

## 6. Noise

### Introduction

- 6.1 This Chapter, which was written by Waterman, assesses the suitability of the Site for the proposed Development, and the likely significant noise impacts from demolition and construction, and the subsequent operation of the Development, on sensitive uses on and around the Site.
- 6.2 This Chapter describes national and local policy and guidance concerning noise, and provides details of the assessment methodology used to predict the noise impacts. Existing baseline conditions at the Site are described, followed by an assessment of the scheme's predicted impacts. The noise impacts are quantified and where necessary mitigation measures are proposed. The nature and significance of the likely residual impacts following mitigation are then described.
- 6.3 A glossary of the acoustic terminology used throughout this Chapter is provided in **Appendix 6.1** of this ES.

### Legislation and Planning Policy Context

#### National Planning Policy

##### Planning Policy Guidance Note 24: 'Planning and Noise'

- 6.4 The main noise-related guidance document for planners in England is PPG24. The principle purpose of the guidance is to determine the suitability of land for residential development, especially where land is affected by noise from transportation or industrial sources. However, PPG24 also provides general guidance with respect to matters to be taken into account in determining planning applications for noise-sensitive developments and for those activities that generate noise.
- 6.5 For residential development, the guidance is presented in terms of four Noise Exposure Categories (NECs), ranging from NEC A, where noise need not normally be considered by the local planning authority (LPA) in determining planning applications to NEC D, where planning permission may need to be refused on noise grounds.

#### Local Planning Policy

##### Cherwell Local Plan 2011

- 6.6 Saved Policy ENV1 of the Non-Statutory Cherwell Local Plan 2011 states that "*Development which is likely to cause materially detrimental levels of noise, vibration, smell, smoke, fumes or other type of environmental pollution will not normally be permitted*".

### Legislation

#### Control of Pollution Act 1974

- 6.7 Noise nuisance from construction works is controlled by Sections 60 and 61 of the Control of Pollution Act 1974 (CoPA). Section 61 of the CoPA allows a contractor or developer to approach the LPA to gain consent to carry out construction works. The LPA has the power to amend or condition any consent.

- 6.8 Section 60 Control of Pollution Act 1974 is essentially the same as the Section 61 except that no approach is made by the contractor and the conditions are imposed by the LPA.

### Guidance

#### BS 5228 – Noise Control on Construction and Open Sites. Part 1:2009

- 6.9 BS 5228 provides guidance for assessing noise during the redevelopment of a site. The Standard describes procedures for estimating noise levels from construction. It stops short of defining acceptable limits and comments that they should be defined on a site-specific basis. It also provides guidance on minimising potential impacts through the use of mitigation and the adoption of Best Practicable Means (BPM).

#### BS 4142 – Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas, 1997

- 6.10 PPG24 makes reference to BS 4142 as sometimes being appropriate guidance for assessing new commercial operations and new building services plant noise. The document provides an objective method for rating the likelihood of complaint from industrial and commercial operations. It also provides a means of determining noise levels from fixed building services plant installations and background noise levels that prevail on and around the proposed developments.

#### Calculation of Road Traffic Noise (CRTN) Department of Transport, 1988

- 6.11 CRTN provides information on the monitoring of road traffic noise and its prediction from traffic flow counts or forecasts, taking account of factors such as percentage heavy vehicles, vehicle speed and road surface type and gradient. It also includes a comprehensive series of noise prediction techniques which take account of the sound attenuation which can derive from propagation distance, reduced angles of view of the noise source, acoustic barriers and soft ground absorption.

## Assessment Methodology and Significance Criteria

### Assessment Methodology

- 6.12 The assessment of potential noise impacts arising from the demolition and construction works, and operation of the proposed Development, was based on the following:
- identifying potentially sensitive existing and future noise receptors on the Site and within the surrounding area;
  - establishing current (baseline) noise conditions at the Site through noise surveys;
  - assessing likely noise levels generated during the demolition and construction stage of the Development;
  - assessing the suitability of the Site for the Development in terms of the prevailing and future baseline noise conditions;
  - establishing design aims for plant and services to be located on or within the proposed new buildings at the Site;
  - assessing likely noise levels from the completed Development (with reference to current legislation and guidance, as detailed above);
  - formulating proposals for mitigation, where appropriate; and
  - predicting and assessing the significance of likely residual noise impacts.

### Establishing Baseline Conditions

- 6.13 A desk-based study and site walkover was undertaken to identify existing and future noise sensitive receptors (NSRs) that could potentially be affected by noise arising from the construction and operation of the Development.
- 6.14 A noise monitoring survey was undertaken on the 21 and 22 June 2010. Measurements were carried out at eight locations which were selected as being representative of the noise climate at existing and proposed NSRs. In order to allow the potential impacts of existing commercial noise sources upon proposed residential dwellings to be assessed, measurements were also taken at all significant noise sources from commercial buildings at Heyford Park.
- 6.15 Further details of the noise monitoring are provided within **Appendix 6.2**. The monitoring locations are identified in **Tables 6.1** and **6.2** and illustrated on **Figure 6.1**.

