



ENVIRONMENTAL STATEMENT - NOVEMBER 2014

# WOODSTOCK EAST



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**Environmental Statement  
Woodstock East  
November 2014**

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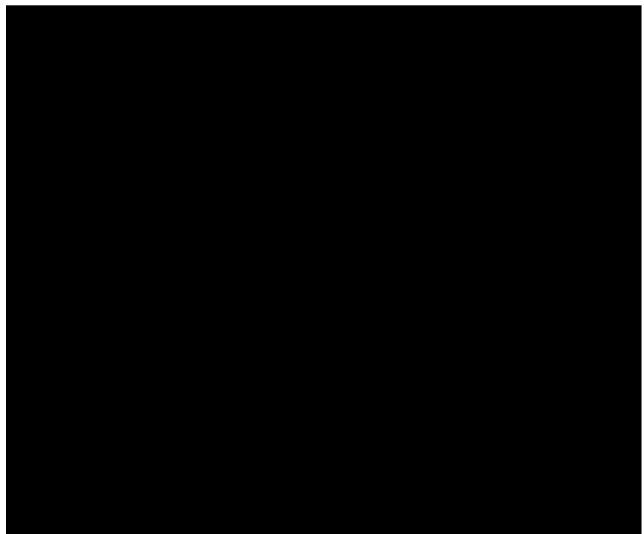
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LEAD CONSULTANT + PLANNING + URBAN DESIGN + ARCHITECTURE + HERITAGE



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FOR

DEVELOPER

Vanbrugh Unit Trust



DEVELOPER



IN CONSULTATION WITH

CONTAMINATION



LANDSCAPE + ARBORICULTURE



TRANSPORT



ECOLOGY



WASTE MANAGEMENT + UTILITIES



CFSH STRATEGY, ENERGY + AIR QUALITY



ARCHAEOLOGY



NOISE



AGRICULTURAL LAND QUALITY



RETAIL, VIABILITY + ECONOMIC



LIGHTING



CONSULTATION



DRAINAGE



CARE VILLAGE DESIGN



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# 1 INTRODUCTION

- 1.1.1 Pye Homes Ltd and the Vanbrugh Unit Trust have submitted a hybrid planning application for a residential led mixed-use development for up to 1,500 homes on land to the south east of Woodstock (now known as Woodstock East).
- 1.1.2 This application is submitted against a background of Government policy and public need to see more homes to meet household demand in a sustainable fashion. The application falls across the boundary of two Oxfordshire District planning authorities: West Oxfordshire and Cherwell. The 2014 Oxfordshire Strategic Housing Market Assessment (SHMA) has identified a need for up to 106,560 homes in Oxfordshire over the period to 2031. Both Districts need to respond to this need.
- 1.1.3 Cherwell is expected to plan for up to 23,800 and West Oxfordshire for up to 13,700, to fulfil their objectively assessed housing need identified by the SHMA.
- 1.1.4 The Oxford and Oxfordshire City Deal, is an ambitious and far reaching economic strategy creating jobs and training opportunities, to secure a strong and robust economic future for Oxfordshire, safeguarding jobs, and improving the standard of living for all Oxfordshire residents.
- 1.1.5 This unprecedented economic growth strategy will have knock on effects for all settlements in Oxfordshire, greater prosperity and job opportunities will enhance people's lives, but barriers such as inadequate infrastructure, land constraints such as the Green Belt and the lack of housing may compromise a successful outcome.
- 1.1.6 The proposed new neighbourhood located outside of the Green Belt, in a location that is easily accessible from the A44 public transport corridor, can deliver much-needed homes in a sustainable manner that will contribute to the economic success of Oxfordshire.
- 1.1.7 Woodstock East can make a significant and sustainable contribution to meeting the urgent identified housing need of the County. The site is situated outside of Oxford Green Belt and outside Oxfordshire's Areas of Outstanding Natural Beauty, yet it is well connected to proposed employment growth on the north side of Oxford, and close to the amenities of Woodstock and the wider area.
- 1.1.8 West Oxfordshire District Council identify Woodstock as a key service centre and is positioned third in West Oxfordshire's Settlement Sustainability Matrix, with only Witney and Carterton being higher. The proposal is of a scale that can make a significant contribution to infrastructure provision to meet the needs of the new population, and support the viability of existing services and facilities in the Town.
- 1.1.9 Development of the Masterplan for the Woodstock East site has been informed particularly by the special qualities of its context sitting as it does, close by to the grounds of Blenheim Palace. All the environmental components of the site and its' context are assessed in detail in this Environmental Statement.

## 2 THE PROPOSALS

### 2.1 Site context

- 2.1.1 The site lies to the south east of Woodstock immediately abutting the residential edge of the town, some 13 kilometres north of Oxford City Centre. It comprises some 74.6 hectares of level but gently sloping agricultural land divided into a series of fields bounded by established hedgerows, and the playing fields of the Marlborough School.
- 2.1.2 The site is bounded by:
- Residential dwellings and school playing fields forming part of Woodstock town on its northwest side
  - Shipton Road and agricultural fields on the north east side
  - The A4095 (Upper Campsfield Road) on the south east, beyond which lies Kidlington/Oxford airport, and;
  - The A44 (Oxford Road) on the south west side beyond which is a caravan club, offices, and Campsfield Wood. Further beyond this are the grounds of Blenheim Palace.
- 2.1.3 Blenheim Palace is designated by UNESCO as a World Heritage site, which taken together with Woodstock town centre, form a particularly important context for the Woodstock East development.
- 2.1.4 Whilst comprising mainly agricultural land, there are notable landscape, heritage, and other features within the site which contribute to its qualities and need to be properly take into account:
- The site contains the buried remains of a Roman Villa, which is designated as a Scheduled Monument,
  - A public footpath runs north south through the site from the adjacent residential estate, across the Caravan Park towards Bladon
  - A complex of historic buildings known as The Pest House is located north of the centre of the site
  - There is an area of Common Land in the south eastern corner of the site
  - Some hedgerows provide ecological habitat
  - Tree copses and hedgerows around much of the site boundaries both have intrinsic value and obscure large areas of the site from their surroundings
- 2.1.5 The Environmental Assessment considers the impacts of the development proposed in the context of these features and all aspects of the site. These features and the findings of this assessment have helped to inform the design of the scheme now proposed.

### 2.2 The development description

- 2.2.1 The development description is:

*Hybrid Planning Application for a mixed-use development comprising: Outline Planning Application for up to 1,500 dwellings, including affordable housing and up to a 150 unit care village (C2) with associated publicly accessible ancillary facilities; site for a new primary school; up to 930sqm of retail space; up to 7,500sqm locally led employment (B1/B2/B8) including link and ride; site for a Football Association step 5 football facility with publicly accessible ancillary facilities; public open space; associated infrastructure, engineering and ancillary works, (all matters reserved except for means of access to the development); and Full planning application for the development of Phase 1 at the south western corner of the site for the erection of 29 residential dwellings (29 of the 1,500 described above) with associated open space, parking and landscaping; with vehicular access provided from Upper Campsfield Road (A4095), Shipton Road and Oxford Road (A44).*

## 2.3 Details of the proposals

2.3.1 The housing make up based on proposals for up to 1,500 homes, and in relation to the Oxfordshire Strategic Housing Market Assessment (SHMA) is shown in table 2.3.1 below.

	Open Market	Affordable	Total	Care Village
<b>1 bedroom flat</b>	0	148 (11%)	148 (11%)	28 (18.7%)
<b>2 bedroom flat</b>	0	88 (6.5%)	88(6.5%)	94 (62.6%)
<b>2 bedroom house</b>	130 (9.6%)	88 (6.5%)	218 (16.1%)	0
<b>3 bedroom house</b>	410 (30.4%)	176 (13%)	586 (43.4%)	28 (18.7%)
<b>4 bedroom house</b>	270 (20%)	40 (3%)	310 (23%)	0
<b>Total</b>	810 (60%)	540 (40%)	1,350 (100%)	150 (100%)

Table 2.3.1 Housing make up in accordance with Oxfordshire SHMA

2.3.2 The level of affordable housing proposed is higher than that required by Cherwell District Council, but takes account of the variable but generally higher levels sought by West Oxfordshire.

2.3.3 The development will be constructed in phases and be designed to protect, respect and make use of the natural assets and cultural heritage of the site and its surroundings.

2.3.4 The first phases of development will take place in the south western corner of the site. The level of affordable housing proposed is higher than that required by Cherwell District Council, but takes account of the variable but generally higher levels sought by West Oxfordshire.

2.3.5 The housing and other uses have been designed around key features of the site. The site of a buried Roman Villa, which is a Scheduled Monument will form one of the key open spaces around which dwellings, including the care village will sit. At the heart of the development will be the local centre. There will be both indoor and outdoor public spaces including the school and its playing fields and the new football pitch and ATP as well as other indoor community space.

2.3.6 The site is bounded by substantial mature trees and hedgerows. These will be maintained together with new structural planting so that the overall visual quality of the main approach to Woodstock along the A44 is enhanced. General views into the site are limited but those most especially for neighbours nearby will be addressed with care.

2.3.7 The connections of the new development with the existing town and with Oxford and key centres of employment are most important. Social and community infrastructure has been proposed to complement and strengthen the viability of the present services and facilities that Woodstock offers for its local residents. Public transport improvements are proposed to strengthen Woodstock's already good connections with Oxford. A new link and ride facility is intended to help ease present parking difficulties in Woodstock by freeing town car parking from commuters.

2.3.8 The following plans have been submitted with the application to detail the proposals:

- Land use parameter plan (P300)
- Movement parameter plan (P400)
- Building Heights parameter plan (P500)

- Densities parameter plan (P600)
- Illustrative Masterplan (P700)

## **2.4 Construction Phase**

- 2.4.1 Construction will take place in phases over a period of some 15-20 years. Construction will involve new access points onto the surrounding highway network including numerous footpath connections. It will involve provision of new utility services and connection with existing networks. An illustrative phasing plan has been submitted with this application.
- 2.4.2 The Environmental Assessment addresses the likely environmental impacts that could arise during the construction phase of the development, taking into account matters such as noise, dust, utilities and highway disturbance. Each technical chapter of this Environmental Statement addresses the construction phase of development where it will have a potential impact on the environment over that period.

### 3 APPROACH TO THE ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

#### 3.1 EIA Regulations

- 3.1.1 The Environmental Impact Assessment Regulations 2011 set out the types of development for which an EIA must always be prepared (Schedule 1 development) and other types of development where an EIA is required where the particular proposal is likely to give rise to significant environmental effects (Schedule 2).
- 3.1.2 The proposed development falls within category 10(b) of Schedule 2 of the Town & Country Planning (Environmental Impact Assessment) Regulations 2011, which relates to 'urban development projects.' For projects that fall within Schedule 2, EIA is only required if the project is likely to have significant environmental effects.
- 3.1.3 Government advice in paragraph A19 of Annex A of Circular 02/99 is that:
- 'Development proposed for sites which have not previously been intensively developed are more likely to require EIA if:*
- *The site area for the scheme is more than 5 hectares, or*
  - *It would provide a total of more than 10,000m of new commercial floor space, or*
  - *The development would have significant urbanising effects in a previously non-urbanised area (e.g. a new development of more than 1,000 dwellings)'*
- 3.1.4 In this case as the site area substantially exceeds 5 hectare and the proposal includes up to 1,500 dwellings on previously undeveloped land, where significant environmental effects could potentially occur, the applicant accepts that an EIA is required.
- 3.1.5 As a consequence, formal scoping requests were made to West Oxfordshire (WODC) and Cherwell (CDC) Districts in August 2014. These requests were accompanied by an EIA Scoping Report prepared by West Waddy ADP (report provided at Appendix 1 of this Section). In preparing their responses, the District Councils sought the views of a number of agencies and organisations before responding (these responses can be found in Appendix 3 of this Section). The District Council Scoping opinion responses are provided at Appendix 2 of this Section.
- 3.1.6 As one would expect, scoping the impact of a development of this size gives rise to a considerable range of responses across many subjects. The formal Scoping responses provided by both District Councils have been carefully considered in preparing this Environmental Statement. The aim has been to provide an assessment document that is proportionate to the importance of the potential impacts, and responsive to those matters of importance both to statutory consultees and to local representatives.
- 3.1.7 Informed by these responses, this Environmental Statement has been prepared in accordance with the requirements of the Town and Country Planning (Environmental Impact Assessment) Regulations 2011. A table demonstrating how the issues raised at the Scoping stage have been addressed by the Environmental Impact Assessment, has been produced (see Appendix 4 of this Section).
- 3.1.8 A separate Non-Technical Summary of the Environmental Statement has been provided in accordance with the EIA Regulations.

#### 3.2 Methodology

- 3.2.1 This Environmental Statement has been prepared in accordance with the Environmental Impact Assessment Regulations and Good Practice Guidance in relation to each of the topics assessed. It assesses the likely significant environmental effects of the planning application for the development here described. This includes the effects of the development in the context of the site and its' surroundings, it takes account of potential cumulative effects of other committed development in Woodstock and also considers a 'do nothing' scenario (i.e. no new development in Woodstock).

### 3.3 Alternatives

- 3.3.1 EIA Regulations (6.1 Schedule 4, paragraph 1(2)) require an Environmental Statement to contain an “outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for the choice made, taking into account the environmental effects”. The question of which alternatives should be studied is for the applicant to decide. The alternative that has been considered in this Environmental Statement is providing no development on the site at Woodstock East.
- 3.3.2 The applicant does not have options relating to sufficient other areas of developable land to provide the proposed level of development and so would not be able to provide an equivalent scheme on another site or combination of sites within the vicinity.
- 3.3.3 A development of the scale proposed for Woodstock East is unlikely to be achievable elsewhere in the vicinity of Woodstock either as single development, or as a series of smaller developments. The alternative option to Woodstock East to consider in this assessment therefore is a ‘no development’ scenario.

### 3.4 Plans and Policies

- 3.4.1 Planning applications should be decided in accordance with the Development Plan unless material considerations indicate otherwise.
- 3.4.2 The Development Plan for the site consists of the Saved Policies of the West Oxfordshire District Local Plan 2011 and the Saved Policies of the Cherwell Local Plan 1996.
- 3.4.3 The Government’s more recently published National Planning Policy Framework carries significant weight in the determination of planning proposals; and there are also a number of District level policy documents that are material to various aspects of this development.
- 3.4.4 Planning policy has therefore been individually addressed within each chapter of the Environmental Statement.

## APPENDICES

- Appendix 1: EIA Scoping Report
- Appendix 2: EIA Scoping Responses – Cherwell and WODC
- Appendix 3: EIA Scoping Responses – Consultees
- Appendix 3: Table of Environmental Impact Assessment Scoping responses from West Oxfordshire and Cherwell District Councils

## 4 COMMUNITY, ECONOMIC AND RETAIL

### 4.1 Community Impacts

#### INTRODUCTION

- 4.1.1 This report addresses the social and community impacts of the proposed new residential development known as Woodstock East.
- 4.1.2 A mixed-use development is proposed to include up to 1,500 dwellings, of which up to 150 dwellings will take the form of a care village, 40% of the remaining dwellings will be 'affordable' and 60% will be market housing. This together with the provision of new social and community facilities, such as a new primary school and relocated football club ground, will have a considerable impact on the social fabric of Woodstock.
- 4.1.3 The site is located immediately to the south east of the town, it falls part within West Oxfordshire but mostly within Cherwell District Council administrative areas. At its' nearest point, the site lies about a kilometre south east of the centre of the town. A good bus service next to the site runs from Oxford through the centre of Woodstock and beyond to Charlbury and Chipping Norton. There is good, level, access to the town on foot and bicycle, which makes the site relatively easy to reach without reliance on the car.
- 4.1.4 Woodstock has a population of some 3,000 people with a rural hinterland that relies on the town for daily local services.
- 4.1.5 The extent of reliance of surrounding parishes on Woodstock varies from service to service. For instance many of the surrounding parishes have primary schools, some have a local shop, but most do not have a health centre or a fire station. Kidlington is the exception because of its comparatively large population (13,000 people) that is supported by its own full range of services and facilities.
- 4.1.6 For this reason, a socio economic profile has been provided of the town and it's immediately adjacent parishes (Bladon, Shipton on Cherwell with Thrupp, and Wootton by Woodstock) as context. Kidlington is not included – for the reason described above, nor is Blenheim Civil Parish – since no statistics are available due to its very small resident population.
- 4.1.7 In some instances a wider study area is referred to in relation to particular service provision, in order to reflect the way any particular service is used, and to better inform the impact that the new development might have.

#### METHODOLOGY

- 4.1.8 This chapter considers the potential impact of the development on the social and community services and facilities of the town. The format of the study is as follows:
- Relevant national and local planning and other policy and material considerations are identified
  - The study analyses the social make-up of the population of Woodstock and its adjacent parishes. This includes examination of employment, deprivation, housing, education, health care and recreation
  - It looks at the range of services and facilities that are presently available, and the adequacy of those facilities. It goes on to identify any spare capacity and any current shortfalls in facilities, taking other planned and consented development into account
  - It assesses the requirements that the new population will be likely to generate for service provision



- It identifies the additional community services and infrastructure that should be provided to meet the needs of the new population taking account of the existing facilities that are available to the town
  - The Assessment identifies the positive and negative effects of the development both before and after the provision of mitigation measures (new facilities and services)
- 4.1.9 The planning application proposal is for a development of up to 1,500 dwellings. This report assesses the impacts of development based on an assumption that there would be 1,500 dwellings of which up to 150 would be in the form of a Care Village, and 40% of the remaining 1,350 dwellings would be affordable.
- 4.1.10 A schedule of facilities, their capacity/suitability, and impact of new development is set out in Annexe A and referred to and supported by the text of Section titled 'Assessment of the Requirements of the Projected Population' of this report.
- 4.1.11 This section seeks to identify and quantify the positive and negative effects of the development on community infrastructure and service provision. The approach used to measure the effects is described in that section.
- 4.1.12 The assessment provided in this chapter has been compiled primarily by means of a desk-based study and has not relied on significant fieldwork. The sources and references for the base data used are listed in the last section of this chapter.

