and open Sites – Part 1: Noise” (BS5228-1), and BRE Controlling particles, vapour and noise pollution from construction Sites, Parts 1 to 5, 2003.

Construction noise can have disturbing effects on the surrounding neighbourhood. The effects are varied and are complicated further by the nature of the Site works, which will be characterised by noise sources which will change location throughout the construction period. The duration of Site operations is also an important consideration. Higher noise levels may be acceptable if it is known that the levels will occur for a limited period.

For the purposes of this assessment, the occupants of residential properties in the vicinity of the Proposed Development are considered to be the receptors most likely to be affected by the construction phases of the Proposed Development. Details of the receptors are set out in Table 7.2, and shown on Drawing ST15158-7.1.

Table 7.2 Noise Sensitive Receptor Locations						
Receptor	Address	Receptor Type	Grid Ref		Bearing from Site	Approximate Distance to Site Boundary
			Easting	Northing		
CESR 1	Keepers Lodge, Harolds Lane, Enderby	Residential	454177	300181	south	150m

The enabling and construction works will be restricted to daytime hours, defined by the local authority. Details of the noise survey carried out at the sensitive receptor and are set out in this Chapter.

In addition to the guidance from the local authority, the Control of Pollution Act 1974 (COPA 1974) gives the local authority power to serve a notice under Section 60 imposing requirements as to the way in which works are to be carried out. This could specify times of operation, maximum levels of noise which should be emitted and the type of plant which should or should not be used.

However it might be preferable for the chosen contractor to obtain prior consent under Section 61 of COPA 1974. Section 61 enables anyone who intends to carry out works to apply to the local authority for consent. Under Section 61 the local authorities and those responsible for construction work, have an opportunity to settle any problems, relating to the potential noise, before work starts.

In addition to COPA 1974, BS5228-1 provides guidance on significance criteria for assessing the potential noise impacts associated with the construction phase of large projects. For the purposes of this noise assessment, the noise likely to be generated by the earthworks and construction phase, have been assessed against significance criteria established, using the BS5228-1 ABC Method.

The ABC method for determining significance criteria requires the ambient noise levels at existing sensitive receptors to be determined. The ambient noise levels at each existing receptor location are then rounded to the nearest 5dB(A) to determine the appropriate threshold value in accordance with the category value A, B or C, as detailed in Table 7.3.

<b>Table 7.3 Thresholds of Significant Impact from Construction Noise at Residential Receptors in accordance with the ABC Method of BS5228-1</b>			
<b>Assessment Category and Threshold Value Period (LAeq)</b>	<b>Threshold Value, in decibels (dB)</b>		
	<b>Category A *1</b>	<b>Category B *2</b>	<b>Category C *3</b>
Daytime (0700 to 1900 hours) and Saturdays (0700 to 1300 hours)	65	70	75
*1 Category A: Threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than this value.			
*2 Category B: Threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as Category A values.			
*3 Category C: Threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than Category A values.			

The noise level likely to be generated at the receptor during the construction phase, i.e. the ambient noise level plus construction noise, is then compared to the appropriate category value. If the noise level is greater than the appropriate category value, a significant noise impact may be registered.

For the purposes of this Chapter it is possible to estimate the degree of impact from the Site works (earthworks and construction), according to the suggested standards, by reference to the time periods during which noise levels may occur in excess of the quoted values. These levels can be seen in Table 7.4.

<b>Table 7.4 Construction Noise Assessment Significance Criteria</b>	
<b>Magnitude of Impact</b>	<b>Criteria for assessing Construction Noise Impact</b>
Large	Noise levels exceed the Assessment Category threshold level for the duration of the construction works.
Medium	Noise levels exceed the Assessment Category threshold level for periods of more than one month, but for significantly less than the whole duration of the construction works.
Small	Noise levels exceed the Assessment Category threshold level for periods of less than one month.
Negligible	Noise levels do not exceed the Assessment Category threshold level during any period.

The construction phase assessment will be carried out at the Construction Existing Sensitive Receptor CESR1. Impacts will also be felt at receptors adjacent to and beyond those listed in Table 7.2. However, impacts at these receptors will be less than at the listed receptors.

The daytime measured noise levels, from the baseline noise survey representative of the existing sensitive receptors have been provided below in Table 7.5.