**Table 6.1: Baseline Noise Monitoring Locations**

Monitoring Location	Description
ML 1	Eastern boundary of the Site, north of Camp Road
ML 2	Car park to the south of 'Shopette'
ML 3	Southern boundary of the Site
ML 4	Dacey Drive
ML 5	Adjacent to Building 139 within Heyford Park
ML 6	Camp Road at the eastern side of the Site
ML 7	Camp Road at the western side of the Site
ML 8	Caravan park to the east of the Site

**Table 6.2: Noise Monitoring Locations – Existing Commercial Noise**

Monitoring Location	Description	Noise Sources
ML A	Building 125 – measurements taken approximately 1m from source B	Daytime – Air Conditioning Units Night-time – Air Conditioning Units
ML B	Building 350 – measurements taken approximately 10m from source C	Daytime – Extraction fans, spraying noise and cutting / grinding noise Night-time – Extraction fans, spraying noise and music
ML C	Building 172 – measurements taken approximately 5m from source D	Daytime – Extraction fans and cutting / grinding noise Night-time – None
ML D	Building 86 – measurements taken approximately 10m from source E	Daytime – Extraction fans and a very low frequency noise associated with air jets Night-time – Extraction fans
ML E	Building 77 – measurements taken approximately 1m from source F	Daytime – Air Conditioning Units Night-time – Air Conditioning Units

### Demolition and Construction Noise Assessment Methodology

- 6.16 At this stage, insufficient detail is available on methodology, phasing and programming of the construction works to be able to carry out a detailed assessment of demolition and construction noise. Therefore, a qualitative assessment was carried out based on professional judgement and experience from undertaking construction noise assessments of developments similar to the proposed. Reference was also made to BS 5228-1:2009, which provides guidance on assessing noise from construction sites.

### Site Suitability Assessment Methodology

#### Transportation Noise

- 6.17 The guidance provided in PPG24 is principally aimed at assessing the suitability of a site for new residential development in terms of existing transport-related noise. The relevant Noise Exposure Category (NEC) criteria are presented in **Table 6.3**.

**Table 6.3: Recommended Noise Exposure Categories for New Dwellings near Existing Road Traffic**

NEC	$L_{Aeq,T}$ dB(A) (07:00 to 23:00)	$L_{Aeq,T}$ dB(A) (23:00 to 07:00)	Advice
A	<55	<45	Noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as a desirable level.
B	55 – 63	45 – 57	Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection against noise.
C	63 – 72	57 – 66	Planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise.
D	>72	>66	Planning permission should normally be refused.

Notes: Sites where individual noise events during the night-time (23:00 to 07:00) regularly exceed 82dB  $L_{Amax}$  (5 time weighting) several times in any hour should be treated as being in NEC C, regardless of the  $L_{Aeq, 8\text{ hour}}$  (except where the  $L_{Aeq, 8h}$  already puts the site in NEC D). Source: PPG24 Annex 1.

#### Commercial Noise

- 6.18 The potential noise impacts of the existing commercial noise sources were considered for the closest proposed NSRs. The closest proposed NSRs are the residential properties within the northern part of the Site, i.e. north of Camp Road. These can be considered as two groups, Group 1 at the north-eastern corner of the northern part of the Site (NSR 4) and Group 2 in the centre of the northern part of the Site (NSR 5). To provide for a worst-case assessment, the lowest monitored background noise levels obtained during the survey period were used throughout the assessment.
- 6.19 The measured source noise levels were corrected for distance, residual noise, barrier attenuation and acoustic character, to provide a rating noise level, in line with the guidance provided in BS 4142:1997. The predicted rating noise levels were compared to the minimum monitored background noise levels to allow the potential for complaints as a result existing commercial noise sources to be determined.

- 6.20 Guidance provided in the Department for Transport's Technical Memorandum '*Calculation of Road Traffic Noise*' and BS 5228-1:2009 states that where a noise source is not visible from the reception point, a conservative 10dB(A) attenuation may be applied and where a source is partially visible, a conservative 5dB(A) attenuation may be applied. Where appropriate, a screening correction was therefore applied to the results.

#### Operational Road Traffic Noise Assessment Methodology

- 6.21 Changes in road traffic flows from the operation of a development can lead to changes in noise levels. However, the likely impacts of the proposed Development would remain unchanged from those identified in the road traffic noise assessment carried out as part of the 2007 ES. This is because the calculated trip generation for the proposed Development is no greater than that calculated for the 2007 development proposals. Therefore, the results of the previous assessment, which are reported later in this chapter, remain robust and valid for this assessment. The potential impacts of changes in road traffic noise were evaluated by consideration of the estimated changes in  $L_{A10,(18h)}$  road traffic noise levels on the local highway network as a result of the operation of the proposed Development. An extract from the 2007 ES comprising the Noise Impact Assessment is contained in **Appendix 6.3**. This presents full details of the methodology for the assessment.

#### Building Services Plant Noise Assessment Methodology

- 6.22 Guidance provided in BS 4142:1997 was used to assess whether noise from sources of an industrial nature associated with the operation of the proposed commercial uses (B1/B2/B8), local centre uses (A1–A5/D1/C3), care facility, hotel and primary school would be likely to give rise to complaints from residents of nearby dwellings.
- 6.23 The standard sets out a methodology whereby the likelihood of complaints about an industrial noise source can be assessed. The measured or predicted noise level from the source in question, the 'specific noise' level, immediately outside of the dwellings is compared with 'background noise' level. Where the noise contains a 'distinguishable discrete continuous note (whine, hiss, screech, hum, etc) or if there are distinct impulses in the noise (bangs, clinks, clatters or thumps), or if the noise is sufficiently irregular as to attract attention, then a correction of +5dB is added to the specific noise level to obtain the 'rating noise' level. The likelihood of noise provoking complaints is assessed by subtracting the background noise level from the rating noise level.