## PLANNING AND POLICY CONTEXT

- 4.1.13 The following plans set the planning and policy scene for social and community impacts:
- National Planning Policy Framework
  - Oxfordshire 2030
  - West Oxfordshire District Local Plan
  - Cherwell District Local Plan
  - Cherwell and West Oxfordshire District Planning Obligations Supplementary Planning Guidance/Infrastructure Delivery Plans
- 4.1.14 Planning applications should be decided in accordance with the Development Plan unless material considerations indicate otherwise. The Development Plan comprises the 'saved policies' of the adopted Cherwell and West Oxfordshire District Local Plans. Other documents referred to are material considerations.
- 4.1.15 The National Planning Policy Framework identifies three dimensions to sustainable development: economic, social and environmental, which should be sought jointly and simultaneously through the planning system. With regard to the social role it states (paragraph 7) that this involves:
- 'supporting strong, vibrant and healthy communities, by providing the supply of housing required to meet the needs of present and future generations; and by creating a high quality built environment, with accessible local services that reflect the community's needs and support its health, social and cultural well-being.'*
- 4.1.16 Advice is provided in the chapter entitled 'Promoting healthy communities. It says at paragraph 69 that planning decisions should aim to achieve places that:
- 'promote opportunities for meetings between members of the community who might not otherwise come into contact with each other, including through mixed use developments, strong neighbourhood centres and active streets'*
- 4.1.17 To deliver the social, recreational and cultural facilities and services the community needs, paragraph 70 says that:
- 'planning policies and decisions should:*

- *Plan positively for the provision and use of shared space, community facilities (such as shops, meeting places, sports venues, cultural buildings, public houses and places of worship) and other local services to enhance the sustainability of communities and residential environments;*
- *Guard against the unnecessary loss of valued facilities and services, particularly where this would reduce the community's ability to meet its day to day needs;*
- *Ensure that established shops, facilities and services are able to develop and modernise in a way that is sustainable, and retained for the benefit of the community; and*
- *Ensure an integrated approach to considering the location of housing, economic uses and community facilities and services'*

4.1.18 The NPPF indicates that Government attaches great importance to ensuring that a sufficient choice of school places is available to meet the needs of existing and new communities. It says (paragraph 72) that local planning authorities should take a proactive, positive and collaborative approach and:

- *'give great weight to the need to create, expand or alter schools; and*
- *Work with schools promoters to identify and resolve key planning issues before applications are submitted.'*

4.1.19 The Framework advises (paragraph 73) that 'access to high quality open spaces and opportunities for sport and recreation can make an important contribution to the health and well-being of communities.'

### **Oxfordshire 2030**

4.1.20 Oxfordshire 2030 is the County Council's overarching strategic partnership plan for the future of Oxfordshire. It contains four priorities for the County:

- World Class Economy
- Healthy and Thriving Communities
- Environment and Climate Change, and
- Reducing inequalities and breaking the Cycle of Deprivation

4.1.21 In respect of the healthy and thriving communities component, there is a series of pledges which include working with the local community, tackling crime and anti-social behaviour, preventing extreme behaviour that threatens public wellbeing, achieving healthy and positive old age, giving opportunity for children to get a good start in life, improving opportunities for independent living, promoting healthy lifestyles, protecting access to local services and reducing the gap between the best and worst off.

### **West Oxfordshire District Local Plan 2011**

4.1.22 Relevant Development Plan policy for West Oxfordshire is provided by saved policy BE1 of the West Oxfordshire Local Plan 2011:

*'Development will not be permitted unless appropriate supporting transport, service and community infrastructure is available or will be provided and appropriate provision has been made to safeguard the local environment. Contributions will be sought from developers and landowners in accordance with Government advice.'*

4.1.23 The West Oxfordshire Draft Local Plan October 2012 provides the latest emerging local plan policy (though this plan is at present on hold) Core Policy C15 states:

*'Where necessary and viable, development will be required to deliver, or contribute towards the provision of appropriate supporting infrastructure'*

***Cherwell District Local Plan***

- 4.1.24 There is no specific community infrastructure delivery policy in the Adopted Cherwell District Local Plan 1996. That plan referred to and relied upon a general policy of the Oxfordshire Structure Plan of the time, which is no longer extant.
- 4.1.25 In 2004 the District Council approved its' Non-Statutory Cherwell Local Plan 2011 for the purpose of planning application decision making. This plan includes Policy OA1, which requires that:
- 'Before proposals for new development are permitted the council will need to be satisfied that any education, library, or other community services and facilities required as a consequence of that development will be provided.'*
- 4.1.26 The principle of infrastructure provision to support new development remains constant through the emergence of new development plan policy.
- 4.1.27 The Draft Cherwell Local Plan as submitted to the Secretary of State in January 2014 contained a series of policies covering education, health and wellbeing, public services and utilities, open space, indoor and outdoor recreation and green infrastructure, all of which seek to secure the necessary infrastructure to mitigate the impact of new development and achieve cohesion with existing communities.
- 4.1.28 In June of this year the examination hearings into this Plan were suspended for six months to enable the Council to put forward proposed modifications to the plan involving increased new housing delivery over the plan period to meet the full, up to date, objectively assessed, needs of the district, based on the Oxfordshire Strategic Housing Market Assessment 2014 (SHMA). Those modifications have now been published for consultation. The latest relevant policies from this plan relating to infrastructure provision are set out in Annexe B.
- 4.1.29 In summary, the emphasis of policy (including both adopted and emerging district local plans) is to achieve and support strong and vibrant communities with accessible facilities. New development needs to include appropriate, viable, supporting infrastructure which supports and complements existing local services.

***Infrastructure Delivery Plans/Planning Obligations Guidance***

- 4.1.30 Both District Councils have produced draft documents which seek to assess infrastructure requirements to accompany their main local plan strategies for new development. These are titled:
- West Oxfordshire Infrastructure Delivery Plan June 2014 Update
  - Cherwell District Planning Obligations Draft Supplementary Planning Document, July 2011
- 4.1.31 The West Oxfordshire document seeks to identify the infrastructure that is needed to support growth in the District. It concentrates mainly on Witney, Carterton and Chipping Norton, though it does identify some specific matters to be addressed at Woodstock. The Cherwell document referred to sets out standards for provision of infrastructure to support new development in general. Whilst this plan does not specifically cover Woodstock (because it is part of West Oxfordshire), the standards it advises can be applied to the development proposed at Woodstock East.
- 4.1.32 Both documents are referred to in the subsequent sections of this report, and used to inform the infrastructure schedule at Annexe A.

## ASSESSMENT OF THE SOCIOECONOMIC MAKE-UP OF THE POPULATION OF WOODSTOCK AND ITS ADJACENT PARISHES

### Demographics

- 4.1.33 There are 1,418 households in Woodstock occupied by 3,046 residents (2011 Census). Of those residents, 14% are aged 75 and over compared to 8.7% in West Oxfordshire District as a whole, and 26% are aged over 65 compared to 18.4% for the District.
- 4.1.34 The over 65 age group forms the highest proportion of people in the town. An ageing population is a concern for West Oxfordshire that is emphasised by the position in Woodstock; the West Oxfordshire Shaping Futures Strategy projects the number of people over 75 to increase by 70% to 2026.
- 4.1.35 The proportion of people in Woodstock aged under 16 is 17% compared to 18.6% for West Oxfordshire District. This figure is projected to decline and this is reflected by the ageing population figures.
- 4.1.36 The Table below shows the population of Woodstock and the surrounding parishes that most directly rely upon the town.

Area	Population	Households	Average household size	Aged under 16	16-74	Aged 75+
Woodstock	3,046	1418	2.15	510 17%	2111 69%	425 14%
Bladon	898	377	2.38	190 21%	641 71.5%	67 7.5%
Shipton/Thrupp	493	185	2.66	124 25%	359 73%	10 2%
Wootton	569	244	2.33	109 19%	406 71.5%	54 9.5%
Cherwell District	141,868	56,728	2.45	28,446 20%	103,269 73%	10,153 7%
West Oxfordshire District	104,779	43,241	2.37	19,467 18.6%	76,163 72.7%	9,149 8.7%

Table 4.1.1: Demography of Woodstock and surrounding Parishes (Source 2011 UK Census)

### Sustainability

- 4.1.37 West Oxfordshire District Council has assessed Woodstock as being a Category C (most sustainable) settlement, in its Local Plan evidence base document 'Settlement Sustainability Report' (December 2013). Woodstock provides local people with good access to a range of local shops, services and facilities together with a wider range of pubs and restaurants, probably in part because of the tourist trade generated by Blenheim Palace. The retail position is examined in detail in a separate retail

Assessment. There is good access to Oxford and also to the countryside by bicycle, on foot via public rights of way, and by car.

### **Deprivation**

4.1.38 The census measures deprivation based on four selected household characteristics: employment, education, health and disability, and housing. In Woodstock, 54.8% of households do not meet any of the criteria for deprivation (i.e. are not deprived), and 31.9% fall into one of the deprivation criteria. This compares with 53.8% of households not falling within the deprivation criteria in West Oxfordshire, 50% in Cherwell and 42.5% in England overall. Households in Woodstock therefore suffer below average deprivation in comparison with the English average.

### **Work patterns**

- 4.1.39 The Census indicates that 1,588 (75%) of Woodstock's 2,111 16-74 year olds are in employment and 37 (1.75%) are unemployed. 10% of the employed population of Woodstock works from home.
- 4.1.40 12.5% of the working population walk to work, 4% travel by bicycle and 12.5% use public transport. 61% travel to work by car (either driving or as a passenger).
- 4.1.41 This adjusts when Woodstock is combined with its surrounding areas; to 10% working from home, 8% walking, 3.5% travelling by bicycle and 11% by public transport; with 67.5% of journeys to work made by car.
- 4.1.42 Despite a relatively good bus service particularly to and from Oxford, the majority of journeys to work in Woodstock and the surrounding parishes are made by private car.
- 4.1.43 Employment characteristics and statistics are addressed in more detail in the Economic Assessment chapter.

### **Educational Attainment**

4.1.44 Woodstock and the Parishes considered have a below District average number of people without any qualifications, except for Shipton with Thrupp, and a significantly above average number with degree level qualifications. There are 108 full time students in Woodstock aged 16 and over.

Area	Population	No Qualifications	As a %	Degree	As a %
Woodstock	3,042	405	13%	1,134	37%
Bladon	898	97	11%	334	37%
Shipton/Thrupp	493	58	12%	117	24%
Wootton	569	65	11%	212	37%
Total/Average	5,002	625	12.5%	1,797	36%
Cherwell	138,916	22,331	16%	31,830	23%
West Oxfordshire	102,415	15,054	15%	28,076	27%

*Table 4.1.2: Educational Attainment in Woodstock and surrounding Parishes (Source: 2011 UK Census)*

### **Health**

4.1.45 As part of the Census, people were asked to assess whether their health was very good, good, fair, bad or very bad. The Census records that 51% of people in Woodstock

consider themselves to be in very good health compared to 47% of the population in England.

- 4.1.46 Considered together with surrounding parishes, 49% of the population is considered to be in very good health, with only 0.8% considered to be in very bad health. In general, people living in the area are marginally healthier than elsewhere.

### Housing

- 4.1.47 The housing stock in Woodstock and its' surrounding parishes is in generally good condition. The table below shows that home ownership rates are close to the District averages of 71%, though there are a number of deviations from the averages of private and socially rented homes within each administrative area.

Area	Home owners	Social rented	Private rented	Shared ownership	Population
<b>Woodstock</b>	2,188 = 72%	291 = 10%	491 = 16%	37 = 1%	3,046
<b>Bladon</b>	623 = 69%	56 = 6%	193 = 21%	0	898
<b>Shipton/Thrupp</b>	313 = 63%	114 = 23%	25 = 5%	37 = 8%	493
<b>Wootton</b>	387 = 68%	83 = 15%	86 = 15%	1 = 0%	569
<b>Total/Average</b>	3,511 = 71%	544 = 11%	795 = 16%	75 = 1.5%	5,006
<b>Cherwell</b>	97,849 = 71%	16,323 = 12%	21,937 = 16%	965 = 1%	138,916
<b>West Oxon</b>	72,105 = 71%	15,056 = 15%	12,443 = 12%	1,340 = 1%	102,415

Table 4.1.3 Tenure in Woodstock and surrounding Parishes (Source: 2011 UK Census (Note: People living rent free not here recorded))

- 4.1.48 The West Oxfordshire District Housing Needs Assessment Update Report 2011 shows that residential property prices are above the District average for smaller dwellings. It indicates that monthly rental values range from £625 for a 1 bedroom flat to £875 for a 2 bedroomed semi-detached home in Woodstock; and £600 for a 1 bedroom flat - £974 for a 3 bedroomed semi-detached home is average for West Oxfordshire. See the Table below.

2011	1 bed flat	2 bed flat	2 bed terraced	3 bed terraced	2 bed semi detached	3 bed semi detached
Woodstock housing area	£147,000	£160,000	£250,000	£200,000	N/A	£230,000
District average	£115,000	£142,000	£175,000	£220,000	£175,000	£220,000

Table 4.1.4: Housing prices in Woodstock (Source: West Oxfordshire Housing Needs Assessment Update 2011)

- 4.1.49 The 2011 Census also records 54 people in Woodstock living in managed and supervised accommodation for older people and 311 people providing unpaid care (ranging from 1-50+ hours per week). The Housing Needs Assessment identifies an aging population across West Oxfordshire with large growth in the 65+, 75+ and 85+ groups, this reflected by a high level of demand for accommodation for older people.

## BASELINE SERVICE POSITION

- 4.1.50 This section identifies the range and extent of services presently available to the local community. Where the information is available it indicates whether or not a facility is at, above or below capacity.
- 4.1.51 The extent of residential development that has taken place since 2011 Census will affect that capacity. New development is set out in the Table below together with its' quantitative impact on households and population.

Base year	Sites	Households	Population
Census year 27/03/2011		1,418	3,046
Dwellings completed 01/04/11 – 01/04/14	<ul style="list-style-type: none"> <li>• Youngs Garage (33)</li> <li>• Hensington Farm (16)</li> <li>• E of Marlborough School (27)</li> </ul>	76	x 2.37 =180
Dwellings planned/still to be completed 01/09/14	<ul style="list-style-type: none"> <li>• 9 Shipton Road (7)</li> <li>• Pye Shipton Road (58)</li> </ul>	65	x 2.37 = 154
Total population		1,418+141=1,559	3,046+334 = 3,380

*Table 4.1.5: New Development in West Oxfordshire (Source: West Oxfordshire District Annual Monitoring Report 2012)*

- 4.1.52 Annexe A to this Assessment provides a schedule covering all the services here discussed. It provides a summary of the service/facility, present capacities (where available) together with the cumulative impact of Woodstock East and other planned and recent development in Woodstock from the table above. Existing provision for each service is described below.

### **Health Care**

#### Doctor's Surgeries

- 4.1.53 There is a doctor's surgery in Woodstock. This surgery serves some 9,278 patients. It is currently accepting new patients although operating below the national average standard. The accommodation is also of a sub-standard quality. The West Oxfordshire Infrastructure Delivery Plan recognises a need to relocate the Doctor's surgery into a new building.
- 4.1.54 Elsewhere there are surgeries at Long Hanborough, Yarnton, and three in Kidlington all of which are accepting new patients. The surgeries in Long Hanborough, Yarnton and Kidlington are all about 3 miles distant from the Site. The Table below lists surgeries and their capacities.

Doctor's Surgeries	Accepting new patients	No of GPs	No of Patients	Spare capacity assuming 1,838 per doctor (National average – CDC SPD)
Woodstock	Yes	5	9,278	-88
Long Hanborough Surgery + Eynsham Medical Centre	Yes	10	13,603	4,777
Yarnton Medical Practice + Kidlington Medical Practice	Yes	6	7,858	3,170
Exeter Surgery Kidlington	Yes	3	4,470	1,044
Gosford Hill Medical Centre	Yes	6	6,914	4,114

Table 4.1.6: Doctor's Surgeries (Source NHS Choices)

#### Dental Practices

4.1.55 Woodstock has its own dental practice in Union Street. This practice is presently accepting new NHS child patients but not adults.

4.1.56 Nearby there are surgeries at Long Hanborough and Kidlington that are accepting new patients. See table 4.1.7 below.

Dentist Surgeries	Dentists	Accepting new patients	Comments
Woodstock Dental Practice	3	0-18yr old NHS patients	
Ratti Ashok, Long Hanborough	3	Fee and non-fee paying adults and under 18yr olds	
The Brace Place, Kidlington	2 Orthodontists	NHS for under 18s, Private treatment for adults	
Kidlington Health Centre	0		Out of Hours Emergency Service only
ADP Kidlington	4	NHS under 18 year olds fee paying and exempt adults	

Table 4.1.7: Dentist Surgeries (Source NHS Choices)

#### Hospitals

4.1.57 The nearest hospitals to Woodstock are the Community Hospitals at Witney, Bicester and Chipping Norton; and the main hospitals in Oxford: John Radcliffe, and specialist Nuffield, Warnford and Churchill hospitals.

#### Education

##### Primary Schools

4.1.58 Present primary school capacities shown in Oxfordshire County Council's Pupil Placement Plan within the Woodstock educational catchment area are as shown in the table below.



## Section 4.1 Community Impacts (West Waddy ADP)

School	Capacity	Roll	Admission No.	Nursery	Temp spaces	Spare capacity
Bladon CE	84	81	12	0	0	3
Bletchingdon Parochial	70	69	10	0	0	1
Combe CE	105	108	15	0	0	-3
Kirtlington CE	105	98	15	0	0	7
Stonesfield	180	134	30	0	0	46
Tackley CE	120	123	20	0	30	-3
William Fletcher (Yarnton)	280	210	40	0	0	70
Woodstock CE	240	248	45	26	0	-8
Wootton CE	70	65	65	0	0	5
<b>Totals</b>						<b>118 places</b>

*Table 4.1.8: Primary School capacity (Source: Oxfordshire Pupil Place Plan 2014-18, July 2014)*

4.1.59 Schools in the Woodstock education catchment including Woodstock CE are essentially full, save for those at Stonesfield (5 miles distant) and Yarnton (2.5 miles distant) both of which have some significant spare capacity. The West Oxfordshire Infrastructure Delivery Plan identifies a need to implement what is described as a 'Phase 2 expansion' of the school.

4.1.60 Only Woodstock CE primary school has nursery provision.

### Secondary Schools

4.1.61 Woodstock has one secondary school that provides education for 11-18 year olds including 6<sup>th</sup> form for the town and a wider rural area. It converted to an Academy in 2012 and specialises in Business and Enterprise. It was rated as 'Good' by Ofsted in 2014.

4.1.62 Present secondary school capacity at Marlborough CE School is shown in table 4.1.9 below together with forecast demand.

Secondary Schools	Age range	Admissions No	Capacity	Pupil numbers October 2013	Forecast demand 2018/19	Forecast Spare Capacity 2018/19
Marlborough CoE	11-18	180	1138	1048	1055	83

*Table 4.1.9: Secondary School capacity (Source: Oxfordshire Pupil Place Plan 2014-18, July 2014)*

4.1.63 The forecast capacity takes account of the Woodstock Partnership which includes the primary schools at: Bladon, Bletchingdon, Combe, Kirtlington, Stonesfield, Yarnton, Woodstock and Wootton. It also takes account of recently completed residential developments in Woodstock at Youngs Garage and Land East of Marlborough School.

4.1.64 The West Oxfordshire Infrastructure Delivery Plan identifies a need for enhanced changing facilities and improvements to science facilities described as 'the Marlborough Science Project'.