Table 7.5 Construction Noise Assessment Criteria				
Receptor	Average Measured Noise Levels (dB L <sub>Aeq</sub> )	Ambient Noise Level Rounded to the nearest 5dB(A) (dB L <sub>Aeq</sub> )	Appropriate Category Value A, B or C in accordance with BS5228-1	Noise Level above which activities of the Construction Phase may cause a significant impact at the Receptor (dB L <sub>Aeq</sub> )
CESR 1 (Monitoring Location 6)	51	50	A	65

The noise assessment for the construction phase details baseline daytime noise levels measured at sensitive receptor locations and outlines the main construction activities that could give rise to noise impacts at receptors in the vicinity of the Proposed Development. It also sets out details of ‘best practice’ management and control measures to ensure that impacts are minimised as far as possible.

#### ***Noise from Construction Vehicles***

In addition to the earthworks and construction activities, vehicle movements to and from the Proposed Development have the potential to generate noise at existing sensitive receptors, in the immediate vicinity of the local road network.

At this stage, detailed traffic data relating to the likely numbers of construction vehicles is not available. However, the number of construction vehicles is not considered to be significant, relative to the existing flows on the major road links surrounding the Proposed Development. It is therefore considered that the level of road traffic noise at sensitive receptor locations will not change significantly due to construction vehicles during the construction phases of the Proposed Development and this impact has not therefore been considered further.

#### ***Vibration from Construction Plant and Vehicles***

Work involving heavy plant on an open Site is likely to generate vibration, which may, in certain circumstances, propagate beyond the boundary of the Proposed Development. In situations where particularly heavy plant, vibrating compaction equipment or piling rigs are being used close to the Proposed Development boundary, nearby properties may experience ground-borne vibration.

The existing sensitive receptors most likely to be affected by vibration generated by the earthworks and construction phase works of Proposed Development are detailed in Table 7.2.

Guidance on the assessment of vibration from development Sites is given in British Standard 5228 -2:2009 “Code of Practice for noise and vibration control on construction and open Sites – Part 2: Vibration” (BS5228-2). BS5228-2 2009 indicates that vibration can have disturbing effects on the surrounding neighbourhood; especially where particularly sensitive operations may be taking place. The significance of vibration levels which may be experienced adjacent to a Site is dependent upon the nature of the source.

It is not possible to mitigate vibration emissions from an open Site. It is important therefore to examine the proposed working method to ascertain what, if any, operations would be likely to cause unacceptable levels of vibration at nearby sensitive locations. It is possible that these operations could be modified to reduce their vibration impacts.

BS5228-2 indicates that the threshold of perception is generally accepted to be between a peak particle velocity (PPV) of 0.14 and 0.3mm/sec. In an urban situation it is unlikely that such vibration levels would be noticed. BS5228 also indicates that it is likely that vibration of 1.0 mm/s in residential environments will cause complaint, but can be tolerated if prior warning and explanation have been given to residents. This standard also indicates that 10 mm/s is likely to be intolerable for any more than a very brief exposure to this level.

The Highways Agency Research report No. 53 “Ground Vibration caused by Civil Engineering Works” 1986 suggests that, when vibration levels from an unusual source exceed the human threshold of perception, complaints may occur. The onset of complaints due to continuous vibration is probable when the PPV exceeds 3mm/sec.

British Standard BS6472: 2008 “Guide to Evaluation of human exposure to vibration in buildings. Part 1: Vibration sources other than blasting” (BS6472-1) suggests that adverse comments or complaints due to continuous vibration are rare in residential situations below a PPV of 0.8mm/sec. Continuous vibration is defined as “vibration which continues uninterrupted for either a daytime period of 16 hours or a night-time period of 8 hours”. The proposed earthworks and construction works at the Site will not cause continuous vibration as defined in BS6472-1.

Human perception of vibration is extremely sensitive. People can detect and be annoyed by vibration before there is any risk of structural damage. Cases where damage to a building has been attributed to the effects of vibration alone are extremely rare; even when vibration has been considered to be intolerable by the occupants.



It is not possible to establish exact vibration damage thresholds that may be applied in all situations. The likelihood of vibration induced damage or nuisance will depend upon the nature of the source, the characteristics of the intervening solid and drift geology and the response pattern of the structures around the Site. Most of these variables are too complex to quantify accurately and thresholds of damage, or nuisance, are therefore conservative estimates based on a knowledge of engineering.

Where ground vibration is of a relatively continuous nature, there is a greater likelihood of structural damage occurring, compared to transient vibration; for example that caused by transiting vehicles.