#### Service and Delivery Noise Assessment Methodology

- 6.24 At this stage, there are insufficient details to carry out a quantitative assessment. Therefore, a qualitative assessment of service yard noise was undertaken and design advice provided to the Development's design team to minimise noise impacts associated with servicing and delivery activities. It is recommended that a detailed assessment is carried out at the Reserved Matters stage to ensure potential impacts are minimised.

### Significance Criteria

#### Demolition and Construction Noise

- 6.25 A qualitative assessment of demolition and construction noise was carried out using professional judgement and experience from undertaking assessments of similar works.

### Site Suitability

- 6.26 The potential impacts of existing noise sources on the proposed residential properties and care facility were assessed against the criteria provided within PPG24, as set out in **Table 6.4**.

**Table 6.4: Significance Criteria for Assessment of the Suitability of the Site for Residential and Care facility Uses**

NEC	L <sub>Aeq,T</sub> dB(A) (07:00 to 23:00)	L <sub>Aeq,T</sub> dB(A) (23:00 to 07:00)	Significance Criteria
A	<55	<45	Insignificant
B	55 – 63	45 – 57	Adverse Impact of Minor Significance
C	63 – 72	57 – 66	Adverse Impact of Moderate Significance
D	>72	>66	Adverse Impact of Substantial Significance

### Road Traffic Noise

- 6.27 The significance of change in noise levels as a result of the operation of the Site were assessed in accordance with the significance criteria detailed in **Table 6.5**. These criteria are derived by considering how changes in noise levels can be categorised by significance based on key benchmarks that relate to human perception of sound. For example, a change in noise levels of 3dB is generally considered to be the smallest change in noise that is perceptible, and a 10dB change in noise represents a doubling or halving of the noise level.

**Table 6.5: Significance Criteria for Road Traffic Noise Assessment**

Significance Criteria	Level above Threshold Value dB(A)	Description
Beneficial Impact of Substantial Significance	>-10	The impact provides a significant positive gain.
Beneficial Impact of Moderate Significance	-9.9 to -5.0	The impact provides some gain to the environment.
Beneficial Impact of Minor Significance	-5.0 to -3.0	The impact is of minor significance but has some environmental benefit.
Insignificant	-2.9 to +2.9	The impact is likely to be imperceptible and is therefore not of concern.
Adverse Impact of Minor Significance	3.0 to 4.9	The impact is undesirable but of limited concern.
Adverse Impact of Moderate Significance	5.0 to 9.9	The impact gives rise to some concern but is likely to be tolerable depending on scale and duration.
Adverse Impact of Substantial Significance	>10	The impact gives rise to serious concern and it should be considered unacceptable.

### Building Services Plant Noise

- 6.28 When assessing the potential impacts of plant noise on nearby NSRs, the criteria presented in **Table 6.6** were used. These criteria are based on the 'likelihood of complaints' criteria as provided in BS 4142:1997.

Table 6.6: Significance Criteria for Plant Noise Assessment

Difference in Rating and Background Levels (dB(A))	Significance Criteria
<5	Insignificant
5.1 to 7.5	Adverse Impact of Minor Significance
7.6 to 10	Adverse Impact of Moderate Significance
>10	Adverse Impact of Substantial Significance

### Service and Delivery Noise

- 6.29 The significance of noise impacts associated with service yard noise is dependent upon a number of factors including the proximity of the sensitive receptors, delivery vehicle types, type of materials being loaded and unloaded, location and layout of the service yard and most importantly the time at which the noise occurs. As the application is in outline only at this stage a qualitative assessment was carried out using professional judgement and experience from undertaking assessments of similar developments.

### Assumptions and Limitations

- 6.30 The following assumptions were made for the purposes of the assessment:
- Owing to the lack of available details on the nature, type, number and location of construction plant the noise predictions were based on experience of plant used at schemes similar to the proposed Development;
  - Only construction plant and activity at ground (i.e. street level) level were included in the assessment of airborne noise; and
  - It was assumed that no night-time construction works would be undertaken.

### Baseline Conditions

#### Noise Sensitive Receptors

- 6.31 The nearest existing NSRs to the Site boundary are detailed in **Table 6.7** and illustrated on **Figure 6.1**. In addition to existing NSRs, consideration was also given to the potential impacts on proposed NSRs within the Development.