### Special Education Needs

4.1.65 None of the primary schools in the Woodstock catchment area provide for special education needs. The nearest Special Education Needs Primary School is Springfield School in Witney. Forecast demand exceeds school capacity. Marlborough CE

Secondary School has a resource unit physical disability, speech, language and communication and autistic spectrum disorder special needs.

#### Adult Learning Centres

- 4.1.66 The West Oxfordshire District Infrastructure Delivery Plan (June 2014 Update) advises that Adult learning centres are situated in Carterton and Chipping Norton with provision in Burford, Charlbury, Eynsham and Witney.
- 4.1.67 Marlborough School offers a range of community education courses and workshops.

#### **Community and Cultural facilities**

##### Library

- 4.1.68 Woodstock has its own library located close to the centre of the town in Hensington Road.
- 4.1.69 The adopted County standard for library provision is that there should be provision of 23m<sup>2</sup> of public space per 1,000 people plus administrative space. It is estimated that the present public space at the library is of the order of 150m<sup>2</sup>. The present library meets or slightly exceeds this standard for the catchment of Woodstock and immediately surrounding parishes (About 5,000 people).

##### Youth Centre

- 4.1.70 Woodstock has a youth centre and a scout and guide hall. The youth centre is located next to the football club ground off New Road. It is in a very poor state of repair. The scout and guide hall is situated in Union Street close to the main town car park.

##### Community Centres

- 4.1.71 There are a number of indoor community spaces available in Woodstock. These include Woodstock Town Hall and the Town Council Community Centre (New Road), the Masonic Hall in New Road and Woodstock Social Club in Oxford Street.

##### Children's Centres

- 4.1.72 Children's centres are one-stop shops for all young children (aged 0-5) and their parents and carers. The nearest centres are at Eynsham and Kidlington, but Marlborough School provides a local outreach facility offering some services locally.
- 4.1.73 A typical children's centre will serve the needs of 800 children under the age of 5 and their families. These centres provide a variety of activities, adult learning, parenting courses and drop-ins for families with children under 5. In addition they offer health visitor clinics, sessions for specialist groups and 'Saturdays' for male carers.

##### Day Care/Day Centres

- 4.1.74 Woodstock has a number of homes specifically for older people some of which have warden support. The Town does not have a Health and Wellbeing Centre (centres which support adults with physical disabilities including older frail adults) – the nearest of which is at Bicester; nor does it have a Day Centre – the nearest of which is in Kidlington (Source: carehome.co.uk. – Adult Day Centres in Oxfordshire).

##### Oxfordshire County Museum

- 4.1.75 The County Museum is located in the Town. It contains a dinosaur garden and exhibit/show space. The newly completed Soldiers of Oxfordshire Museum is within its grounds.

Cemetery

- 4.1.76 There is a cemetery on the edge of the Town off Green Lane. The Cemetery is the responsibility of the Town Council. There are some plots remaining.

Other services and facilities found within Woodstock:

- 4.1.77 Woodstock has a Chiropractic clinic, veterinary practice and cattery.

**Recreation and Leisure**Formal recreational Facilities

- 4.1.78 Woodstock has a public open air swimming pool (summertime only, located next to Marlborough School) and a tennis and bowls club (located close to the Town Centre, accessed via Cadogan Park). It has a football club (Old Woodstock Town Football Club). The Old Woodstock Town football ground has poor facilities – inadequate changing rooms and lacks floodlights - and this threatens the club's position in the Hellenic League.
- 4.1.79 The Town has community centre space for recreation (e.g. Town Council Community Centre) and Marlborough School also provides exercise classes. There is a membership Gym at Oxford Airport (VIDA Health and Fitness). Otherwise, the nearest public indoor leisure centre is at Kidlington: Kidlington and Gosford Sports Centre provides an indoor swimming pool, gym, multi-purpose sports hall, squash/racket ball.

Informal Open Space

- 4.1.80 Woodstock has an informal playing field next to the town football ground and a 5 a side pitch at Rosamund Drive. It has 3 children's play areas, at Rosamund Drive, New Road and Budds Close; these are undergoing updating and improvement.
- 4.1.81 Both the West Oxfordshire Open Space Study 2013 and the West Oxfordshire Playing Pitch Strategy 2014 focus on Witney, Carterton and Chipping Norton, so neither quantifies or assesses the standard of provision at Woodstock. However, the officer report on the Shipton Road Pye Homes development (Uplands Area Planning Sub-Committee, 6 May 2014 Application No: 13/0982/P/FP) indicates that there is some 6ha of parks and recreation grounds, serving a population of 3,100 people, which provides an above standard level of public open space/playing pitches against the requirement for 1.25 ha per 1,000 people identified in the WODC Playing Pitch study.
- 4.1.82 The town has an allotment ground off Green Lane. It is well used and there are few vacant plots.
- 4.1.83 The Town Council would like a skateboard park for the Town; this is identified as a need in the West Oxfordshire Infrastructure Delivery Plan. This Plan also identifies a need for a new outdoor floodlit/Astro turf pitch.

Green Infrastructure

- 4.1.84 Woodstock and nearby parishes are blessed with Blenheim Palace grounds which are accessible via public paths and passes available to all Woodstock residents. Other green space within the Town envelope includes Woodstock Water Meadows and Budds Close Linear Park. The West Oxfordshire Infrastructure Delivery Plan identifies the latter spaces as requiring further support, enhancement and maintenance.
- 4.1.85 There are a variety of footpaths emanating from the Town. A footpath runs north – south through the site. This connects the site to the Town northwards, and to Bladon southwards. Cycle Route 5 runs north – south linking to Bladon and Oxford, Wootton and Banbury northward through open countryside.

## Emergency Services

### Police

- 4.1.86 Cherwell and West Oxfordshire Districts fall within the Thames Valley Policy area; this covers Berkshire, Buckinghamshire and Oxfordshire.
- 4.1.87 Woodstock has its own local police station (located off Hensington Road), which is a tier 2 Neighbourhood Station with station duty officers at the site (Source: Thames Valley Police website). This is identified in the West Oxfordshire Infrastructure Delivery Plan as needing to be extended or replaced. The main Thames Valley HQ service operates from Langford Lane next to Oxford Airport.

### Fire

- 4.1.88 Woodstock has its' own Fire Station which is served by on call fire fighters. It is located near to the Police Station on the Hensington Road.

### Ambulance

- 4.1.89 Woodstock is provided for by the South Central Ambulance Service (SCAS) NHS Foundation Trust. This Trust covers Berkshire, Buckinghamshire, Hampshire and Oxfordshire.
- 4.1.90 The local ambulance base is in Langford Lane on the north side of Kidlington, close to the A44.

## ASSESSMENT OF THE REQUIREMENTS OF THE PROJECTED NEW POPULATION OF WOODSTOCK EAST

- 4.1.91 This assessment is based on the Woodstock East development providing about 1,500 homes with the mix of dwelling types and sizes shown below.

	Open Market	Affordable	Total	Care Village
<b>1 bedroom flat</b>	0	148 (11%)	148 (11%)	28 (18.7%)
<b>2 bedroom flat</b>	0	88 (6.5%)	88(6.5%)	94 (62.6%)
<b>2 bedroom house</b>	130 (9.6%)	88 (6.5%)	218 (16.1%)	0
<b>3 bedroom house</b>	410 (30.4%)	176 (13%)	586 (43.4%)	28 (18.7%)
<b>4 bedroom house</b>	270 (20%)	40 (3%)	310 (23%)	0
<b>Total</b>	810 (60%)	540 (40%)	1,350 (100%)	150 (100%)

Table 4.1.10: Projected housing mix for 1,500 dwellings

- 4.1.92 Based on typical average household size for West Oxfordshire District of 2.37 people per dwelling, 1,500 dwellings would result in a new population of 3,555 people.
- 4.1.93 This assessment relies on the assumption that the development will result in 3,555 new residents, and measures the impacts of that level of population, except where more specific information is available. For comparison, Cherwell District's average household size is 2.45, but Woodstock's is 2.15 people per dwelling. This assessment seeks to provide a robust assessment of the impacts taking a realistic 'worse case' scenario.
- 4.1.94 A provides a schedule of all services here considered, and indicates present capacities where known, cumulative impacts of planned new development, together with the impact of Woodstock East on those services.
- 4.1.95 The paragraphs below examine impact/requirements of the new population for each service/facility. Reference is frequently made to the Cherwell District Council 2011 Draft

Supplementary Planning Guidance on Planning Obligations. This is used here over the West Oxfordshire Draft Infrastructure Delivery Plan since a) most of the new development is in Cherwell District, and b) it provides quantitative standards for service provision where the West Oxfordshire publication does not.

### Healthcare

- 4.1.96 The development will result in some 3,555 people wishing to register with a doctor and a dentist. Based on national average provision (CDC SPD) of 1,838 patients per doctor, the equivalent of 2 doctors' time will be needed to serve the new population.
- 4.1.97 The present patient to doctor ratio at the Woodstock Surgery is already slightly higher than the national average. A replacement surgery is at present proposed to be built at the site of and combined with a new police station off Hensington Road. The implications of the Woodstock East development will need to be taken into account in the planning of the new surgery to ensure that it is large enough to serve the increased population.

### Education

- 4.1.98 The table below shows Oxfordshire based pupil generation rates for different sized dwellings.

	1 bed	2 bed	3 bed	4+ bed
<b>Primary (4-10)</b>	0.00	0.17	0.39	0.51
<b>Secondary (11/15)</b>	0.00	0.09	0.23	0.35
<b>6<sup>th</sup> form (16-17)</b>	0.00	0.01	0.03	0.07

*Table 4.1.11: Students per dwelling (Source: Table 14 Cherwell DC Planning Obligations SPD (These rates are originally derived from the Oxfordshire Survey of New Housing (2008))*

- 4.1.99 The table includes a reduction of 15% applied to the rates to take account of pupils using the independent sector. A further reduction has been applied to the sixth form rates as it is recognised that not all children will remain in Children Services Authority maintained schools into the sixth form. This is the approach used and published by Cherwell District Council in their Planning Obligations Supplementary Planning Document.
- 4.1.100 These pupil generation rates have been applied to the proposed mix of dwellings (see Table below). Care Village dwellings have not been considered in this calculation because they will not generate children. No allowance has been made for the implications of legislation that now requires young people to remain in some form of education or training until 18th years of age but this is likely to add to numbers staying into the sixth form.

Primary	No of dwellings	Child generation rate	No of children
2 bed	306	0.17	52
3 bed	586	0.39	229
4 bed +	310	0.51	158
<b>Totals</b>	1,112		439

Secondary	No of dwellings	Child generation rate	No of children
2 bed	306	0.09	27.5
3 bed	586	0.23	135
4 bed +	310	0.35	108.5
<b>Totals</b>	1,112		271

6 <sup>th</sup> Form	No of dwellings	Child generation rate	No of children
2 bed	306	0.01	2
3 bed	586	0.03	19.5
4 bed +	310	0.07	22
Totals	1,112		43.5

Table 4.1.12: Number of children generated from the development (Primary, Secondary and 6th form)

- 4.1.101 So there will potentially be 439 primary school children, 271 secondary school children together with an addition of at least 43.5 requiring sixth form education.
- 4.1.102 Special Education Needs: The Cherwell DC Planning Obligations SPD advises that: based on the current percentage of pupils being educated in Special Educational Needs (SEN) schools in Oxfordshire 1.02% of the total pupils generated by the development will need to be educated in a SEN school (the majority of pupils with a statement of special educational needs are educated in “mainstream” schools).
- 4.1.103 This development therefore has the potential to include:  $429+268+42 = 739 \times 1.02\% =$  equivalent 8 children with special educational needs.
- 4.1.104 Primary education can be provided by means of a new school within the application site. Initially this can be planned as a 2 form entry school (420 pupils), with capacity on site to support expansion to a 3 form entry school (630 pupils) should that be needed over time.
- 4.1.105 Secondary education can be provided by the expansion of the present Marlborough School. This can be accommodated by a combination of improving the configuration and if necessary of buildings on the existing school site, if necessary providing more multi storey accommodation.

### **Social and Community Services**

- 4.1.106 A new population of 3,555 people should have access to a Library Facility.
- 4.1.107 The Cherwell District Council Draft Planning Obligations Supplementary Guidance CDC SPD advises:
- ‘Contributions for libraries will be calculated using a formula based on the adopted standard of providing 23m<sup>2</sup> of publicly available library floor space per 1,000 head of population, i.e. 0.023m<sup>2</sup> per person. An additional 19.6% backroom space to enable the library to function will also be required.’*
- 4.1.108 Using this formula, the new development would therefore give rise to a figure of 89.5m<sup>2</sup> of library space made up of:
- 3,555 people  $\times$  0.023m<sup>2</sup> = 81.8m<sup>2</sup> of public space
  - 81.8m<sup>2</sup>  $\times$  19.6% = 16m<sup>2</sup> backroom space
- 4.1.109 The present library building does not afford such spare capacity and the footprint of the site is quite restricted. It may not be practical to increase the floor space of the present library building. Expansion could be achieved by extending the library site, and/or investment could be made in the library service for Woodstock.
- 4.1.110 The CDC SPD advises that new Youth Centres should be provided for a catchment of 3,000 young people aged 16 – 19.
- 4.1.111 The new development will generate of the order of 315 people of this age (based on secondary pupil generation figures). The Census indicates that Woodstock had 97 16-19 year olds in 2011.
- 4.1.112 The present Youth Centre is in a very poor physical state and needs to be replaced either on the present site next to Woodstock Old Town football club, or elsewhere. Given the proportionate increase in 16-19 year olds that can be expected, it would be appropriate that the new development contributed significantly to the achievement of a new youth

centre, which could be provided either at the existing site, or as part of the Woodstock East development.

- 4.1.113 The CDC SPD recommends provision of new Community Halls in residential developments of 1,000 dwellings and over. The new development would therefore be expected to provide such a facility. The Cherwell District Council (SPD) expects community hall provision to a standard of 0.052m<sup>2</sup> per person, which equates to on site provision of 3,555 x 0.052 = 185m<sup>2</sup> for the Woodstock East residents. Notably Sport England Design Guidance Notes, 2001 recommend the smallest community hall designs require about 300m<sup>2</sup> of space. A new hall would therefore need to be at least that size.
- 4.1.114 A typical Children's Centre will serve the needs of 800 children under the age of 5 and their families.
- 4.1.115 This development will generate up to some 200 children under the age of 5 (Woodstock presently has 180 children under 5 (2011 UK Census)). So this development does not alone justify its own children's centre but will add to demands on the existing provision at Marlborough School and/or at Kidlington.
- 4.1.116 Every child aged 3-4 should have access to a Nursery School place. Woodstock presently has 75 nursery-aged children and the new development will generate a greater number of children of that age, who will need access to such provision. This would need to be met as part of new primary school provision.
- 4.1.117 A Care Village of up to 150 units forms a key component of the proposed development. This element of the development will need a range of facilities to support older people such as day care, recreation and meal services.
- 4.1.118 The space available at Woodstock Cemetery is quite limited. The new development will add to demand for the available plots. The Cemetery is next to open farmland, so it should be possible to expand the Cemetery to meet additional need.

### **Recreation and Leisure**

- 4.1.119 The CDC SPD provides local standards for outdoor recreation which in general terms require the following provision for the proposed development:
- Outdoor sports (e.g. tennis/playing pitches), 1.3 ha per 1,000 = 4.6 ha
  - Play space for young and older children, 0.78 ha per 1,000 = 2.8 ha
  - Allotments, 0.31ha per 1,000 = 1.1 ha
  - Green space, standard 2.3 ha per 1,000 people (urban edge) = 8.2 ha
- 4.1.120 The Woodstock East development will need to provide for recreational green space to meet the standards set out above. It is planned that this provision will be made on site by both providing informal green spaces and children's play areas across the development, and formal outdoor sports provision within a dedicated space. The latter will include a new football pitch and related facilities for Old Woodstock Football Club.

### **Emergency Services**

- 4.1.121 There are fire, police and ambulance service facilities in the vicinity of the Site. The new development would put additional pressure on all of these services but there are no quantitative standards provided by the services or the District Councils determining the impact of a development of around 3,500 people.
- 4.1.122 West Oxfordshire in their Infrastructure Delivery Plan, have indicated that Thames Valley Police have identified:

*'a number of measures to improve police related facilities/equipment...' and '...the potential future adaptations of the police stations in Woodstock and Carterton to provide additional space to meet the demands of future growth.'*

4.1.123 And at 4.6.2 that:

*‘...on strategic residential sites consisting of approximately 1,000 dwellings or more, on site infrastructure including potential on site drop in “neighbourhood offices” may be required...’*

4.1.124 The CDC SPD advises that the planning authority will seek contributions to improvement and/or extension of fire service facilities, which might be buildings, vehicles, access arrangements and hydrants.

4.1.125 These statements are pertinent to the new development. A new local police station is already planned combined with a doctor’s surgery off Hensington Road. A police neighbourhood office can be provided either within the proposed local retail centre and/or within community buildings.

## **SOCIAL AND COMMUNITY INFRASTRUCTURE TO BE PROVIDED FOR WOODSTOCK EAST**

4.1.126 Annexe A captures the findings of this assessment thus far – most particularly the services and facilities available in and for Woodstock, and the impact of Woodstock East if District Council and other service standards are applied. The upshot of the assessment is highlighted below in terms of the facilities that should be provided in connection with the new development.

4.1.127 In summary:

- Doctors’ surgery – the present facility is inadequate. A new surgery is already proposed as part of a redevelopment of the existing police station. This redevelopment will need to be large enough to accommodate the equivalent of 2 extra doctors to meet the needs of Woodstock East
- Dental surgeries – there is limited capacity at present in Woodstock and surrounding dental practices. The new development will need to provide the opportunity for a new surgery to be set up. Such accommodation can be provided as part of the new local centre
- Primary Schools – there is no spare capacity in Woodstock but limited spare capacity elsewhere in Yarnton and Stonesfield. Woodstock East will need to provide a new 2 form entry 420 place school to include a nursery facility within the development site; the school site will need to be large enough to allow for the expansion of the school to a 3 form entry school should this be necessary for the completed Woodstock East development
- Secondary School – there is some spare capacity in Marlborough School in Woodstock; but there will be a need to considerably expand the school to provide at least for 1,374 places at the school together with an improved special needs facility. There is room within the present Marlborough School site to reconfigure the accommodation and allow expansion of the school, but further study would be needed to establish whether or not this would impact on the present school playing fields. If so, it is possible that land to replace any playing field encroachment would be needed
- Library – the existing library is close to floor space capacity. The new population will be underprovided for without expansion of the present facility. The site itself is confined, and expansion of services could be through improved technology and service facilities, rather than by an increased floor space
- Youth Centre – the present building is in a poor state. Woodstock East should contribute to achieving a better building either on the present site or elsewhere – which could be within the Woodstock East development
- Community Centre – there is already a range of indoor community spaces in the town, but the scale of the development proposed justifies providing new community



hall space on the Woodstock East site, this has the potential include the youth centre referred to above

- Children’s centres – a limited service is provided at Marlborough School – new development provides the opportunity to bolster this provision as part of an improvement package for Marlborough school
- Day care – there are no formal day care facilities for older people in Woodstock; a 150 person care home is proposed as part of the new development which will include leisure, day care and refreshment facilities
- Leisure – The proposed relocation of the Old Woodstock Town football ground would provide a modern facility and support the Club’s desire to remain in the Hellenic League. Other formal open space will be provided on the site including an additional all weather sports pitch and club house complex with public access
- Natural green space and Allotments – 8.5 ha of natural green space and 1.0 ha of allotment space will need to be provided on site
- Emergency services – the site is generally well positioned for these services. The additional population further supports the impending planning application to provide a new local police station combined with a new health centre off Hensington Road

**OVERALL IMPACT OF WOODSTOCK EAST BEFORE AND AFTER MITIGATION**

4.1.128 The significance of the effects of the proposed new development, both positive and negative, and before and after mitigation is considered using the weighting criteria shown below.