BS5228-2 2009 suggests that the onset of cosmetic damage is 15mm/sec (15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz for residential or light commercial type buildings).

The adverse residual impacts are assessed against the categories set out in Table 7.6.

<b>Table 7.6 Construction Vibration Assessment Significance Criteria</b>	
<b>Magnitude of Impact</b>	<b>Criteria for Assessing Construction Vibration impact</b>
Large	> 10mm per sec. Vibration likely to be intolerable for more than brief exposure. Approaching the level at which cosmetic damage may occur in light structures.
Medium	5mm - 10mm per second. Tolerance less likely even with prior warning and explanation.
Small	1mm – 5mm per second. Complaints are likely, but can be tolerated if prior warning and explanation given.
Negligible	< 1mm per second. Below level at which complaints are likely.

**Road Traffic Noise and Existing Sensitive Receptors**

The operational phase of the Proposed Development will generate additional traffic movements on the existing road network. Additional vehicle movements have the potential to increase road traffic noise levels at existing receptors.

The current and future road traffic noise levels at a number of sensitive receptors; both with and without the Proposed Development in place, have been predicted using the calculation procedures set out in CRTN. The memorandum was prepared to enable entitlement under the Noise Insulation Regulations 1975 to be determined; but it is stated in the document, that the guidance is equally appropriate for the calculation of traffic noise for land use planning purposes.

For this noise assessment, CRTN has been used to determine the noise levels at Operational Existing Sensitive Receptors detailed in Table 7.7.

<b>Table 8.7 Noise Sensitive Receptor Locations</b>						
<b>Receptor</b>	<b>Address</b>	<b>Receptor Type</b>	<b>Grid Ref</b>		<b>Bearing from Site</b>	<b>Approximate Distance to Site Boundary</b>
			<b>Easting</b>	<b>Northing</b>		
OESR 1	49 Mill End, Enderby	Residential	453361	299822	west	1.2km
OESR 2	20 Hall Walk	Residential	453534	299639	west	1km
OESR 3	Warren Farm	Residential	454026	300206	north west	1.1km
OESR 4	2 Warren Farm Cottage	Residential	454228	300156	north west	900m
OESR 5	13a Blaby Road	Residential	453763	299341	west	780m
OESR 6	60 Blaby Road	Residential	454046	299143	west	530m
OESR 7	209 Blaby Road	Residential	454733	298814	south	220m
OESR 8	230 Leicester Road	Residential	454799	298686	south	370m
OESR 9	251 Blaby Road	Residential	454918	298652	south	470m
OESR 10	11 St Johns, Enderby	Residential	454974	298822	south	300m
OESR 11	28 St Johns	Residential	454949	298934	south east	155m
OESR 12	59 St Johns	Residential	455126	299154	east	35m
OESR 13	83 St Johns	Residential	455258	299373	east	70m
OESR 14	Leicester Marriot	Hotel	454981	300478	north	630m
OESR 15	3 Smith Way	Offices	454955	299807	north	35m

The traffic information for the Proposed Development has been provided by RPS and includes HGV percentage and speed limits for each of the links. The traffic data has been provided in scenarios that include a base year, an opening year and a future year, with and without the Proposed Development. The opening and future years also take in to account road traffic associated with committed developments where appropriate.

Impacts will also be felt at receptors adjacent to and beyond those listed in Table 7.7. However impacts at these receptors will be less than at the listed receptors.

The changes in road traffic noise levels have been assessed against a set of significance criteria. The criteria shown in Table 7.8 are based upon guidance contained within the Design Manual for Roads and Bridges, Volume 11, Section 3, Part 7, 2011 (DMRB) for the assessment of changes in road traffic noise. The criteria do not relate to the actual existing noise levels (i.e. traffic noise due to current residential development) but only the predicted changes.

<b>Table 7.8 Road Traffic Noise Assessment Significance Criteria</b>	
<b>Magnitude of Impact</b>	<b>Criteria for Assessing Road Traffic Noise</b>
Large / Large Beneficial	> 10.0 dB increase or decrease in traffic noise (equating to a clearly perceptible increase in the loudness of noise).
Medium / Medium Beneficial	5.0 – 9.9 dB increase or decrease in traffic noise (equating to an increase in the loudness of the noise which is at or about the threshold of perception)
Small / Small Beneficial	3.0 – 4.9 dB increase or decrease in traffic noise
Negligible	0.1 – 2.9 dB increase in traffic noise.