Table 6.7: Noise Sensitive Receptors

NSR (see Figure 6.1)	Sensitive Receptor
NSR 1	Letchmere Farm to the north-east of the Site
NSR 2	Caravan Park / Heyford Leys Farm to the east of the Site
NSR 3	Field Barn Farm to the south
NSR 4	Proposed new housing, centre of site north of Camp Road
NSR 5	Proposed new, north-eastern area of site north of camp road

## Noise Survey Results

### Baseline Noise Survey

6.32 The measured noise levels are presented in full in **Appendix 6.2** and are summarised in **Table 6.8**.

Table 6.8: Summary of Baseline Noise Measurements

Monitoring Location (see Figure 6.1)	Period	L <sub>Aeq,T</sub> (dB(A))	L <sub>A10,T</sub> (dB(A))	L <sub>A90,T</sub> (dB(A))		L <sub>AMax</sub> (dB(A))
				Minimum	Average	
ML 1	Daytime	45	48	35	36	65
	Evening	37	40	28	28	52
	Night-time	37	39	25	26	53
ML 2	Daytime	49	52	34	36	76
	Evening	38	35	24	24	60
	Night-time	36	32	21	23	61
ML 3	Daytime	44	48	30	32	61
	Evening	33	35	28	28	57
	Night-time	36	36	22	25	54
ML 4	Daytime	54	48	35	36	77
	Evening	55	49	23	25	76
	Night-time	29	31	23	23	51
ML 5	Daytime	42	43	35	36	60
	Evening	37	38	33	33	66
	Night-time	47	38	33	47	71
ML 6	Daytime	57	59	49	56	80
	Night-time	54	52	23	34	80
ML 7	Daytime	65	67	35	40	93
ML 8	Daytime	49	50	40	40	73

6.33 Monitored noise levels on and in the vicinity of the proposed Development ranged between 42 and 65dB LAeq during the daytime, 33 and 55dB LAeq during the evening and 29 and 54dB LAeq,T during the night-time. Noise levels of this magnitude are typical of those experienced within a rural environment. The highest monitored noise levels were experienced at monitoring locations (ML) 6 and 7 which were located immediately adjacent to Camp Road. The measured night-time levels at ML 5 were slightly elevated owing to a low flying aircraft during the measurement period.

### Noise Survey of Existing Commercial Uses

6.34 In order to allow the impacts of existing commercial noise sources on proposed residential dwellings to be assessed, measurements were taken at all significant commercial buildings noise sources at Heyford Park. These are described in **Table 6.8** and illustrated in **Figure 6.1**. The full set of five minute measurement results are presented in **Appendix 6.2** and are summarised in **Table 6.9**.

Table 6.1: Summary of Monitoring Results for Existing Commercial Noise Sources

Monitoring Location (see Figure 6.1)	Description	Monitoring Period	L <sub>Aeq,T</sub> (dB(A))
ML A	Measurements taken approximately 1m from source A	Daytime	66
		Night-time	67
ML B	Measurements taken approximately 10m from source B	Daytime	66
		Night-time	57
ML C	Measurements taken approximately 5m from source C	Daytime	51
ML D	Measurements taken approximately 10m from source D	Daytime	52
		Night-time	43
ML E	Measurements taken approximately 1m from source E	Daytime	65
		Night-time	59

## Impact Assessment

### Demolition and Construction Phase

#### Noise

- 6.35 At this stage, it is not possible to carry out a detailed assessment of demolition and construction noise because there is insufficient detail on methodology, phasing and programming. As the project progresses, the 'Best Practical Means' (BPM) of carrying out the work would be identified in accordance with the procedures given in BS 5228:2009 and CoPA. As each parcel of land approaches development, final detailed construction method statements would be prepared. Where these methods would be likely to cause increased noise at sensitive receptors, BPMs would be used to control noise and specific details would be discussed and agreed with the LPA and an appropriate Construction Code of Practice (CCoP) would be developed and implemented. The CCoP would be included in the contract documents.
- 6.36 The proposed Development is likely to be phased, such that construction activities would not take place across the entire Site simultaneously. Work on each building / group of buildings would be likely to take place in four general stages: demolition; foundations; superstructure construction; and fit-out / landscaping.

#### Demolition

- 6.37 Demolition activities would involve the use of pneumatic breakers, bull-dozer, dumper trucks and tipper lorries would be used to demolish existing buildings, and collect and remove material from the Site. Noise would likely be greatest where demolition is taking place, although this would move around the Site and would therefore be relatively short-term in nature. Demolition activities are typically the noisiest activity undertaken during the construction works. These activities would be likely to be audible above background noise in external areas of the nearest properties outside of the Site when they are closest. It might also be possible to detect some demolition noise when inside a property with opened windows.

### *Foundations*

- 6.38 Installing concrete piles using a Rotary Auger are often less intrusive than impact piling. However, both methods would need materials delivered by heavy duty vehicle / cement lorry.
- 6.39 The majority of the residential properties would be constructed using standard house building techniques, i.e. strip foundations. The noisiest aspect of this activity is the excavation for footings with a mechanical digger. Noise during this aspect of foundation construction might be just audible above background noise in external areas of the nearest residential properties outside of the Site. However, it would be unlikely to be audible within residential properties.
- 6.40 If piled foundations were to be required, the technique of piling would affect the amount of noise perceived at the nearest properties to the Site. In terms of noise generation, the most intrusive form of piling is driven piling; which would be likely to be audible above background noise levels in external areas of the nearest properties. It might also be just audible within these properties if windows were open. Other forms of piling would likely be less audible within properties outside the Site.

### *Superstructure construction*

- 6.41 Noise from superstructure construction would depend on the method chosen, for example brick / block, concrete or steel framed. Whichever construction is used cranes (fixed, wheeled or tracked), pneumatic hand tools, back hoe excavators may be used along with concrete pumps or mixers would be required. The amount of concrete to be pumped would increase if the building is constructed using a concrete frame or floors. These activities would not generally be audible at the nearest properties outside of the Site because they are relatively quiet in operation.