Magnitude of change	Sensitivity of receptor/receiving environment			
	High	Medium	Low	Negligible
High	Major	Major	Moderate	Negligible
Medium	Major	Moderate	Minor to Moderate	Negligible
Low	Moderate	Minor to Moderate	Minor	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

4.1.129 The terms that have been used to quantify impacts are defined below:

- Major effect: where the impact could be expected to be very significant
- Moderate effect: where the impact could be expected to have a noticeable effect
- Minor effect: where the impact could be expected to result in a small, barely noticeable effect
- Negligible impact: where no/negligible effect is expected

4.1.130 The Table below assesses the impacts of Woodstock East based on a development of 1500 homes (the maximum proposed) including up to 150 for older people based on the dwelling mix set out in table 2.3.1. The assessment assumes that the development will take place in phases over time, which means that some services will have the opportunity to adjust as demand incrementally increases. Annexe A provides a fuller schedule of the first three columns of this analysis.

Service/Facility	Impact before mitigation	Mitigation proposed	Impact after mitigation
<b>Healthcare</b>			
Hospitals	The health service is potentially sensitive to additional demands but the magnitude of additional demand in the context of Oxfordshire is low. The negative impact is minor to moderate	No specific mitigation proposed	A minor negative impact. The impact arises because of the County wide demand for more housing (and consequent population increase) rather than from development at this site.
Doctors Surgery	The present Woodstock Surgery would not cope with the extra population. The negative impact would be moderate	A new health centre is already proposed in the Town Centre, this will need to provide space for 2 additional GPs	A new facility to standard will represent a moderate positive impact
Dentists	The new population will increase demand on the present local Practices though market demand tends to dictate service provision. Short term minor negative.	The local centre proposed within the site will provide accommodation suitable for a dental surgery which would increase choice in the town	Minor positive impact
<b>Education</b>			
Nursery	There is no nursery provision at schools in the town. Impact would be a moderate negative	The new primary school would provide nursery accommodation	This will represent a moderate positive impact
Primary	Present school in Woodstock is full so new development results in a major negative	New school proposed to meet the needs of the new population	The Town will have good quality school infrastructure and the new school will provide increased choice. Moderate to Major positive impact
Secondary	Present school has insufficient spare capacity. There would be a major negative impact	Funding to enable the improvement and expansion of the school is proposed to meet the new demand	A bigger better facility will increase viability of a broad curriculum. Moderate positive impact
Adult Education	There is some provision at Marlborough school upon which demand would increase. Minor negative impact	No specific proposals	Increased population can increase range and viability of courses. Minor positive impact
Special Needs	Some provision at Marlborough school. Moderate negative impact	Improvements to/enlargement of Marlborough school	Opportunity to increase services and facilities that will be available. Moderate positive impact
<b>Community and Cultural</b>			

Service/Facility	Impact before mitigation	Mitigation proposed	Impact after mitigation
Library	There is limited spare capacity at present. There would be a moderate adverse impact	There are no proposals at present to enlarge the library but new development provides an opportunity to fund an upgrade the quality of the library facility	Space standards might not be achieved but the quality of the building and services available could increase. Overall negligible impact
Youth Centre	Present facility is poor. Increased demand will have a major negative impact	New development will support the viability and achievement of a new facility on the existing or new the site either through funding or a building	Overall major positive impact
Community Centres	Hard to quantify impact but there are a number of facilities presently available. Minor to moderate adverse impact	New community facilities will be provided on site	This will add to the overall availability of community space in and around the Town. Minor to moderate positive impact
Children's Centres	There would be a significant increase in demand on the local facility. Potential moderate adverse impact	Opportunity to improve the services provided at Marlborough School	Moderate positive impact
Day Care/Centres	A new population of some 3,000 would add to pressure on existing facilities Moderate/major impact	150 unit Care Village proposed which will provide recreation and other facilities open to the wider public	The on site facilities will meet the needs of the new population. Minor positive impact
Cemetery	Pressure on cemetery space is a moderate negative impact	A contribution to enable the provision of additional cemetery space in the town can be made	Impact will be negligible
<b>Recreation/Leisure</b>			
Indoor leisure centre and facilities	Will add to demands on existing facilities and equally contribute to the viability of Woodstock's own facilities. Overall minor negative impact	Improvements will be funded to Marlborough school accommodation + recreational facilities, Care Village facilities will be open to the public	Moderate overall positive impact
<b>Outdoor Recreation</b>			
Football club	Present facility has poor changing facilities and no floodlights. This would continue. Neutral impact	A new site for the football club is proposed within the development site with new facilities	Major positive impact

Service/Facility	Impact before mitigation	Mitigation proposed	Impact after mitigation
Informal recreation/ playing pitches	The surplus of informal recreation is insufficient to meet the needs of the new population. Moderate adverse impact	Up to 4.8 ha of informal recreation including a new all-weather pitch will be provided on site	This will add to the stock and variety of informal recreation space available for the Town. Minor to moderate positive impact
Children's play areas	Present play areas are not ideally located for the new development	2.53 hectares of children's play areas will be provided. This can include a skateboard park	As above. A minor to moderate positive impact
Allotments	Present allotment garden has limited spare capacity. Moderate adverse impact	1.0 ha of new space will be provided on site	Neutral impact
Natural green space	Blenheim Palace grounds provide a huge green space asset for the Town, which is also adjacent to rural open countryside. Negligible impact	Some 8.45 ha of green space will be provided to meet standard for new population	Minor positive impact
<b>Emergency Services</b>			
Police	Moderate increase in demand for service. Adds to viability of local service provision. Neutral impact overall	New police station already proposed with health centre on existing site	Adds to viability of local service provision. Minor to moderate positive impact
Fire	Same as Police	None proposed	Minor negative impact
Ambulance	Moderate increase in demand. Minor to moderate adverse impact	None proposed	Moderate negative impact

4.1.131 The impacts identified in the table above take each service in isolation and the magnitude of impact is described in the context of that service. Some of the initiatives are wholly within the control of the applicant and landowners, whilst in other instances a successful outcome will depend on other agencies taking advantage of the financial or other contribution that the development will offer. In some cases therefore the new development *offers opportunities* to make overall improvements to the Town's facilities, and these have been taken into account in the assessment.

4.1.132 The impacts need also to be taken together in the context of the Town and the development proposed as a whole. Cumulative impacts of permitted/planned developments have been considered in Annexe A and although not explicitly referred to, the assessment of positive and negative effects above, assumes that all permitted developments have been completed.

4.1.133 The capacity of some service provision is difficult to quantify. In some cases the new development, because of the scale proposed, has the potential to increase both the range and the viability of the services offered.

**Alternatives to Woodstock East**

- 4.1.134 A development of the scale proposed for Woodstock East is unlikely to be achievable elsewhere in the vicinity of Woodstock either as single development, or as a series of smaller developments. The alternative option to Woodstock East to consider in this assessment therefore is a 'no development' scenario.
- 4.1.135 This Assessment considers the positive and negative impacts of the Woodstock East proposal. The consequence of a 'no development' scenario is essentially the reverse of that assessment.
- 4.1.136 There would for the most part be no change to the level and quality of facilities and service provision available in Woodstock from those at present.
- 4.1.137 Whilst Woodstock East would provide yet more momentum, there is every reason to believe that a new health centre will be provided through the already proposals that already exist to relocate the surgery to the site off the Hensington Road.
- 4.1.138 Some of the present deficiencies would be likely to remain though, most notably the poor quality of the facilities for the Old Woodstock Town football Club, and the youth club would not change.
- 4.1.139 Education provision would remain as at present, so a single primary school compared to the choice of two schools that would be provided by the Woodstock East development. The secondary school could be expected to remain at its present size and configuration with the same opportunities achievable with a school roll of around 1,050 in number.
- 4.1.140 It is likely that other provision, such as formal recreation, and informal open space, allotments and cemetery space would remain largely as now.
- 4.1.141 Small, piecemeal development would not be able to deliver the same improvements to community and social facilities.

**Overall Conclusions**

- 4.1.142 Unsurprisingly, the Woodstock East development would be likely to have an overall major negative impact on present facilities and service provision for people in and around Woodstock if no new provision was introduced. This would be the case virtually across the board of service provision. There are exceptions where additional residents increase the viability of a struggling or marginal service.
- 4.1.143 However, national and local planning policy requires that new development should make provision to offset adverse impacts on service provision. And in accordance with that policy it is intended here that the potential negative impacts of Woodstock East be mitigated.
- 4.1.144 In terms of health care, the development will put an additional strain on all services, but this can be offset by the provision of a new doctor's surgery as already planned – provided that it makes provision for more GP accommodation. This would turn the moderate negative impact of the development on the Town, into a moderate positive.
- 4.1.145 A development of 1,500 new dwellings is large enough to make a significant difference to education provision in a town the size of Woodstock. A new primary school and enlarged secondary school together with related special education and adult education enhancements can bring benefits across the education range. Taken together these factors represent a major positive impact of the development for service provision.
- 4.1.146 The impacts on the community and cultural environment are perhaps a little more mixed. The Care village will ensure that older people within the development are properly cared for, and will offer some recreation facilities to the wider public. Other facilities can all benefit if new services and accommodation are provided in the right way. If library and youth centre improvements can be successfully achieved, then this area can represent a modest enhancement of the Town's facilities, but if not, then the new population will put a strain on these services. An influx of younger people will generally support the viability of

facilities for young people in the town. Overall the impact on this subject area represents a moderate positive impact.

- 4.1.147 The size and scale of the Woodstock East site affords opportunity to plan for new leisure and recreation facilities that can bring overall a significant benefit to the whole Town since the development can provide brand new open space provision at all levels, and most notably will provide a new and sought after Football Club facility.
- 4.1.148 The impacts on the emergency services are rather less tangible. Perhaps most notable is that this development is well located to existing emergency services provision, which is located in Woodstock (fire and local police), with Thames Valley Police HQ and the ambulance service nearby in Langford Lane, Kidlington. Overall the impact is neutral.
- 4.1.149 The new development should be designed in a manner that respects the existing structure of the town, acknowledging where possible the need for service provision to be maintained in the Town centre to avoid creating a competing new centre, yet providing services and facilities suitably close to the new residents as well as to those existing.
- 4.1.150 Properly planned with the right facilities identified in this assessment, the new development at Woodstock East can have an overall moderate to major benefit to facility and service provision in Woodstock, and to the wider sustainability of the Town.

## REFERENCES

1. The National Planning Policy Framework (NPPF) - March 2012
2. Oxfordshire 2030
3. Adopted West Oxfordshire Local Plan 2011
4. Draft West Oxfordshire Local Plan 2012
5. Adopted Cherwell District Local Plan 1996
6. West Oxfordshire District Council Settlement Sustainability Report – December 2013
7. Non-Statutory Cherwell Local Plan 2011
8. Draft Cherwell Local Plan as submitted to the Secretary of State in January 2014
9. Oxfordshire Strategic Housing Market Assessment 2014 (SHMA)
10. West Oxfordshire Infrastructure Delivery Plan June 2014 Update
11. Cherwell District Planning Obligations Draft Supplementary Planning Document, July 2011
12. UK Census 2011
13. West Oxfordshire Shaping Futures Strategy (undated)
14. Settlement Sustainability Report' - December 2013
15. West Oxfordshire District Housing Needs Assessment Update 2011
16. West Oxfordshire District Annual Monitoring Report 2012
17. NHS Choices website
18. Oxfordshire Pupil Place Plan 2014-18, July 2014
19. Carehome.co.uk. – Adult Day Centres in Oxfordshire
20. West Oxfordshire Open Space Study 2013
21. West Oxfordshire Playing Pitch Strategy 2014
22. Thames Valley Police website

23. Oxfordshire Survey of New Housing 2008
24. Sport England Design Guidance Notes 2012

## **ANNEXES**

- Annexe A: Schedule of Services and Facilities
- Annexe B: Relevant policies from the draft Cherwell Local Plan as Submitted to SOS January 2014

## 4.2 Economic Impacts

### Introduction

- 4.2.1 Lambert Smith Hampton has been appointed by Pye Homes Ltd and the Vanbrugh Unit Trust to produce as part of the Environmental Impact Assessment (EIA) for the Land at Woodstock East ("The Site") an economic assessment of the proposed development.
- 4.2.2 This report assesses the likely significant economic effects of the proposed development that will arise from the proposed housing, the proposed retail and employment uses. A separate section in the report assesses the social and community impacts of the proposed scheme.
- 4.2.3 This economic assessment forms one part of the Environmental Impact Assessment for the proposed development, and should be read in conjunction with the other sections.

### The Proposed Development

- 4.2.4 The following components of the proposed scheme are relevant to the socio-economic assessment:
- The construction of residential units (Use Class C3) up to a maximum of 1,500 units, including affordable housing, a 150 units at a Care Village, with associated formal and informal open spaces, landscaping and recreation;
  - The construction of a local hub that will include retail provision within Use Classes A1/A2/A3/A4 of up to 930sqm and also link to the Care Village;
  - The provision of a Care Village (Use Class C2 with ancillary A3/ A4/ D2) of 150 homes within the residential provision. The care Village is likely to have a component of public accessible services including a bar, restaurant and gym linked to the hub area;
  - The provision of a 2 form entry primary school (Use Class D1);
  - The construction of employment floorspace of up to 7, 500sqm of office (Use Class B1), light industrial (Use Class B2) and warehousing/ storage (Use Class B8) including an element of park and ride;
  - The re-provision for the football club (Use Class D2)

### The Study Area

- 4.2.5 The proposed development falls within the administrative boundaries of Cherwell District Council (the majority of site) and West Oxfordshire District Council (the minority of the site). These districts form the immediate area within which the potential economic effects of the proposed development will be captured. The area of assessment will focus on Woodstock, but restricting the assessment of impact to just the immediate area would not capture local effects accurately as they will occur across town and administrative boundaries.
- 4.2.6 The baseline context for the assessment of the socio-economic impacts includes an analysis of a wider catchment area to include comparison with national (England) and regional (Oxfordshire) economies.
- 4.2.7 The geographical area has been defined to reflect the area where the majority of impacts are to be experienced including the provision of jobs, access to services and housing, reflecting the area of study for the retail assessment. Figure 1.1 displays the boundary of the study area.



Site Context

- 4.2.8 The Site is located immediately to the south east of the town of Woodstock, within the administrative boundaries of Cherwell District Council and West Oxfordshire District Council. The town of Woodstock currently does not have a business or industrial estate. The town mainly consists of shops and services that serve the local population and the large numbers of visitors attracted to the area by the world heritage site. The largest company located in Woodstock is Owen Mumford, a leader in the medical technology market.
- 4.2.9 Within the wider area there are large employment areas including Oxford City Airport which lies directly to the south of the site; the Begbroke Estate a high-tech innovation park linked to Oxford University; further afield business premises and offices can be found in the towns of Kidlington, Witney and Bicester, where the first phase of the Eco Town development are being progressed.
- 4.2.10 Following this introduction this reports sets out: the current legislative framework; the planning policy context is detailed focusing on policies relating to social and economic issues; the methodology for this assessment; the results from the desk top study giving a baseline context for the assessment; the survey work that has been undertaken; a commentary of the impacts and recommends mitigation measures; finally a conclusion to the assessment.

**Relevant Legislation**

- 4.2.11 This section of the report outlines the relevant legislation to be taken into account through the EIA process, and identifies any specific areas of legislation that will inform the assessment of the economic effects of the proposed development.
- 4.2.12 The requirement for an EIA is set out in Article 3 of Directive 2011/92/EC – Environmental Impact Assessment. This states that EIA's should "identify, describe and assess in an appropriate manner, in the light of each individual case and in accordance with Articles 4-12, the direct and indirect effects of a project on human beings, fauna and flora; soil, water, air, climate and the landscape; material assets and the cultural heritage; and the interaction between the factors referred to above".
- 4.2.13 For development in England, further legislation that applies the EU legislation is contained within the Town and Country Planning (Environmental Impact Assessment) (England) Regulations 2011. These regulations apply to certain types of development. The criteria for the development that is subject to EIA is included in schedules at the end of the legislation. Schedule 4 of the legislation sets out the information that should be contained within an EIA, to allow for a reasonable assessment of the effects of a proposed development. Within schedule 4 reference is made to factors such as population, but there is no specific identification of socio-economic factors.
- 4.2.14 Although not legislation, in considering the socio-economic effects there are two key documents that can assist in this assessment. These are:
- HM Treasury, Appraisal and Evaluation in Central Government, January 2003 (referred to as "The Green Book"). The Green Book contains a high level discussion of the principles and best practice covering all issues relating to project appraisal.
  - English Partnerships' Additionality Guide, Third Edition, October 2008. The Additionality Guide explains how to assess the additionality of a regeneration, renewal and regional development intervention.

**Planning Policy Context**

- 4.2.15 The development plan policy which covers the application site consists of the following documents:
- National Planning Policy Framework (NPPF)

- West Oxfordshire Adopted Local Plan (2011)
- West Oxfordshire Emerging Local Plan (2012)
- Cherwell District Council Adopted Local Plan (1996)
- Non-Statutory Cherwell Local Plan (2001)
- Cherwell District Council Emerging Local Plan (2014)

4.2.16 In addition to these planning policy documents the Oxford City Deal. The Cherwell Economic Development Strategy 2011-2016 and other evidence base studies on employment land and economic development are also considered.

National Planning Policy Framework (NPPF)

4.2.17 The NPPF was published in March 2012 and replaced the majority of planning policy and guidance in the form of Planning Policy Guidance (PPGs) and Planning Policy Statements (PPSs). The NPPF sets out the Governments planning policies for England and their implementation.