### *Landscaping and fit-out*

- 6.42 Landscaping, fit-out and infrastructure would take place as the Site is progressively developed. Hand tools, back hoe excavators, bull-dozers and road rollers may be required at various times and depending on the amount of earth movement required; tippers or dumper trucks would be required.
- 6.43 Ground modelling activities, and any other particularly noisy construction methods, can be restricted to agreed hours of the day. Similarly, times for haulage on and off the Site may also be restricted.
- 6.44 Ground modelling activities may be quite audible at the nearest properties to the Site when they are closest, if earth moving equipment is being operated. However, these would be a short term, transient activity.
- 6.45 Experience has shown that problems associated with demolition and construction noise can, to a large extent, be mitigated by conducting a sensitive public consultation exercise, which must start before the works on-site commence. A named person who can be contacted in the event of query or concern is also beneficial. Continued public liaison throughout the works would alleviate many potential problems. Although it has not been possible to carry out a detailed assessment, impacts would be unlikely to be significant as a consequence of the distance between the Development and the nearest off Site NSRs. During the noisiest activities, it is considered that, at worst, there would be the potential for some **short-term, adverse impacts of minor significance**.
- 6.46 In addition, given that the proposed Development is likely to be constructed in phases, there would be the potential for **adverse impacts of minor to moderate significance** to arise on both existing and proposed NSRs within the Site boundary, especially during the construction of the later phases of the Development.

## Completed Development

### Site Suitability

#### Transportation Noise

- 6.47 The dominant existing noise source in the area of the proposed Development is road traffic noise. Consequently monitored noise levels were compared against the NEC criteria for road traffic sources as provided in PPG24. The monitored noise levels and corresponding NECs are presented in **Table 6.10**.

Table 6.2: Averaged Ambient Noise Levels and Corresponding NEC

Monitoring Location	Period	L <sub>Aeq,T</sub> (dB(A))	NEC
ML 1	Daytime	45	A
	Night-time	37	A
ML 2	Daytime	49	A
	Night-time	36	A
ML 3	Daytime	44	A
	Night-time	36	A
ML 4	Daytime	54	A
	Night-time	29	A
ML 5	Daytime	42	A
	Night-time	47	B
ML 6	Daytime	57	B
	Night-time	54	B
ML 7	Daytime	65	C

- 6.48 The measured noise levels at the Site place the majority of the Site into NEC A with small areas of land adjacent to Camp Road falling into NEC B and NEC C.
- 6.49 For locations that fall into NEC A, PPG24 states that “*Noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as a desirable level*”. At these locations there would be insignificant impact on future residential receptors.
- 6.50 For locations that fall into NEC B, PPG states that “*Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection against noise*”. At these locations there would be adverse impact of minor significance on future residential receptors.
- 6.51 For locations that fall into NEC C, PPG states that “*Planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise*”. At these locations there would be adverse impact of minor significance on future residential receptors.

#### Commercial Noise

- 6.52 **Table 6.11** below presents the data used to assess the likely impact on NSRs from existing commercial noise sources. The results indicate that given the proximity of the proposed dwellings

to the existing commercial properties and in the absence of mitigation, there is the potential for adverse impacts of substantial significance on the proposed NSRs.

- 6.53 Therefore, assuming these commercial uses would continue to operate as at present, mitigation measures would need to be implemented to ensure that future residents are not adversely affected by noise emanating from the commercial uses.

Table 6.3: BS 4142:1997 Assessment – Potential Impacts from Existing Commercial Noise Sources on the Proposed Residential Development

Noise Source	Noise Sensitive Receptor	Existing Noise Levels		Rating Noise Level (dB(A))	Level Difference (dB(A))	Impact Significance
		Period	L <sub>A90,T</sub> (dB(A))			
A	NSR 4	Daytime	35	53*	+18	Substantial, Adverse
		Night-time	33	54*	+21	Substantial, Adverse
B	NSR 4	Daytime	35	70	+35	Substantial, Adverse
		Night-time	33	61	+28	Substantial, Adverse
C	NSR 4	Daytime	35	53	+18	Substantial, Adverse
	NSR 5	Daytime	35	31 <sup>#</sup>	-4	Insignificant
D	NSR 4	Daytime	35	42 <sup>#</sup>	+7	Minor, Adverse
		Night-time	33	33 <sup>#</sup>	0	Insignificant
	NSR 5	Daytime	35	41 <sup>#</sup>	+6	Minor, Adverse
		Night-time	25	32 <sup>#</sup>	+7	Minor, Adverse
E	NSR 4	Daytime	35	47 <sup>#</sup>	+12	Substantial, Adverse
		Night-time	33	41 <sup>#</sup>	+8	Moderate, Adverse
	NSR 5	Daytime	35	50	+15	Substantial, Adverse
		Night-time	25	44	+19	Substantial, Adverse

Notes: \* 5dB screening correction has been applied  
<sup>#</sup> 10dB screening correction has been applied

- 6.54 When considering new commercial uses which would be introduced with the proposed Development the noise levels generated would be dependent on the end users. It is recommended that a detailed assessment of noise from the proposed commercial uses is carried out at the detailed planning stage to determine the likelihood of disturbance at the nearest NSRs. However, it is considered that in the absence of mitigation and appropriate noise control measures the proposed commercial areas associated with the proposed Development would have the potential to have an **adverse impact of moderate significance** upon nearby NSRs.