4.2.18 The ‘Golden Thread’ running through the NPPF is the presumption in favour of sustainable development. For decision making this means approving development proposals that accord with the development plan without delay” (NPPF Paragraph 14). The three dimensions to sustainable development, economic, social and environmental, as set out in the NPPF, should be considered simultaneously, and not in isolation when considering development proposals, to ensure that a sustainable development is achieved.

4.2.19 Paragraph 17 details the Core Planning Principles of the NPPF and states that development should “proactively drive and support sustainable economic development to deliver the homes, business and industrial units, infrastructure and thriving local places that the country needs”. The NPPF is clear in its proactive approach to enabling sustainable economic growth, and that this should be supported by the planning system.

4.2.20 Paragraphs 18 to 22 of the NPPF under Building a strong, competitive economy expand on the Governments approach to delivering economic development through the planning system. Paragraph 19 states that planning should not be an impediment to sustainable growth, and should operate to encourage it. This positive approach to achieving economic growth should also be recognised in planning policies, which should not overburden investment in business.

4.2.21 Paragraph 23 (Ensuring the viability of town centres) states that planning policies should be positive, promote competitive town centre environments and set out policies for the management and growth of centres over the plan period.

4.2.22 In drawing up Local Plans, the NPPF states that local planning authorities should promote competitive town centres that provide customer choice and a diverse retail offer and which reflect the individuality of town centres.

4.2.23 Paragraph 26 (Ensuring the viability of town centres) states that when assessing applications for retail, leisure and office development outside of town centres, which are not in accordance with an up-to-date Local Plan, local planning authorities should require an impact assessment if the development is over a proportionate, locally set floorspace threshold (if there is no locally set threshold, the default threshold is 2,500 sqm). This should include assessment of:

- The impact of the proposal on existing, committed and planned public and private investment in a centre or centres in the catchment area of the proposal; and
- The impact of the proposal on town centre vitality and viability, including local consumer choice and trade in the town centre and wider area, up to five years from the time the application is made. For major schemes where the full impact will not be realised in five years, the impact should also be assessed up to ten years from the time the application is made.

West Oxfordshire Adopted Local Plan 2011

- 4.2.24 The West Oxfordshire Local Plan 2011 was adopted in June 2006, and in line with legislation certain policies have been saved since 2009. Despite this the policies in the plan are time expired when considered against paragraph 14 of the NPPF. For completeness the saved policies of relevance to this assessment are detailed below.
- 4.2.25 Policy SH1 (New Retail Development) states that proposals for retail development, other than to meet purely local needs, will be located according to the following sequence:
- 1) Within the town centres
  - 2) On the edge of the town centres
  - 3) In out-of-centre locations that are, or can be made, readily accessible by a choice of means of transport
- 4.2.26 Proposals for retail and other town centre uses in locations other than town centres will only be permitted where:
- a need for the development has been established;
  - the sequential approach has been followed and there are no suitable sequentially preferable sites available;
  - the development would not harm either directly or cumulatively the vitality and viability of any nearby town centre or planned measures to improve it;
  - the development proposed is appropriate in nature and scale to the location;
  - the proposal accords with other policies in the plan with regard to traffic impact, amenity and environment.
- 4.2.27 Policy SH4 (Shopping Facilities for the Local Community) states that proposals for small scale individual shops or groups of shops (Class A1), or other small-scale retail premises to meet the daily needs of the local community will be permitted within towns and villages, provided all the following criteria are met:
- the site would be readily accessible by bicycle and on foot;
  - the proposal would not harm the vitality and viability of an existing town centre or an established village centre for shopping;
  - there is no detrimental impact on the amenity of occupiers of residential property from noise, fumes, smell, lighting, activity levels or hours of operation at the site.
- 4.2.28 Policy BE1 (Environmental and Community Infrastructure) states that development will not be permitted unless appropriate supporting, service and community infrastructure is available or will be provided.
- 4.2.29 Policy E1 (Employment Allocations) of the West Oxfordshire adopted Local Plan allocates the following sites for employment uses:
- Witney - off Downs Road
  - Chipping Norton depot site
  - Lakeside Industrial Estate, Standlake
- 4.2.30 Policy E2 (New Employment Sites in Towns and Larger Villages (Group C), states that the Council will permit development within or adjoining the settlements for the development of a small estate of up to a maximum of one hectare for employment purposes where there is an identified lack of employment land in the immediate area. The criteria for these premises are to provide floorspace/ units of 500sqm or less, and occupied by firms who need to be located in the area.
- 4.2.31 Policy E3 (Individual Premises) allows the development of single employer sites where they are within or next to settlements in groups B and C.

West Oxfordshire Draft Local Plan (2012)

- 4.2.32 West Oxfordshire District Council is preparing a new Local Plan that will replace the now time expired plan adopted in 2006. The recent Local Plan Housing Consultation that closed on the 3rd October 2014 set out the council response to the findings of the Oxfordshire Strategic Housing Market Assessment and other relevant evidence.
- 4.2.33 WODC confirmed that there was a significant response to the consultation, so much so, that the planned timetable to forward the Submission Local Plan document to Cabinet has been postponed indefinitely, allowing the council time to undertake further technical studies.
- 4.2.34 At this time, there is considerable uncertainty on the timetable for taking the new Local Plan forward.
- 4.2.35 The draft Local Plan, based on evidence suggested an additional need of 60ha of employment land in the district over the plan period (para 6.13). The Plan states that 25ha of this land has already been identified, with a further 10ha identified as part of the West Witney Strategic Development Area.
- 4.2.36 Policy CP11 (Land for Business) states that Business Development Land and Business Sites are those which include predominantly office-based, industrial or storage and distribution activities (B class uses) or related sui generis uses. Including existing commitments, the following Business Development Land provision is identified to meet business needs:
- Witney - 20ha to the west of Witney including 10ha as part of the West Witney Strategic Development Area (SDA).
  - Carterton - 5ha primarily at West Oxon Business Park and Land at Ventura Park with a further 2.5ha on land with recently built premises.
  - Chipping Norton - 5ha to the east of the town including, the Former highways depot (1ha), former Parker Knoll factory site (2ha) and potential for a further 2ha of land as part of the previous mixed use local plan allocation north of London Road.
  - Other Towns Villages and Rural Areas – At least 5ha within existing commitments with 2ha at Lakeside Standlake (previous Local Plan allocation).
- 4.2.37 CP12 (Supporting the Rural Economy) states that the Council will work to improve the broadband and mobile telecommunications services in rural areas, facilitating home working and more flexible working practices. The policy supports the provision of new small business sites in or adjacent to towns and villages, but they have to be conservative in scale and character and meet a business need that cannot otherwise be met. The policy also supports development for farm or country estate diversification.
- 4.2.38 CP14 (Sustainable Tourism) supports the development of tourism and leisure development which utilises and enriches the natural and built environment. New tourist and visitor facilities should be located within or close to existing settlements, reusing buildings where possible.
- 4.2.39 CP15 (Local Services and Community Facilities) states that the Council will promote the development and retention of local services and community facilities to promote social interaction and healthy inclusive communities. Proposals that would result in the loss of community facilities and services will only be supported where it can be clearly shown that appropriate alternative provision of at least equivalent suitability and accessibility, particularly by foot, will remain or that the existing use is no longer required or viable and is incapable of being made viable or adapted for other community uses. Where possible a robust marketing exercise will be required to demonstrate a lack of commercial or community interest in continuing the community facility or service.
- 4.2.40 CP16 (Town Centres) states that town, village and neighbourhood centres will be supported as the focus for shopping, leisure, community facilities and services. The Council will work with local businesses, residents, parish and town councils to ensure

town, village and neighbourhood centres remain vibrant, accessible and meet local needs.

- 4.2.41 The Council will apply the sequential and impact tests set out in the NPPF to new shopping and other town centre development. Impact assessments will be required for significant proposals (over 500m<sup>2</sup> net sales floorspace) where they are not in a centre or in accordance with a local or neighbourhood development plans. Development proposals which significantly increase car parking demand in our town centres will be expected to make appropriate public car parking provision or provide equivalent financial contributions.
- 4.2.42 CP34 (Eynsham – Woodstock Sub-Area Strategy) focuses new development in the areas of Eynsham, Long Hanborough and Woodstock. The policy outlines a sub-area strategy which includes support for additional employment opportunities including sustainable tourism and rural diversification; seeking the retention and development of local services and community facilities throughout the sub-area, but specifically ensuring that Woodstock Town Centre remains vibrant through resisting the loss of shops and other town centre uses. The policy also promotes a parking strategy for Woodstock Town Centre, promoting an increase in the availability and more efficient use of car parking provision in appropriate locations.

#### West Oxfordshire Economy Study Update November 2012

- 4.2.43 The study updated a previous assessment undertaken in 2007 to provide evidence for emerging policies in the Local Plan. The study identifies the key business sectors in the district as being manufacturing, scientific and technical industries; retail; tourism; military aviation; and rural economy. Many of these are small business with the study identifying that 70% of the total number of business in the district employ less than 5 people.
- 4.2.44 The review of employment sites in the study indicated that there had been limited change since the previous study in 2007, and indicated a good range of sites in terms of quality, type and distribution. However, it was noted there is some ageing stock that is an issue particularly in terms of the economics of refurbishment.
- 4.2.45 Key recommendations from the report included:
- Increase in supply for land to support key industrial, manufacturing and engineering sectors;
  - Maintain labour supply through things like the provision of housing
  - Promote a successful visitor economy
  - Support a vibrant rural economy
- 4.2.46 Using a steady growth scenario the study concludes that the district needs an additional 60ha of land for business. Of this 25ha of land has been identified through existing planning permissions, and there is a further 10ha of employment land to be provided to the west of Witney.

#### Cherwell District Council Adopted Local Plan (1996)

- 4.2.47 Cherwell District Council also has out of date policies when considered against paragraph 14 of the NPPF. The current policies were adopted in 1996, and saved from 2009. For completeness the relevant policies for this assessment are as follows;
- 4.2.48 Policy EMP4 states that in rural areas, proposal for employment generating development of the following types will normally be permitted:
- Within an existing acceptable employment site including redevelopment
  - Conversion on an existing building or group of buildings (provided that the form, bulk and general design of the buildings concerned is in keeping with the surrounding

area and in the case of a building beyond the limits of a settlement, can be converted without major rebuilding or extension

- Within, or, adjoining settlements, for a minor extension to an existing acceptable employment site provided that the proposal and any associated employment activities can be carried on without undue detriment to the appearance and character of the rural landscape and without harming the amenities of settlements or the special character of the countryside.

#### Cherwell District Council Emerging Local Plan (2014)

- 4.2.49 The Cherwell District Local Plan 2031 was submitted to the Secretary of State for Communities and Local Government for formal Examination on 31 January 2014. The Examination was commenced and postponed on the same day, 4th July 2014, to allow the Council additional time to put forward proposed modifications to the plan to increase new housing delivery to meet the full, up to date, needs of the district. As yet to be examined, the weight afforded to these emerging policies is reduced.
- 4.2.50 Theme One (B.1) (Policies for Developing a Sustainable Local Economy) of the emerging Cherwell Local Plan (2014) states that increasing the economic competitiveness of Cherwell District is fundamental to providing employment opportunities to reduce the level of out commuting as well as reducing traffic congestion and so shifting to a more locally self sufficient, sustainable economy.
- 4.2.51 Paragraph B.4 of the emerging Cherwell Local Plan (2014) states that protecting the role and function of existing town centres and employment areas, as well as enhancing the natural and built environment, will enable Cherwell to become as business-friendly as possible in support of jobs and prosperity.
- 4.2.52 Paragraph B.29 of the emerging Cherwell Local Plan (2014) states that the type of employment development the District wants to attract are:
- Advanced manufacturing/high performance engineering
  - The Green Economy
  - Innovation, research and development
  - Retailing
  - Consumer services
- 4.2.53 Policy BSC 8 (Securing Health and Well-Being) of the emerging Cherwell Local Plan (2014) states that the Council will support the provision of health/well being facilities in sustainable locations which contribute towards health and well-being.
- 4.2.54 Paragraph B.158 of the emerging Cherwell Local Plan (2014) seeks to ensure that social infrastructure grows at the same rate as our communities and that existing deficiencies in provision are addressed.
- 4.2.55 The emerging plan contains policies for the areas of the district; this includes Kidlington and the rural areas. The Policy 1 for Kidlington seeks to accommodate high value employment needs in this area of the borough. Specifically the policy commits the council to undertake a small scale review of the green belt in two specific areas, Langford Lane/ London-Oxford Airport, and Begbroke Science Park.

#### Non-Statutory Cherwell Local Plan 2011

- 4.2.56 Policy EMP4 of the Non-Statutory Cherwell Local Plan 2011 states that proposals for employment generating development, including redevelopment, will be permitted within an existing acceptable employment site provided that:
- The proposal and any associated employment activities can be carried out without undue detriment to residential amenity, the Highway Network, village character, the

appearance and character of the landscape and the environment generally, including and buildings or features of designated importance.

- The proposal is for small firms (up to about 500 sqm or firms whose source of supply, commercial linkages, labour supply and markets makes a specific location necessary for them and:
- The proposals will not give rise to excessive or inappropriate traffic and will wherever possible contribute to the general aim of reducing the need to travel by private car.

#### Cherwell Economic Development Strategy 2011-2016

4.2.57 The Cherwell Local Strategic Partnership sets out through the strategy their vision for the economy of Cherwell. The Cherwell Economic Development Strategy is a shared 'vision' supporting and developing the broad themes outlined in the Community Strategy, setting out the direction that needs to be taken to ensure that the economy and society of the District is prosperous and resilient.

4.2.58 The Strategy is based on three broad themes:

- People (skills development, work readiness, help to find work)
- Business (entrepreneurship, enabling success, attracting investment)
- Place (provide transport and housing infrastructure, support rural areas and develop key urban sites)

4.2.59 The central theme of the Strategy is the creation of 'economic resilience', whereby the focus is upon the power to combine the resources of the private, social and public sector partners. By joining together, the Council believes they can add value by becoming more effective and efficient, ready to make an even greater difference through enabling the creation of jobs and prosperity this year, the next and in the decades to come.

4.2.60 The Strategy begins by identifying the 'Issues' facing Cherwell's economy which are:

- Levels of employment remain high but not everybody is benefiting;
- Increased reliance upon public sector jobs which are set to reduce in number;
- The economic climate, access to finance and cash flow have become critical issues for businesses;
- Wages paid within Cherwell still lag behind South East regional averages;
- There are still residents without the right skills;
- There remain pockets of deprivation within our overall prosperity;
- Our population is expected to grow significantly;
- Employment land, premises & infrastructure do not always meet modern business needs;

4.2.61 The vision set out in the Strategy will be achieved by:

- Enabling appropriate housing & business development to meet the future needs of the population;
- Engaging with the wealth of expertise, enterprise and innovation available locally;
- Helping residents to develop their skills to allow everybody to have employment;
- Tackling the causes of under achievement, which include engagement in education and training, poor housing, lack of access to transport, poor socio- economic cultures and dependence on benefits.
- Supporting new and existing businesses, and their products and services, for them to locate and grow in North Oxfordshire which, in turn, will encourage our younger population to stay or return here;

- Evolving our rural and urban areas through the engagement and involvement of our business communities;
- Developing and growing the low carbon economy

#### Cherwell Employment Land Review 2012 (URS)

- 4.2.62 The Cherwell Employment Land Review updated the previous 2006b study and assessed the quantity, quality and viability of the districts employment land supply and forecast the future demand for employment land over the plan period.
- 4.2.63 The 2012 update identified a need for additional 52.6 to 87.2 hectares of employment land dependent on whether a high or low growth scenario is applied. The study concluded that a medium growth scenario is seen as the most realistic in Cherwell, with a need for an additional 69.8 hectares of land.
- 4.2.64 Broken down by area and employment type, the ELR concluded:

##### **B1**

Overall the study concludes that there is a relatively healthy supply, with some dated stock, which has the potential for refurbishment. There is also identified brownfield and Greenfield land that could accommodate additional demand. In Kidlington the B1 land demand is identified as between 9.3-11.3 hectares, and for the rest of the district the demand forecast is for 14.9-20.1 hectares.

##### **B2**

For B2 premises the study identifies that there is a high proportion of older premises that might not be suitable for eco and knowledge based economies. The forecast demand across the whole district is for an additional need of between 0.0-13.1 hectares of land.

##### **B8**

The study identifies that Cherwell has a strong warehousing and logistics tradition, mainly due to the location near the M40. Most of the industrial buildings are of modern construction, however there are some older premises, which need renovation. The forecasted need is for an additional 25.9-38.5 hectares of land.

#### 2014 Updated Cherwell Employment Land Forecasts

- 4.2.65 In 2014 the Council updated the ELR forecasting figures for each of the future growth scenarios to 2031, and also amended the baseline calculation of the current floorspace figure. The updated forecasting has resulted in a slight increase in employment land need in the district, with a need for an additional 58.3- 90.9 hectares based on low and high growth scenarios, and 74.6 hectares based on the medium growth scenario.

#### Cherwell Economic Analysis Study August 2014

- 4.2.66 This study was produced as an addendum to the Cherwell Economic Analysis Study, and further considers the Strategic housing Market Assessment (SHMA) and economic forecasting. The report has been produced to provide evidence for the Cherwell Local Plan currently under examination.
- 4.2.67 Through an analysis of economic forecasting the study (high growth scenario) it is estimated that only 12, 700 jobs will be located on B use class employment land in Cherwell. The report concludes by looking at sub-areas within the district that for Banbury the projections of forecast jobs and employment jobs are well aligned; for Bicester the allocations for both dwellings and jobs for exceed the forecast levels, however the report comments that this is unsurprising given the planned levels of growth.
- 4.2.68 The forecasts for Kidlington show a lower level of allocations compared to forecast jobs and again this is the same for the rural areas. The report concludes that "the Council's employment strategy is broadly in line with the forecasts and its housing allocations and



its overall strategy will more than accommodate growth in the Oxfordshire SHMA identified for the Planned Economic Growth Scenario”.