#### Assessment of Road Traffic Noise

- 6.55 Predicted trip generation and traffic flows for the proposed Development are broadly the same as those predicted for the 2007 planning application. Therefore, the 2007 road traffic noise assessment also remains valid; the results of which are provided in full in **Appendix 6.3** and summarised below.
- 6.56 In most locations, the change in traffic flows would result in noise level changes of less than 3dB. Therefore, it is considered that the change in traffic is insufficient to cause any perceptible increase

in noise level. However, for roads experiencing a greater change in traffic flows, significant impacts would be likely to occur in the following areas:

- increase in noise levels of 4 to 5dB on the road between North Aston Road and Water Street, resulting in an **adverse impact of minor to moderate significance**;
- increase in noise levels of 2 to 6dB and decreases in noise levels of 3 to 8dB along Camp Road, resulting in **adverse impacts** and **beneficial impacts of moderate significance** respectively;
- increase in noise level of 3dB and decrease in noise level of -6dB on parts of Port Way between Lower Heyford Road and Heyford Road, resulting in **adverse impact of minor significance** and **beneficial impacts of moderate significance**; and
- decrease in noise level of 7dB at one section of Ardley Road (B430), between Hereford Road and Heyford Road, resulting in a **beneficial impact of moderate significance**.

6.57 Whilst the traffic impact assessment shows that some moderate adverse noise increases would occur, these would be limited to NSRs situated immediately adjacent to roads. There are no NSRs adjacent to the section of Port Way that would experience a significant change in noise level and NSRs on the road between North Aston Road and Water Street are set back from the road edge by at least 10m.

6.58 The greatest change in noise levels are predicted to arise on Camp Road. However, the design of noise sensitive premises adjacent to Camp Road would be considered at the detailed design stage to ensure that future occupants would not be adversely affected by road traffic noise. Therefore, overall, it is considered that noise impacts resulting from changes in traffic flows would be **insignificant** on-Site and **beneficial** and of **minor to moderate significance** off Site.

#### Building Services Plant Noise

6.59 The proposed commercial uses (B1/B2/B8), local centre uses (A1–A5/D1/C3), care facility and primary school may introduce items of plant and equipment, associated with ventilation, heating and cooling. Any items of fixed plant installed as part of the Development would have the potential to generate noise. At this stage, details of the proposed location, nature, type and number of any such plant are unavailable. Therefore, it is considered appropriate to specify suitable limits to which any plant should conform. These limits should include any corrections for acoustic characteristics and account for the location of the nearest NSRs.

6.60 At this stage in the design process, plant specification is sufficiently flexible to ensure that suitably quiet non-tonal plant can be procured and / or mitigation options such as screening (e.g. acoustic louvres) can be investigated as necessary, to ensure that guideline noise criteria are met. However, in the absence of suitable mitigation, fixed plant and mechanical services noise would have the potential to have an **adverse impact of minor significance** upon nearby NSRs.

#### Service and Delivery Noise

6.61 The proposed commercial uses (B1/B2/B8), local centre uses (A1–A5/D1/C3) and care facility could introduce noise from delivery activities within dedicated service yards. The frequency and times of deliveries would be dependent on the end users. It is recommended that a detailed assessment of noise from service yard and delivery activities is carried out at the detailed planning stage to determine the likelihood of disturbance at the nearest NSRs. However, in the absence of mitigation and appropriate noise control measures the service areas associated with the proposed Development would have the potential to give rise to an **adverse impact of moderate significance** upon nearby NSRs.

## Mitigation Measures and Residual Impacts

### Demolition and Construction Phase

- 6.62 Disturbance due to construction can be defined as a temporary nuisance to people in the area that can occur at any time between the start of demolition works and the opening of the Development. In accordance with standard working practices, the principles of the BPM, as defined in the CoPA, would be used to reduce emissions throughout the construction period. This would incorporate the use of measures to control noise that do not unreasonably inhibit the work, and the use of working methods that result in minimum impacts compatible with best working practices.
- 6.63 Noise control measures such as the siting of fixed plant away from the Site boundary, the use of properly silenced plant, and screening / enclosures and hoarding where appropriate, would significantly reduce construction noise. In practice, the degree of noise attenuation due to screening and other measures, such as separation distance and operational times, would likely be greater than 10dB. Further analysis of the potential noise impacts on local receptor locations would be carried out during the Development's detailed design, once more accurate information is available relating to construction methods and plant, so that appropriate controls can be agreed with CDC and implemented in advance of any works.
- 6.64 Appropriate conditions to minimise noise should be imposed on the Contractor as part of their contract requirements, and the Contractor should also be required to liaise with CDC to minimise adverse impacts at all times. An appropriate CCoP should be developed through consultation with CDC. The CCoP would be likely to include the following measures:
- selecting inherently quiet plant;
  - using, where necessary and practicable, enclosures and screens around noisy fixed plant;
  - limiting Site work where possible to daytime hours; and
  - adhering to relevant British Standards.
- 6.65 Provision should also be made for specific noise criteria to be adhered to, where feasible, and for suitable plant and working methods to be agreed with CDC prior to the commencement of any works. On Site noise monitoring should also be carried out if necessary, which would assist in controlling levels at specific receptors. The option would also exist for an application for 'Prior Consent' to be made to CDC under Section 61 of the CoPA. Such an application would provide CDC with the necessary details relating to construction method statements and construction noise impacts, thereby enabling CDC to check that BPM are being used and that the noise controls are acceptable. In authorising an application for prior consent, CDC could apply reasonable conditions where these are considered necessary.
- 6.66 In addition, a Construction Logistics Plan should be developed to minimise the potential impacts from construction traffic. Key controls should include:
- provision made to ensure that the unloading is carried out on-Site rather than on the adjacent roads;
  - construction vehicles should travel via designated routes, which should be agreed with CDC and other relevant authorities; and
  - materials deliveries should be phased and controlled on a 'just-in-time' basis, wherever possible, minimising travel time and traffic congestion around the Site.
- 6.67 The above controls are regularly and successfully applied to large scale construction projects in order to minimise noise impacts on local communities. The application of similar control measures