Oxford City Deal

- 4.2.69 The Oxford City Deal is a major investment strategy to create thousands of new jobs supported by the Government. The Oxford City Deal sets out actions for the region to create new jobs, support research and businesses and improve housing and transport. The deal was signed with the government on the 30th January 2014.
- 4.2.70 The Oxford city deal represents a significant step forward in the economic growth of the area, committing the government, county and district councils as well as other stakeholders, including the Universities.
- 4.2.71 The growth through the deal is focused on innovation and growing and enhancing the existing knowledge and science base in the area. Key focuses are to maximise the Universities and what the deal refers to as “big science” facilities which includes the Harwell Campus and Innovation Campus.
- 4.2.72 The pertinent points of the deal include:
- Invest in an ambitious network of new innovation and incubation centres which will nurture small businesses;
  - The Harwell Innovation Hub: focused on open innovation;
  - The UKAEA Culham Advanced Manufacturing Hub: focused on remote handling technologies;
  - The Oxford BioEscalator: focused on the life sciences sector;
  - The Begbroke Innovation Accelerator: focused on advanced engineering sectors.
  - Invest in Growth Hub to help small and medium enterprises to grow through better business support –with a particular focus on supporting innovation;
  - Accelerate the delivery of 7,500 homes across the county; and recognise that the provision of quality housing will be fundamental to the delivery of innovation-led growth. To support this commitment, Oxford & Oxfordshire will propose an ambitious Local Growth Deal, including a request to lift the Housing Revenue Account debt cap;
  - Enable three new transport schemes to support developments at the Enterprise Zone, Northern Gateway and the first phase of the “Science Transit” public transport scheme;
  - Deliver over 500 new Apprenticeships for young people;
  - Provide £95m of local and national public sector investment with a further £550m of investment from housing providers;
  - Leverage in nearly £600m of private sector investment through site development, transport infrastructure, skills schemes; and business support services and innovation centres;
  - Create 18,600 new jobs and a further 31,400 jobs during the construction phase.

Oxford Northern Gateway Area Action Plan (AAP)

- 4.2.73 This AAP is being taken forward by Oxford City Council (OCC) and was submitted to the Government Inspectorate on 24 October 2014. The Northern Gateway is considered by OCC to be one of the most important development opportunities in Oxford and provide the area with the largest single area of employment land for development in the City, as well as delivering much needed housing.

- 4.2.74 The vision for the Northern Gateway is to “create a world-class employment area which will build on the strengths of Oxford’s economy in the key sectors of education, health, research and development, and knowledge-based businesses linked to the two universities and hospitals”.
- 4.2.75 The Northern Gateway is identified in the APP as the only undeveloped strategic employment-led allocation in the city and that the site is critical to the delivery of the wider Oxfordshire Strategic Economic Plan (SEP).
- 4.2.76 The identified need for this site to come forward for primarily employment uses is identified in the Oxford City Council Core Strategy and evidence base. Since adopted, the evidence has been updated through the Oxford Economic Growth Strategy, as well as studies produced for Oxford University. The AAP summarises the studies *“the thread running through all these studies and strategies is that if Oxford is going to continue to have an important role in these sectors nationally, it is important that there are opportunities within the city to provide more floorspace to support them”*.
- 4.2.77 Policy NG2 (Mix of Uses) in the APP states that planning permission at the Northern Gateway will be granted for up to 90, 000sqm of employment development, up to 500 new homes, a range of local scale retail uses and a hotel (180 bedrooms) with associated leisure facilities.

## **METHODOLOGY**

- 4.2.78 This Economic Assessment has been undertaken in line with the EIA scoping methodology, scoping opinions received from both Cherwell District Council and West Oxfordshire District Council, and the relevant planning policy context.
- 4.2.79 The assessment has been underpinned by secondary research desktop study review of baseline information and, primary research through consultation with relevant stakeholders.

### ***Extent of the Study Area***

- 4.2.80 The extent of the study area for the economic considerations is principally the town of Woodstock. The following Super Output Areas (SOAs) and wards have been used and form the definition for the Woodstock area, as well as the Parish boundary:
- Cherwell SOA19
  - West Oxfordshire SOA004
- 4.2.81 Secondary data, where available, has been used at SOA or ward level. Where this is not available at the local level, data has been used at district level. Comparisons are given for context at the Oxfordshire and national level.

### ***Consultation***

- 4.2.82 Consultation has been undertaken with the following:
- Economic Development Officers at Oxford City Council
  - Economic Development and Policy Officers at West Oxfordshire District Council
  - Economic Development Officer at Cherwell District Council
- 4.2.83 The Oxfordshire Chamber of Commerce and Economic Development department at Oxfordshire County Council were also contacted, but declined to meet at this stage. No response was received from the Oxfordshire Local Enterprise Partnership.

### ***Economic Policy Overview***

- 4.2.84 An overview of economic policy currently in place to support sustainable growth and development in the local, regional and national areas has been undertaken. This includes

a review of the National Planning Policy Framework (NPPF), the Local Plans for Cherwell District Council and West Oxfordshire District Council, the Oxford City Deal and relevant Economic Development Strategies. The policies relevant to the context of this proposed development have been highlighted, including key strategic objectives that the project may contribute towards.

#### **Method of Baseline Context Data Collection**

- 4.2.85 To inform the assessment, a full economic baseline has been produced for the local area, which has been benchmarked against Oxfordshire and England. The main focus of the economic baseline has been the population and changes to demographics, housing provision, the labour market, economic activity, wage levels and travel to work areas.
- 4.2.86 The assessment has been informed by standard approaches to the collection of data utilising recognised sources including Census information, Office of National Statistics (ONS), Land Registry, and Oxfordshire County Council.
- 4.2.87 The date shown is the latest known available at the time of the study (October 2014).

#### **Assessment of Effects**

- 4.2.88 As part of the assessment of the affects of the proposed development, it will be important to identify who the sensitive receptors could be. Given the nature of the scheme, residential led mixed use, the key receptor groups in economic terms are likely to be the businesses and residents within the study area.
- 4.2.89 The economic effects of the proposed development are considered to be in two broad categories; the construction phase and jobs that this would generate, and the jobs supported and generated by the new proposed employment and retail floorspace.
- 4.2.90 The jobs generated by the scheme have been assessed on the floorspace provision for the employment space and converted from sqm to the number of jobs based on the latest guidance from the Homes and Communities Agency.

#### **Significance Criteria**

- 4.2.91 The likely changes to the baseline conditions and the effects of those changes as a result of the proposed development have been assessed to provide the likely significant economic effects within the study area.
- 4.2.92 No set of standards to assess these economic effects is established for this type of study. Each effect identified will be assessed considering the following:
- Change to baseline - Negligible, minor, moderate, major
  - Positive or negative change
  - Permanent or temporary change
  - Short, medium or long term change
- 4.2.93 An assessment of the magnitude of the change and the residual effects of each is considered, and any mitigation measures considered relevant are included.

#### **Results of Desk Study**

- 4.2.94 This section of the report provides an assessment of the socio-economic baseline for the study area. This baseline analysis builds on the planning policy context and has been examined from a range of information sources including published inline sources by the Office of National Statistics (ONS), Land Registry, Oxfordshire County Council, FOCUS and other websites.
- 4.2.95 The baseline profile for the area is set out for the following aspects:

- Population – current and future population and household projections for the area and household characteristics. These will aid analysis of the affect of additional residents within the demographic makeup of the area and the proposed uses within the development.
- Housing – tenure profile and housing market performance, and the implications for the tenure and housing size/ typology.
- Employment – looking at the current working age population, the economy including jobs by sector and key businesses, and unemployment and travel to work patterns. The implications of these factors will be considered in the context of the proposed employment space on the development.

### **Baseline Conditions**

#### Population

- 4.2.96 West Oxfordshire's estimated total population in March 2011 was 104,800 people. Over the 10 years since 2001 there has been a:
- 10% increase in the total population
  - 2% growth in number of children aged 0 to 9
  - 31% increase in population aged 60+
- 4.2.97 Cherwell's estimated total population in March 2011 was 141,900 people. Over the 10 years since 2001 there has been an
- 8% increase in the total population
  - 3% growth in number of children aged 0 to 9
  - 27% increase in population aged 60+
- 4.2.98 The total population of Oxfordshire is 653,800, therefore West Oxfordshire Council represents 16% of the total county population, and Cherwell District Council represents 28% of the total population. Table 1 illustrates that over the past 30 years, from 1981 to 2011, the total resident population in Cherwell district has grown by over 30,000 people, equivalent to adding a town the size of Bicester. West Oxfordshire's population has grown by 28%. The county as a whole has increased by 112,000 people, just above the current size of West Oxfordshire.

District	Increase in population	% Growth
Cherwell	32,700	+30%
West Oxfordshire	23,100	+28%
Oxfordshire	112,000	+21%

*Table 4.2.1: 1981 to 2011 population growth (Source: Census 2011)*

- 4.2.99 In terms of the age structure of the of the existing population of West Oxfordshire Council and Cherwell Council, please find in Table 1.1 the data from the Office of National Statistics (ONS.) The table identifies Cherwell and West Oxfordshire as having a similar age profile with the majority of the population falling within the 16-44 age bracket.

Age	Woodstock	Woodstock %	Cherwell	Cherwell %	West Oxfordshire	West Oxfordshire %
0-15	510	16	28,446	20	19,467	19
16-44	995	32	54,806	39	37,268	36
45-65	821	26	36,917	26	28,782	149
65+	774	25	21,699	15	19,262	18
Popn (all ages)	3100	100	141,868	100	104,779	100

Table 4.2.2: Population by Age (Source: Census 2011)

4.2.100 Table 4.4.2 presents data for the change in population between the two census years, 2001 and 2011. In Woodstock it can be seen that the largest proportion of population, which grew between 2001 and 2011, fell into the 0-15 age bracket. In Cherwell there was a significant decrease in people aged 16-44 and in West Oxfordshire largest increase in population was in the age group 45-65.

Age	Woodstock			Cherwell			West Oxfordshire		
	2001	2011	Change	2001	2011	Change	2001	2011	Change
0-15	416	510	94	27,722	28,446	724	19,445	19,467	22
16-44	1014	995	-19	55,712	54,806	-906	36,780	37,268	488
45-65	765	821	56	30,626	36,917	6,291	24,108	28,782	4,674
65+	764	774	10	17,725	21,699	3,974	15,307	19,762	3,955
Popn (all ages)	2925	3100	175	131,785	141,868	10,083	95,640	104,779	9,139

Table 4.2.3: Past Population Age change between 2001 – 2011 (Source: Census 2011)

### Housing

4.2.101 Table 1.3 illustrates the housing tenure make up in Cherwell and West Oxfordshire based on the ONS data from the last census in 2011. The housing data shows that the majority of households across the three separate areas own their property with 74- 78% being owner-occupiers.

4.2.102 Across the three areas the majority of people own their properties. In Woodstock, only 0.2% of people live in shared ownership properties, which is a similar trend reflected in Cherwell and West Oxfordshire where only 0.4% of people live in shared ownership. Across the three areas a very small proportion (1%-3%) live in accommodation rented from the Council.

Tenure	Woodstock	Woodstock %	Cherwell	Cherwell %	West Oxfordshire	West Oxfordshire %
All occupied households	1418	100%	13,884	100%	12,244	100%
Owned	1004	71	10,857	78%	9,606	78%
Shared ownership	15	1	55	0.4%	50	0.4%
Rented from Council	22	2	394	3%	296	2%
Other Social Rent	125	9	1,704	12%	1,520	12%
Private rented	231	16	533	4%	531	4%
Living rent free	21	1	341	2%	241	2%

Table 4.2.4: Housing Tenure (Source: Census 2011)

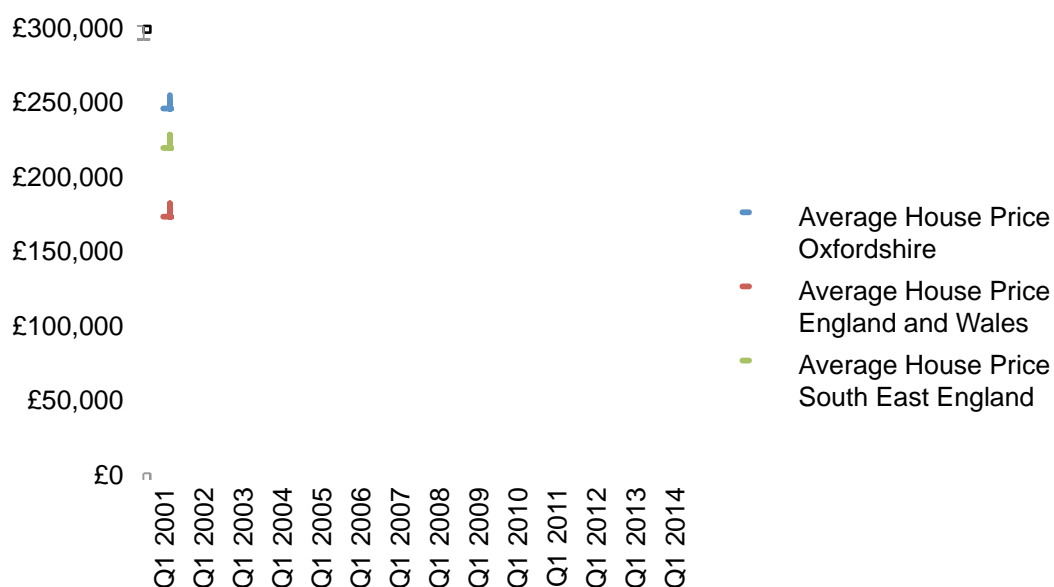


Figure 4.2.1: Average House Prices 2001-2014 (Source: Land Registry)

4.2.103 Figure 4.2.1 shows the change in average house prices between 2001 and 2014 for Oxfordshire, the South East of England and for England and Wales. It shows that house prices in Oxfordshire are considerably higher than the average for England and slightly higher than the South East of England.

4.2.104 Figure 4.2.1 illustrates that house prices have grown in a similar trajectory across all three regions between 2001 and 2014, with prices rising steadily until the end of 2008 where a trough is seen in the data. Average prices since 2009 have been on an upward trend, remaining at a peak in 2014.

### Economy

4.2.105 This section profiles the performance of West Oxfordshire and Cherwell's economy in relation to labour supply.

4.2.106 Based on the latest data available from the Annual Population Survey (2013 - 2014) this data profiles the economic activity of the two district councils in comparison to the wider activity of Great Britain.

	Woodstock	Woodstock	West Oxfordshire	West Oxfordshire	Cherwell	Cherwell	Great Britain
	(numbers)	(%)	(numbers)	(%)	(numbers)	(%)	(%)
<b>All people</b>							
Economically active	1,854	82	58,000	84	76,800	80	77
In employment	1,814	80	56,200	81	73,100	77	72
Employees	1,511	67	43,200	64	61,500	65	61
Self employed	303	13	11,900	15	11,600	12	10
Unemployed (model-based)	40	2	2,100	4	3,100	4	7
<b>Males</b>							
Economically active	975	88	31,200	92	42,200	87	83
In employment	953	86	30,700	90	39,300	82	77
Employees	762	69	23,900	73	32,000	67	63
Self employed	191	17	6,400	16	7,300	15	14
Unemployed	22	2	n/a	n/a		n/a	8
<b>Females</b>							
Economically active	879	76	26,800	77	34,600	73	72
In employment	861	75	25,500	73	33,900	72	67
Employees	749	65	19,200	55	29,500	63	60
Self employed	112	10	5,400	15	4,400	9	6
Unemployed	18	2	n/a	n/a		n/a	7

Table 4.2.5: Economic activities of residents (Source: Census 2011)

4.2.107 It can be seen that overall Woodstock, West Oxfordshire and Cherwell have a higher number of economically active people than the national average. Both West Oxfordshire and Cherwell have a 4% unemployment rate compared to a 7% national average. Woodstock has an even lower unemployment rate of 2%. Overall, West Oxfordshire has more economically active male and females than Cherwell. Woodstock has more economically active males than females.

4.2.108 The data shown in Table 1.6 is taken from the Annual Survey of Wages (2013/2014) and sets out the average weekly and hourly earnings by resident for both West Oxfordshire and Cherwell.

	West Oxfordshire	Cherwell	Great Britain
Gross weekly pay	(£)	(£)	(£)
Full-time workers	560	518	518
Male full-time workers	645	559	559
Female full-time workers	494	440	460
Hourly pay - excluding overtime	(£)	(£)	(£)
Full-time workers	14	13	13
Male full-time workers	16	13	14
Female full-time workers	14	12	12

Table 4.2.6: Earnings by resident (Source: Census)

4.2.109 Table 4.2.6 shows that West Oxfordshire has a much higher gross weekly pay per resident than the national average at £560 in comparison to £518 per resident. Both male and female full time workers receive a considerable increase in weekly pay than the

national average, with male full time workers receiving £645 per week per in comparison to £559 and females receiving £494 in comparison to £460.

4.2.110 Overall, in West Oxfordshire hourly pay is in line with the national average.

4.2.111 For Cherwell the gross weekly pay for full time and male full time workers is in line with the national average, however for female full time workers is £440 in comparison to £460, considerably less. In terms of hourly pay, Cherwell is in line with the national average of £13 per hour for males and £12 per hour for females.

	Woodstock (number)	Woodstock (%)	West Oxfordshire (number)	West Oxfordshire (%)	Cherwell (number)	Cherwell (%)	England (%)
1 Managers, directors and senior officials	343	19	6,300	11	7,000	9.6	10
2 Professional occupations	298	16	9,900	18	16,600	22.7	23
3 Associate professional & technical	289	16	10,200	18.	8,100	11.1	11
4 Administrative & secretarial	207	11	#	#	10,200	13.9	14
5 Skilled trades occupations	203	11	7,700	14	8,000	11	11
6 Caring, leisure and other service occupations	109	6	6,700	12	4,800	6.6	7
7 Sales and customer service occupations	99	6	#	#	6,100	8.3	8
8 Process plant & machine operatives	88	5	3,500	6	5,900	8.1	8
9 Elementary occupations	178	10	4,900	9	6,400	8.7	9

Table 4.2.7: Employment by occupation (note: # denotes sample size too small)

4.2.112 Table 4.2.7 sets out the employment by occupation data taken from the annual population survey 2013-2014. The data shows the different levels of occupation in each sector for Woodstock, West Oxfordshire and Cherwell in comparison to the national average.

4.2.113 The largest proportion of West Oxfordshire workers (47.8%) fall into SOC 2010 major group 1-3 which includes managers, directors and senior officials, professional occupations and associate. This is in line with the national statistics.

4.2.114 The largest proportion of workers in West Oxfordshire (18.2%) occupy the 'associate professional and technical areas. The smallest proportion of workers of West Oxfordshire (6.2%) work as 'process plant and machine operatives.'

4.2.115 For Cherwell, the largest proportion of residents (43.4%) also fall into SOC 2010 Major Group 1-3. The largest proportion of residents (22.7%) in Cherwell work in 'professional occupations' and the smallest proportion work in 'caring, leisure and other service occupations.'

4.2.116 For Woodstock largest proportion of residents also falls into SOC 2010 Major Group 1-3 and the largest percentage of workers fall into the Managers, directors and senior officials sector.



	Woodstock	Woodstock %	West Oxfordshire	West Oxfordshire %	Cherwell	Cherwell %
<b>By age of claimant</b>						
Total	15		520		660	
Aged 18-24	0	#	120	23%	165	25%
Aged 25-49	10	67%	280	54%	345	52%
Aged 50 and over	5	33%	110	21%	145	22%
<b>By duration of claim</b>						
Up to 6 months	10	67%	370	71%	500	76%
Over 6 up to 12 months	0	#	85	16%	75	11%
Over 12 months	0	#	70	13%	85	13%

Table 4.2.8: JSA Age and duration (note: # denotes sample size too small)

4.2.117 Table 4.2.8 illustrates Job Seekers Allowance claimants by age and duration. This data is taken from the annual survey of wages (2013/2014) and compares Woodstock, West Oxfordshire and Cherwell.

4.2.118 Woodstock, West Oxfordshire and Cherwell have very low numbers of people claiming JSA. In Woodstock alone only 15 people in total are claiming JSA, and it can be seen that 10 of these 15 people (67%) only claimed up to 6 months. In West Oxfordshire and Cherwell the largest group of JSA claimers fall into the 25-49 age bracket. Both West Oxfordshire and Cherwell both have a low percentage (13%) of Job Seekers claiming for over 12 months.

Distance travelled to work	Cherwell	Cherwell SOA 19	West Oxfordshire	West Oxfordshire SOA 004
All categories: Distance travelled to work	74829	3348	56515	4087
Less than 2km	15543	372	10490	389
2km to less than 5km	9914	346	3742	279
5km to less than 10km	8762	1026	7891	484
10km to less than 20km	10963	566	10738	1329
20km to less than 30km	6288	221	5893	220
30km to less than 40km	3203	28	1574	66
40km to less than 60km	2247	76	1265	112
60km and over	3768	118	2563	228
Work mainly at or from home	8567	331	7665	670
Other	5574	264	4694	310
Total distance (km)	1024707.5	38359.8	765313.6	57696
Average distance (km)	16.9	13.9	17.3	18.6

Table 4.2.9: Distance travelled to work (Source: Census 2011)

4.2.119 Table 4.2.9 is an analysis of the latest travel to work flows for West Oxfordshire and Cherwell, obtained from the 2011 Census and shown above. In comparison to Cherwell and West Oxfordshire, we have included data from the super out areas for which the Site falls within known as Cherwell SOA 19 and West Oxfordshire SOA 004.

4.2.120 The table presents the travel to work patterns at a district level from West Oxfordshire and from Cherwell and also at a super output level for the adjacent areas to the Site and Woodstock.

4.2.121 In Cherwell, the largest proportion of residents travel <5 km to work and on a super output level the largest proportion of people travel 5km - < 10km to work. Residents do not travel very far to reach their place of work. In addition, over 11% of residents work from home.

4.2.122 The average distance travelled to work from Cherwell is 16.9km. On a super output area it can be seen that the average distance travelled to work is 13.9km.

4.2.123 In West Oxfordshire, the largest proportion of residents travel 10km to < 20km on both a district and super output level. The residents of West Oxfordshire travel further than the residents of Cherwell to their place of work. Only 8% of residents in West Oxfordshire work from home.

4.2.124 The average distance travelled to work from West Oxfordshire is 17.3km. On a super output area the average distance travelled to work is 18.6km.

	Woodstock	West Oxfordshire	Cherwell	South East	England
All Usual Residents Aged 16 to 74 in Employment	1,588	56,515	74,829	4,260,723	25,162,721
Part-Time; Total	436	15,220	20,164	1,218,587	7,307,083
Part-Time; 15 Hours or Less Worked	169	5,452	6,853	437,582	2,418,518
Part-Time; 16 to 30 Hours Worked	267	9,768	13,311	781,005	4,888,565
Full-Time; Total	1,152	41,295	54,665	3,042,136	17,855,638
Full-Time; 31 to 48 Hours Worked	910	32,351	43,981	2,418,700	14,502,713
Full-Time; 49 or More Hours Worked	242	8,944	10,684	623,436	3,352,925

Table 4.2.10: Hours Worked

	Woodstock	West Oxfordshire	Cherwell	South East	England
All Usual Residents Aged 16 to 74 in Employment	1,588	56,515	74,829	4,260,723	25,162,721
Part-Time; Total	27%	27%	27%	29%	29%
Part-Time; 15 Hours or Less Worked	11%	10%	9%	10%	10%
Part-Time; 16 to 30 Hours Worked	17%	17%	18%	18%	19%
Full-Time; Total	1,152	41,295	54,665	3,042,136	17,855,638
Full-Time; 31 to 48 Hours Worked	79%	78%	80%	80%	81%
Full-Time; 49 or More Hours Worked	21%	22%	20%	20%	19%

Table 4.2.11: Hours Worked as a percentage

4.2.125 Table 4.2.10 and Table 4.2.11 set out that hours worked by each area. It can be seen that the majority of people across all areas work full time hours. In Woodstock the largest

proportion of people work Full Time between 31 to 48 hours a week and the lowest proportion work Part Time less than 15 hours a week.

4.2.126 The same pattern is true in West Oxfordshire and Cherwell, and this is in line with the national average.

	<b>Woodstock</b>	<b>West Oxfordshire</b>	<b>Cherwell</b>	<b>South East</b>	<b>England</b>
Underground, Metro, Light Rail, Tram	3	87	96	15,338	1,027,625
Train	43	1,053	2,185	311,895	1,343,684
Bus, Minibus or Coach	149	2,444	3,672	189,926	1,886,539
Taxi	0	101	298	16,750	131,465
Motorcycle, Scooter or Moped	16	495	556	36,467	206,550
Driving a Car or Van	910	36,866	47,271	2,590,701	14,345,882
Passenger in a Car or Van	48	2,588	4,034	200,386	1,264,553
Bicycle	63	2,315	2,592	127,614	742,675
On Foot	197	5,777	8,964	463,662	2,701,453
Other Method of Travel to Work	6	273	404	28,328	162,727

*Table 4.2.12: Method of travel to work*

4.2.127 Table 4.2.12 shows that the majority of workers drive a car or a van to work across all areas, including the South East and Britain. Only three workers from Woodstock take the underground to work and none take Taxi's to reach their workplace. This is in line with the trend across all areas, whereby it can be seen that the least amount of workers travel by taxi to their workplace. Additionally, Motorcycle, Scooter or Moped are also unpopular methods of travel.

4.2.128 All areas have a higher proportion of workers travelling by foot to their workplace, compared to the national average. It can also be seen that Woodstock, Cherwell and West Oxfordshire have a higher proportion of workers travelling by bicycle to work than the national or regional average.

Section 4.2 Economic Impacts (Lambert Smith Hampton)

	Woodstock	West Oxfordshire	Cherwell	South East	England
A Agriculture, Forestry and Fishing	1	750	867	28,582	203,789
B Mining and Quarrying	0	89	34	5,832	43,302
C Manufacturing	106	5,130	8,621	306,391	2,226,247
C10-12 Manufacturing; Food, Beverages and Tobacco	9	391	1,660	26,300	307,520
C13-15 Manufacturing; Textiles, Wearing Apparel and Leather and Related Products	2	147	148	8,224	102,956
C16, 17 Manufacturing; Wood, Paper and Paper Products	0	209	197	8,942	65,687
C19-22 Manufacturing; Chemicals, Chemical Products, Rubber and Plastic	7	506	745	41,489	264,421
C23-25 Manufacturing; Low Tech	7	548	849	40,025	375,445
C26-30 Manufacturing; High Tech	42	1,540	2,815	96,887	586,741
C18, 31, 32 Manufacturing; Other	39	1,789	2,207	84,524	523,477
D Electricity, Gas, Steam and Air Conditioning Supply	2	199	262	24,500	140,148
E Water Supply; Sewerage, Waste Management and Remediation Activities	2	369	473	29,749	175,214
F Construction	104	4,565	5,519	339,761	1,931,936
G Wholesale and Retail Trade; Repair of Motor Vehicles and Motor Cycles	190	8,493	13,217	662,860	4,007,570
H Transport and Storage	33	1,825	3,380	222,795	1,260,094
I Accommodation and Food Service Activities	138	2,559	3,253	214,329	1,399,931
J Information and Communication	111	2,970	3,655	235,081	1,024,352
K Financial and Insurance Activities	21	1,263	1,827	191,566	1,103,858
L Real Estate Activities	26	893	808	61,133	367,459
M Professional, Scientific and Technical Activities	171	4,497	4,971	317,787	1,687,127
N Administrative and Support Service Activities	55	2,308	3,401	219,830	1,239,422
O Public Administration and	88	5,186	5,022	255,674	1,483,450

	Woodstock	West Oxfordshire	Cherwell	South East	England
Defence; Compulsory Social Security					
P Education	244	6,644	7,836	432,119	2,490,199
Q Human Health and Social Work Activities	189	5,689	7,864	495,212	3,121,238
R, S Arts, Entertainment and Recreation; Other Service Activities	105	2,960	3,475	208,963	1,206,021
T Activities of Households as Employers; Undifferentiated Goods - and Services - Producing Activities of Households for Own Use	2	114	99	6,581	30,356
U Activities of Extraterritorial Organisations and Bodies	0	12	245	1978	21008

Table 4.2.13: Industry

4.2.129 Table 4.2.13 shows the number of works and the industrial sectors they work in across Woodstock, West Oxfordshire, Cherwell, the South East and England.

4.2.130 In Woodstock, the largest proportion (244 people) work in education and the second largest amount of people work in professional, scientific and technical activities (171 people.) In West Oxfordshire the largest proportion of people work in wholesale, retail trade, repair of motor vehicles and motorcycles. This is the same in Cherwell, the South East of England and Britain.

4.2.131 In Woodstock none of the population work in Manufacturing Chemicals, Chemical products and Rubber, or in Activities of Extraterritorial Organizations and Bodies. In West Oxfordshire, the lowest proportion (12) of workers work in Activities of Extraterritorial Organizations and Bodies and only 89 people work in mining. In Cherwell a similar pattern is present, with the lowest amount of people (39) working in mining and in Activities of Households as Employers; Undifferentiated Goods - and Services - Producing Activities of Households for Own Use.

	Woodstock	West Oxfordshire	Cherwell	England
No Qualifications	405	15,054	22,331	9,656,810
1-4 O Levels/CSE/GCSEs (Any Grades), Entry Level, Foundation Diploma	827	32,107	42,211	14,476,106
NVQ Level 1, Foundation GNVQ, Basic Skills	115	6,381	9,432	3,549,205
5+ O Level (Passes)/CSEs (Grade 1)/GCSEs (Grades A*-C), School Certificate, 1 A Level/2-3 AS Levels/VCEs, Higher Diploma, Welsh Baccalaureate Intermediate Diploma	1,229	36,365	41,642	14,770,857
NVQ Level 2, Intermediate GNVQ, City and Guilds Craft, BTEC First/General Diploma, RSA Diploma	279	12,724	17,214	6,471,092
Apprenticeship	164	6,295	8,466	2,723,419
2+ A Levels/VCEs, 4+ As Levels, Higher School Certificate, Progression/Advanced Diploma, Welsh Baccalaureate Advanced Diploma	784	20,066	21,592	7,989,853
NVQ Level 3, Advanced GNVQ, City and Guilds Advanced Craft, ONC, OND, BTEC National, RSA Advanced Diploma	204	9,861	12,877	4,701,028
Degree (For Example BA, BSc), Higher Degree (For Example MA, PhD, PGCE)	852	17,808	19,772	7,472,181
NVQ Level 4-5, HNC, HND, RSA Higher Diploma, BTEC Higher Level	87	4,185	5,049	1,878,697
Professional Qualifications (For Example Teaching, Nursing, Accountancy)	591	15,484	16,955	6,072,830
Other Vocational/Work-Related Qualifications	460	17,491	21,534	7,315,650
Foreign Qualifications	176	3,583	6,762	2,776,829

Table 4.2.14: Qualifications Gained

4.2.132 Table 4.2.14 illustrates the qualifications gained across Woodstock, West Oxfordshire, Cherwell, the South East and England.

4.2.133 The largest proportion of people nationally (16%) have a qualification level of 1-4 O Levels/CSE/GCSEs (Any Grades), Entry Level, Foundation Diploma or 5+ O Level (Passes)/CSEs (Grade 1)/GCSEs (Grades A\*-C), School Certificate, 1 A Level/2-3 AS Levels/VCEs, Higher Diploma, Welsh Baccalaureate Intermediate Diploma.

4.2.134 It can be seen that the largest proportion of people in Woodstock and West Oxfordshire have a qualification level 5+ O Level (Passes)/CSEs (Grade 1)/GCSEs (Grades A\*-C), School Certificate, 1 A Level/2-3 AS Levels/VCEs, Higher Diploma, Welsh Baccalaureate Intermediate Diploma. It can therefore be seen that the residents of Woodstock and West Oxfordshire have a higher level of qualification gained than the national average.

4.2.135 In Cherwell the largest proportion of people have 1-4 O Levels/CSE/GCSEs (Any Grades), Entry Level, Foundation Diploma and this is in line with the national average.

	Woodstock	West Oxfordshire	Cherwell	England
All Households	1,418	43,241	56,728	22,063,368
Unshared Dwelling; Total	1,418	43,221	56,672	21,985,413
Unshared Dwelling; Whole House or Bungalow; Total	1,146	38,701	50,589	17,235,610
Unshared Dwelling; Whole House or Bungalow; Detached	363	14,745	17,234	4,949,216
Unshared Dwelling; Whole House or Bungalow; Semi-Detached	371	14,152	20,202	6,889,935
Unshared Dwelling; Whole House or Bungalow; Terraced (Including End-Terrace)	412	9,804	13,153	5,396,459
Unshared Dwelling; Flat, Maisonette or Apartment; Total	272	4,231	5,926	4,668,839
Unshared Dwelling; Flat, Maisonette or Apartment; Purpose-Built Block of Flats or Tenement	195	3,356	4,728	3,624,359
Unshared Dwelling; Flat, Maisonette or Apartment; Part of a Converted or Shared House (Including Bed-Sits)	30	518	824	834,083
Unshared Dwelling; Flat, Maisonette or Apartment; In Commercial Building	47	357	374	210,397
Unshared Dwelling; Caravan or Other Mobile or Temporary Structure	0	289	157	80,964
Shared Dwelling	0	20	56	77,955

Table 4.2.15: Accommodation Type

4.2.136 Table 4.2.15 illustrates the accommodation type that the residents of Woodstock, West Oxfordshire, Cherwell and England occupy. The data is broken down into different types of accommodation from whole house/bungalow to unshared dwelling caravan or other mobile or temporary structure.

4.2.137 Across all the areas the trends remain very similar and in Woodstock, West Oxfordshire, Cherwell statistics remain in line with national averages.

4.2.138 Across all the areas the most popular accommodation type is unshared dwelling whole house or bungalow. Across all areas the least amount of people live in unshared dwellings caravan or other mobile temporary structures. Shared dwellings also account for a small proportion of accommodation types across all areas.

### Tourism

4.2.139 The West Oxfordshire Local Plan (2011) estimates that the annual tourism spend is worth over £100 million, and across the District tourism supports about 11% of the District's workforce, either directly or indirectly. As agriculture continues to decline leisure and tourism becomes even more important to the rural economy (West Oxfordshire Local Plan 2011 p. 109).

4.2.140 The Economic Impact of Tourism West Oxfordshire 2012 document states that overall, an estimated 490,000 staying trips were spent in West Oxfordshire in 2012, of which around

451,000 were made by domestic visitors (92%) and 39,000 by overseas visitors (8%). Compared to 2011, domestic overnight trips increased by 2.5%, whereas overseas overnight trips dropped by the same percentage.

- 4.2.141 Staying trips resulted in an estimated 1,409,000 visitor nights in West Oxfordshire, a marginal increase compared to 2011.
- 4.2.142 Despite only a very small increase in overnight trip volume, expenditure was up in 2012. Staying visitors spent in total £105.1 million on their trip. This represents a 4.2% increase in expenditure as a result of visitors spending more on their trip per head in 2012 compared to 2011. Average expenditure among domestic overnight visitors increased from £190.46 per person in 2011 to £194.04 per person in 2012 whereas average spend among visitors from overseas increased from £426.95 per person in 2011 to £452.23 per person in 2012.
- 4.2.143 Approximately 3,790,000 tourism day trips were made to West Oxfordshire (lasting more than 3 hours and taken on an irregular basis) in 2012 generating an additional £135,505,000 visitor trip expenditure. Compared to 2011, the volume of day trips increased by 3.6%, whereas day trip spend increased by 2.7%.
- 4.2.144 Total expenditure by visitors to West Oxfordshire is estimated to have been in the region of £240,654,000 in 2012, up by 3.5% compared to 2011. Once adjustments are made to recognise that some of this expenditure will take place outside the District (e.g. it is estimated that around 40% of expenditure on travel such as the purchase of petrol, coach and train fares, will be made at source of origin or on-route), total direct visitor expenditure is reduced to £215,382,000.
- 4.2.145 Additional tourism expenditure is however, generated by other sources, increasing the total amount of money spent in the District. It is estimated that expenditure on second homes and on goods and services purchased by friends and relatives visitors were staying with, or visiting, generated a further total £7,443,000 expenditure associated with overnights trips in 2012. This brings direct expenditure generated by tourism in the District in 2012 to £222,825,000, up 3.2% compared to 2011.
- 4.2.146 Direct expenditure is translated to £268,219,000 worth of income for local businesses through additional indirect and induced effects. Compared to 2011, this represents an increase of 3% in total tourism value.
- 4.2.147 This tourism-related expenditure is estimated to have supported 3,420 FTE jobs in West Oxfordshire. Once part-time and seasonal employment is added, the total number of jobs supported increased to 4,760 Actual jobs.
- 4.2.148 These jobs are spread across a wide range of service sectors from catering and retail to public service jobs such as in local government, and not just tourism. According to the Office of National Statistics, there are 52,000 jobs across the District (included self employed). Based on our estimates, total tourism related expenditure supports 9.2% of these jobs in the District.
- 4.2.149 In terms of Woodstock, the main tourist attraction in the area is Blenheim Palace. In 2013, 610,794 people visited the Palace, a 2% decrease from 2012 when the Palace received 625,055 visitors (ALVA: Association of Leading Visitor Attractions). Other notable tourist attractions include, St Martin's Church where Winston Churchill is buried, Rousham Park a well-preserved 17<sup>th</sup> Century manor house and The Oxfordshire Museum.

## Summary

- 4.2.150 Overall the Woodstock area appears to be performing well, with high numbers of people in employment and low levels of unemployment. Of those in employment a large proportion are in groups 1-3 managers, directors, professional and technical occupations. A large proportion of employed work in the education, motor vehicle and professional scientific industries, which is reflective of the main industries in the wider area.



- 4.2.151 The professional level of occupations in Woodstock are reflected in the levels of qualifications obtained by the population with a high number achieving A levels/ diploma, and a high proportion of these obtaining degree level or higher.
- 4.2.152 In terms of travel to work, a huge majority of the existing Woodstock population travel to work by car or van, and district wide the vast majority of trips are more than 10km, but less than 20km.