during the construction of the proposed Development would likewise ensure that the works proceed with the minimum disturbance to sensitive receptors.

- 6.68 Implementation of these mitigation measures would ensure that impacts on existing residential properties are insignificant. However, depending of the phasing of the Development, there is the potential for some **short-term, adverse impacts of minor significance** on new sensitive receptors that have been introduced to the Site.

## Completed Development

### Site Suitability

- 6.69 Given that land adjacent to Camp Road is placed within NEC B and C and existing commercial uses have the potential to adversely affect future residents, mitigation measures may be required for those properties facing directly onto the road or for those close to relevant existing commercial premises. To ensure suitable internal and external noise levels are met, a combination of the following mitigation measures should be considered:
- setting properties back from the commercial buildings;
  - superior glazing (than thermal double glazing) on habitable rooms (living rooms and bedrooms) facing Camp Road / commercial noise sources;
  - orientating buildings so that the gable ends face towards the road / commercial noise sources;
  - locating habitable rooms away from the road / commercial noise sources. For example, rooms less sensitive to noise, such as bathrooms, kitchens and dining rooms should face the adjacent railway line. These would also act as a buffer to habitable rooms; and / or
  - providing an acoustic barrier along Camp Road or the boundaries of the residential areas.
- 6.70 With appropriate design of each building's façade, **insignificant** impacts are predicted for the new residential Development within the Site. All design matters relating to the Development could be dealt with by way of planning conditions.

### Road Traffic Noise

- 6.71 No mitigation for road traffic noise is proposed. Therefore, residual noise impacts resulting from changes in traffic flows would remain **insignificant** on-Site and **beneficial** and of **minor to moderate significance** off Site.

### Building Services Plant Noise

- 6.72 Plant machinery such as generators or compressors should be positioned as far from noise sensitive locations as possible and ideally in naturally screened positions. All plant equipment should be adequately maintained to minimise noise emission.

A suitably worded planning condition is suggested to ensure noise from fixed mechanical plant does not exceed the criteria. The following planning condition is recommended: *"With regards to fixed mechanical and refrigeration plant, development shall not commence until details of the fixed plant serving the development hereby permitted, and any mitigation measures to achieve this condition are submitted to and approved in writing by Cherwell District Council. The level of noise emitted from the fixed mechanical and refrigeration units associated with the site shall not exceed 5dB(A) below the minimum monitored background noise level during either the daytime (23:00 to 07:00) or night-time (23:00 to 07:00) seven days a week. The noise levels shall be determined by*

*measurement or calculation at the nearest noise sensitive premises. The measurements and assessments shall be made according to BS 4142: 1997.”*

- 6.73 A detailed assessment would be carried out at the detailed design stage to ensure the recommended planning condition is met. Therefore, residual impacts from building service plant noise would be **insignificant**.

#### Service and Delivery Noise

- 6.74 A suitably worded planning condition is suggested to ensure noise does not cause disturbance. The following planning condition is recommended:

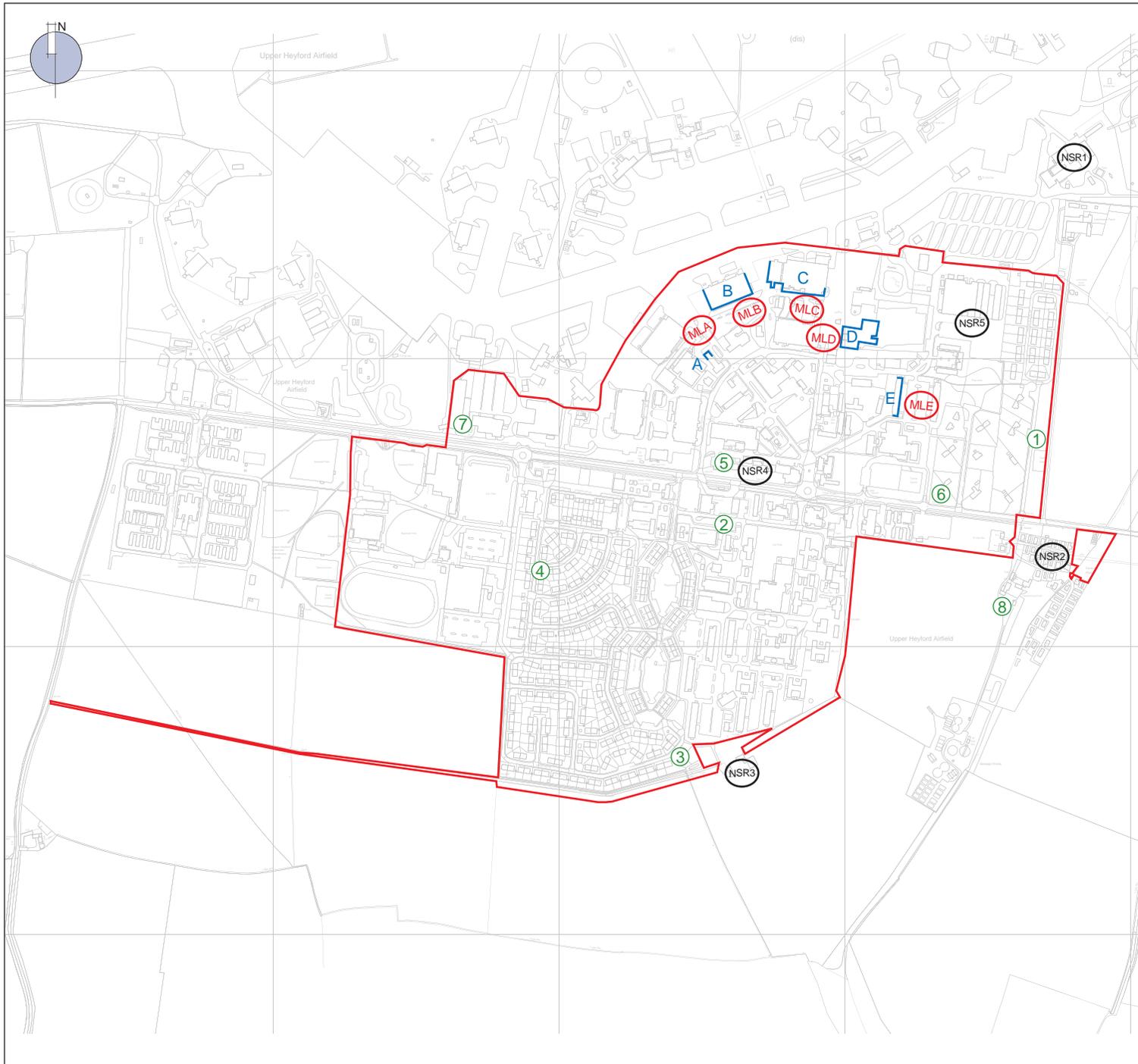
*“Before the development hereby permitted commences a scheme shall be agreed with the local planning authority which specifies the provisions to be made for the control of noise emanating from the site”.*

- 6.75 To minimise the potential for adverse impacts, the following measures should be considered at the detailed design stage:
- where possible, service yards should be located away from NSRs making use of screening from the commercial buildings themselves;
  - where service yards are in line of sight from NSRs, acoustic barriers could be erected to minimised noise;
  - where practicable, loading and unloading should be carried out in fully enclosed bays; and
  - where practicable, deliveries should be scheduled during the daytime only.
- 6.76 Given the adoption of the above mitigation measures secured by an appropriately worded planning condition, residual impacts from service and delivery noise would be **insignificant**.

#### Conclusions

- 6.77 An assessment of the potential noise impacts of the Development has been undertaken. The assessment included a monitoring survey at the Site to measure the existing noise levels and an assessment of the suitability of noise conditions for new residents. The assessment also considered any potential increase in noise resulting from the Development on local existing and future sensitive receptors.
- 6.78 The most sensitive existing receptors to noise near to the Site are residential properties to the northeast, east and south. Within the completed Development, occupants of the new residential units would also be sensitive to noise.
- 6.79 The Site is reasonably typical of quiet rural locations with the existing predominant sources of noise at the Site include road traffic and some noise from existing commercial uses.
- 6.80 Demolition and construction activities would inevitably give rise to some noise impacts to the receptors closest to the Site. However, steps would be taken to minimise noise, which would be implemented through planning conditions and would form part of the code of construction practice. This would include careful selection of modern and quiet plant and machinery, agreed working hours, traffic management measures and monitoring of demolition and construction noise levels.
- 6.81 The majority of the Site is suitable for noise sensitive development such as residential properties and the care facility. However, noise levels are slightly higher adjacent to Camp Road which is also the area affected by noise increases as a result of traffic generated by the Development. Furthermore, without mitigation, the existing commercial uses on the Site would adversely affect the properties that are proposed to be located adjacent to the existing commercial buildings.

However, if appropriate design considerations are given to noise at the detailed design stage, future residents would be unlikely to be affected by existing noise sources. Appropriate design would also ensure that residential and hotel uses within the Development would not be adversely affected by noise from service yards and delivery activities and building service plant noise.



-  Site Boundary
-  Baseline Noise Monitoring Locations
-  Specific Noise Monitoring Locations
-  Existing Noise Sources
-  Noise Sensitive Receptor

Project Details	E10658-103: Upper Heyford
Figure Title	Figure 6.1: Noise Monitoring and Assessment Locations
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