## RESULTS OF FIELD SURVEY

- 4.2.153 As part of the assessment a number of organisations with an economic interest and remit were contacted to be interviewed. The following organisations were interviewed:
- Economic Development and Policy Officers at West Oxfordshire District Council
  - Economic Development Officers at Oxford City Council
  - Economic Development Officer at Cherwell District Council
- 4.2.154 Other organisations were contacted as part of the process but declined to be interviewed. The main comments received during these interviews are summarised below.

### Economic Development and Planning Policy Officers at West Oxfordshire District Council

- 4.2.155 The Economic development officer welcomed the inclusion and provision of employment space on the site, Officers stated that the social and community impact of the development were likely to be more significant.
- 4.2.156 The type and scale of units included in the proposal were welcomed with an identified need for starter units and also medium sized spaces for firms to grow into; which would provide more Class B use space which the Officers believe there is demand for in the area.
- 4.2.157 A key element of the scheme will be how it is managed, whether there is an overall management of the site, and on what basis premises will be made available to businesses – leasehold, freehold or a combination of both.
- 4.2.158 The current evidence base for employment development in the authority was confirmed at 60ha with 25ha of employment land need currently unallocated or identified. Although it was acknowledge that the location of most of the employment on this site is outside of the authority boundary, the 7,500sqm of employment provision will provide for some of the identified need for employment space for the wider area.
- 4.2.159 The linkage of the site with Woodstock and effect of the new development on the existing town centre will need to be considered, particularly how the development will function and the potential effect it may have on the vitality of the town centre. Officers acknowledge that one of the most significant issues for Woodstock town centre is the lack of parking.
- 4.2.160 Officers did consider that the area allocated for the employment use could be too small, and questioned whether enough space is provided to allow for growth, and a critical mass is usually needed to enable employment sites such as this to work and be successful.
- 4.2.161 Overall, the inclusion of employment space was considered to be positive, with the type and size of small and medium enterprise units considered to be of an appropriate scale. Consideration should be given to the link to Woodstock, the management and function of the employment site and any opportunity for future growth.

### Economic Development Officers at Oxford City Council

- 4.2.162 Officers were supportive of the type and scale of development proposed with small and medium sized units, and considered these are right for the target market of SMEs.
- 4.2.163 Officers commented that Oxford as a whole has a limited market for employment space, with no new quality employment space coming forward in the city, and either end (high

spec space and low level entry space) of the market is considered to be constrained. The science park is popular with very low if any vacancies.

- 4.2.164 Officers advised that part of the Town Hall has recently been converted into small start up spaces and these have been popular with 80% already taken up. Oxford City Council has also completed a starter unit study across the city as this is seen to be a key area to address.
- 4.2.165 There is an identified need in Oxfordshire for employment space. The Northern gateway should be coming forward to provide more high-tech and innovation space.
- 4.2.166 The city area has been losing many office blocks to residential. The council is currently in the process of implementing an Article 4 direction in certain areas to try and prevent more loss of office stock.
- 4.2.167 Commuting is a major issue for the city, with in-commuting of around 45,000 of a working population of 110, 000. 38, 000 of these in commuters are from neighbouring districts; of those living outside the city 70% travel by unsustainable means (i.e. the car). Of those working and living in the city travel is more sustainable, with 60% using sustainable means of travel. Approximately 16, 000 out commute from the city to London.
- 4.2.168 One of the key issues for the City Council is changing the commuting pattern to be more sustainable and reduce car commuting.
- 4.2.169 Overall the officers felt that it was positive that the development would provide employment choice outside the city, and that the employment offered as part of the application would complement rather than compete with other employment locations within the County

Economic Development Officer, Cherwell District Council

- 4.2.170 Regarding the scale and nature of the provision proposed the officer considered that this would be appropriate. The Officer suggested that consideration should be given to the inclusion of a small business centre to help start-up businesses, with a suite of offices to support very small businesses.
- 4.2.171 The key issue highlighted was to include flexible space to allow business to grow and contract as necessary, and to accommodate different use and lease arrangements. It was also considered important that although it would provide B class jobs that warehousing was kept to a minimum.
- 4.2.172 Officers considered that it was important that any employment provision is of a complementary theme rather than repeating what is already provided in the wider area, such as Langford Lane.
- 4.2.173 The officer commented on the strength of the economy locally using the example of Begbroke where it can be very difficult to obtain space.
- 4.2.174 The officer commented that the Council through their economic strategy are looking for a balance of new housing and jobs. It was agreed that currently Woodstock has limited employment uses.
- 4.2.175 Commuting was raised as a potential issue, with the need for the employment provision to be somewhat self-contained to reduce potential in and out commuting and traffic congestion.
- 4.2.176 The officer commented that vacancy rates vary depending on the type of units. Modern units tend to go quickly with high take-up rates, whereas out-dated employment space can be vacant for longer periods of time. However demand is considered to be high in this part of the district particularly in Kidlington and the Begbroke Science Park.
- 4.2.177 The district is currently seeing some speculative development in Banbury and Bicester. There is currently a net deficit of employment land and additional land allocations are coming through the Local Plan, however these are in the green belt.

- 4.2.178 The Council is pro economic growth and work with the Cherwell Investment Partnership and the Local Enterprise Partnership.
- 4.2.179 Officers did comment that the proposed development would be a big change for Woodstock, but agreed that currently this is mainly a service centre for local residents and for tourists to the area.
- 4.2.180 It was considered that the location of the employment unit's worked well within the site, close to the airport. The layout plans need to ensure that there is adequate surveillance of the employment units during the weekends and evenings when there may not be people about, without creating any nuisances for nearby residential units. The routes for HGVs also need to be considered.
- 4.2.181 There was a concern that the park and ride may take up more space and reduce the proposed employment land take. It was suggest that the design of the employment units should be underpinned by a set of design principles, together with additional land, to facilitate the ease of future expansion if required.
- 4.2.182 The location of the employment units in close proximity to the airport and the potential of a link access road was seen as positive; particularly in taking forward the idea of clustering employment uses around the airport promoted in the Cherwell Economic Development Strategy.
- 4.2.183 The provision of a good level of affordable housing within the scheme was also seen as key for attracting people and jobs to the area.

#### **EVALUATION, IMPACTS AND MITIGATION**

- 4.2.184 This section sets out the likely significant economic effects of the proposed development. The economic effects can be expected through the construction phase and on completion of the scheme. This assessment is reliant on the information obtained through the baseline study and the details of the construction and completion of the scheme.

#### ***Construction Effects***

- 4.2.185 One of the key issues raised by the construction phase of any development is the extent to which the main contractors will attempt to use local labour. The labour force on a construction site is usually a combination of local labour and that from outside the area, which is more likely to be specialist workers.
- 4.2.186 The effects of the construction phase of the development has been assessed considering the base case, which is no development coming forward. In this scenario, it is assumed that there would be no redevelopment of the site, and as such no construction related activities. The employment baseline would be considered to be zero.
- 4.2.187 The construction phase of the scheme is proposed to take 15+ years, with the phasing of the development. During the construction phase the site will create numerous skilled and unskilled jobs.
- 4.2.188 While it may be expected that local construction firms will benefit significantly from increasing demand from construction services there is anticipated to be leakage of jobs outside of the study area partially due to expertise needed and partly to access the level of labour needed for the construction project. Although it is not expected that construction labour would move to the area, there could be an increased spend in the local area, and in addition to the direct employment generated, there could be an increase in employment through the supply of goods and services supplying the construction site.
- 4.2.189 Overall the effect is considered to be minor/ moderate and positive. The effect will take place over the medium to long term with construction over 10-15 years and will be temporary.

Mitigation

- 4.2.190 The main mitigation will be to minimise the leakage of construction jobs to potential workers that live no further than a 45-minute drive from the site, This will ensure that as many local businesses and residents benefit from the employment generated by the development, potentially increasing local prosperity and reducing the need to travel.
- 4.2.191 The preference, and encouragement for the use of local labour will be assisted through the publicity of the scheme, and through mechanisms, that require developers to secure contracts with a set percentage target of the workforce being from the local area.

Residual Effects

- 4.2.192 The mitigation measures proposed would seek to reduce the leakage of construction employment to outside the area and increase the employment opportunities for local people during the construction phase of the development. However, it is anticipated that some of the workforce will come from outside the area, possibly where skilled trades are needed. As such the construction economic effect on the local area is considered to be moderately positive.

**Employment Effects**

- 4.2.193 The proposed development will generate long-term jobs once completed. The development proposes 7, 500sqm of employment floorspace within B1, B2 and B8 Use Classes. The direct employment generated by the development is estimated by applying averages of the HCA employment density ratios for the land uses.
- 4.2.194 Based on these the number of jobs created by the development would be circa 160 FTE jobs. The new employment floorspace will improve the quality in the office and light industry units on offer in the area, and will provide for some of the identified additional need for employment land as recognised by both districts Employment Land reviews. This would be considered to be a major positive long term effect.
- 4.2.195 The proposed employment floorspace gives the potential for enterprise growth through the provision of small units from 500sqm to medium sized self contained units of 1,500sqm, providing a range of sizes to enable start up businesses and the growth of companies through follow on space. This will encourage more enterprise facilities and provide opportunities that have been identified through the consultation as needed within the area.
- 4.2.196 As identified earlier in the baseline, the area generally has low unemployment. However, local employment opportunities, particularly in Woodstock are limited, which means that residents will often have to travel further afield for employment. It makes perfect sense to create local employment opportunities to facilitate new start up businesses, and for local people.
- 4.2.197 An obstacle in creating employment opportunities for local people has been identified as a lack of flexible and small suitable spaces available in Woodstock and the surrounding area. The proposed development, delivering this type of local employment space will go some way in mitigating this barrier. This approach to local employment aligns well with the economic growth strategy for the wider area in the Oxford City Deal and the Cherwell Economic Development Strategy.
- 4.2.198 The number of additional jobs and the opportunity for economic growth offered through the proposed development is considered to have a moderate positive effect over the longer term.

Mitigation

- 4.2.199 No mitigation is required as the proposed development is considered to provide for potential local employment and business growth in the area. However, to ensure that as

large a proportion of local residents obtain access to these jobs and the opportunities, it is important that local residents are made aware of the opportunities coming forward and that there are linkages with local training initiatives to meet any local employer requirements or to enable local start up businesses.

#### Residual Effects

4.2.200 The residual employment effect is considered to be a major positive. The proposed development will provide a significant employment opportunity for Woodstock.

#### **Retail Effects**

4.2.201 The population of the proposed development would generate demand for a modest retail provision. The existing food store facilities in Woodstock that would serve the local and increased population generated by the development would be limited to a small Co-op shop located on the high street. Much of the other retail and services offer is directed to supporting the large number of visitors to the area.

4.2.202 The proposed retail space of 930sqm will meet the resident day to day needs, including limited main food and top up shopping and will help reduce reliance on the car. The retail area has been located in the northern part of the site with pedestrian links through to the existing residential areas. The location and offer within the retail has the potential to create, through the linkages with the Care Village, a focal point and hub for the development, and also further retail services for the residents of Woodstock, particularly with the inclusion of a food store.

4.2.203 The direct employment generated by the retail within the development is estimated by applying averages of the HCA employment density ratios for the land uses. Based on this the number of retail jobs created by the development would be in the region of 55 FTE jobs.

#### Mitigation

4.2.204 No mitigation will be required as the demand for resident local retail needs will be met through the provision of the retail floorspace within the proposed development.

#### Residual Effects

4.2.205 The retail offer would increase the local spend and would complement the town centre in providing additional sustainable facilities. The residual effect is therefore considered to be a minor-moderate positive.

#### **Housing**

4.2.206 The scheme is proposed to develop up to 1,500 new homes of which up to 40% would be affordable.

4.2.207 Both the market and affordable homes would be provided in a mix of dwelling types and sizes to help meet local identified need and make a contribution to the much needed additional housing in the area. Without this site being brought forward a significant unmet demand would remain. Given the low levels of new housing coming forward and the need and demand for new housing in the area the provision of additional housing is considered to have a low impact on local house prices. The proposal is therefore considered to have a moderate positive effect in addressing local housing demand over the medium to long term and a significant effect on the supply of affordable housing in Woodstock.

4.2.208 Based on up to 1,500 homes to be delivered through this development, based on the typical household size for West Oxfordshire District of 2.37 people per dwelling, the resultant new population would be around 3,247 people. However it is reasonable to assume that some of those moving into the new dwellings may already reside in the area,

looking for their first home or existing residents who are on the local authority or Registered Providers waiting lists.

4.2.209 In January 2014 a document entitled 'Oxford and Oxfordshire City Deal' was published. Page 5 of this document deals with 'Planning for Development'. It states:

'The City Deal should enable further economic growth. However, this success has placed pressure on the local housing market. Oxford and Oxfordshire have overwhelming evidence that the lack of choice and availability of housing and affordable housing is a major barrier to growth. Oxford and other areas in the county are identified as among the least affordable locations in the country...The Universities and businesses in the knowledge economy identify that housing is a significant barrier to the recruitment and retention of staff, including senior management and researchers. More housing is essential for the future of the knowledge economy in Oxford and Oxfordshire.'

4.2.210 The proposed development will create the opportunity to deliver housing, in a sustainable location with excellent access to public transport, and will assist in the wider vision in achieving the aspiration of the City Deal.

#### Mitigation

4.2.211 The proposed development will provide new housing that is required to meet an identified local need in the immediate and wider area for an expanding population and demand for different types of dwelling. No mitigation is therefore considered to be required.

#### Residual Effect

4.2.212 The proposed development will have a moderate positive effect in addressing local housing demand over the medium to long term and a significant effect on the supply of affordable housing in Woodstock.

#### Mitigation

4.2.213 The proposed development will provide new housing that is required to meet an identified local need in the immediate and wider area for an expanding population and demand for different types of dwelling. No mitigation is therefore considered to be required.

#### Residual Effect

4.2.214 The proposed development will have a moderate positive effect in addressing local housing demand over the medium to long term and a significant effect on the supply of affordable housing in Woodstock.

### **Conclusions**

4.2.215 This section has presented an evaluation of the economic effects resulting from the proposed development. It has assessed the proposed development in terms of the extent of its potential economic effects on population, employment, retail and housing.

4.2.216 The development mix within the proposed development has been shaped by planning policy both at the national and local level, considering emerging Local Plans and evidence base documents.

4.2.217 The proposed development will deliver both temporary and permanent employment on the site, through both the construction and operation phase of the development.

4.2.218 The Oxford City Deal sets out actions for the region to create new jobs, support research and businesses and improve housing and transport. The proposed development would contribute to the wider economic objectives of the City for Oxfordshire through the provision of employment floorspace to meet the objective of creating 18,600 jobs, and providing housing contributing to the City Deal aspiration of delivering 7,500 homes,

including a proportion of affordable housing. The proposed development would ensure that districts contribute to this strategic plan for Oxfordshire.

- 4.2.219 Oxford City Council (OCC) is also promoting the Northern Gateway through the Area Action Plan (AAP). This will deliver some of the strategic employment and housing needs for the city, however from the interview undertaken with officers at OCC there is a need for further space and homes and a development such as this would contribute to providing for that need.
- 4.2.220 The proposed development located adjacent to Woodstock with its high tourist visitor numbers, is considered to have a neutral benefit on tourism. The proposed scheme is not considered to attract nor deter visitors. However, the provision of a proportion of affordable housing on the site may help contribute to housing for low paid workers in the tourism industry potentially creating more sustainable travel patterns.
- 4.2.221 The proposed development will deliver up to 1,500 homes, which will result in a population increase of 3, 247 people. The proposed new dwellings will provide a positive effect on the provision of housing, both market and affordable both meeting the local and area demand for housing and provide additional housing for those wanting to work in the area. The increase in the population will also aid Woodstock in becoming a more sustainable settlement, providing additional housing and services, reducing the need to travel.
- 4.2.222 The employment effects associated with the proposed development in both the construction and permanent phases of the scheme offer the opportunity for positive effects on local employment opportunities, with the completed employment floorspace likely to provide an additional 160 jobs in the area.
- 4.2.223 In addition the retail space within the development could provide an additional 55 job opportunities, and increases the services to support the local population, both existing and proposed through the development with a supermarket retail offer that would reduce the need to travel.
- 4.2.224 The economic effects of the development are considered to be positive, enabling the creation of a more sustainable area and meets policy and identified demand for additional employment opportunities, housing and an expanded retail offer.

## REFERENCES

1. Town and Country Planning (Environmental Impact Assessment) (England) Regulations 2011
2. National Planning Policy Framework, (NPPF) March 2012
3. HM Treasury, Appraisal and Evaluation in Central Government, January 2003
4. English Partnerships' Additionality Guide, Third Edition, October 2008
5. West Oxfordshire Adopted Local Plan (2011)
6. West Oxfordshire Emerging Local Plan (2012)
7. Cherwell District Council Adopted Local Plan (1996)
8. Non-Statutory Cherwell Local Plan (2011)
9. Cherwell District Council Emerging Local Plan (2014)
10. Cherwell Economic Development Strategy 2011-2016
11. Cherwell Employment Land Review 2012 (URS)
12. 2014 Updated Cherwell Employment Land Forecasts
13. Cherwell Economic Analysis Study August 2014 (CAG Consultants)
14. Oxford City Deal

15. Oxford Northern Gateway Area Action Plan (AAP)



## 4.3 Retail Impacts

### INTRODUCTION

- 4.3.1 Lambert Smith Hampton (LSH) has been appointed by Pye Homes Ltd and the Vanbrugh Unit Trust to produce as part of the Environmental Impact Assessment (EIA) for the Land at Woodstock East (“The Site”) a retail assessment of the proposed development.
- 4.3.2 This report assesses the likely significant social, environmental and economic effects of the proposed development that will arise from the proposed housing and the proposed new retail outlet.
- 4.3.3 This retail assessment forms one part of the Environmental Impact Assessment for the proposed development, and should be read in conjunction with the other sections.

### ***The Proposed Development***

- 4.3.4 The following components of the proposed scheme are relevant to the socio-economic assessment:
- The construction of residential units (Use Class C3) up to a maximum of 1,500 units a 150 unit Care Village, with associated formal and informal open spaces, landscaping and recreation;
  - The construction of a local hub that will include a new supermarket of up to 930sqm and also link to the Care Village;

### ***The Study Area***

- 4.3.5 The proposed development falls within the administrative boundaries of Cherwell District Council (the majority of site) and West Oxfordshire District Council (the minority of the site). These districts form the immediate area within which the potential economic effects of the proposed development will be captured. Specifically the study will look at the retail centres of both Woodstock and Kidlington as well as Long Hanborough village centre in considering the retail impacts of the proposals. The assessment will focus on Woodstock, but restricting the assessment of impact to just the immediate area would not capture local effects accurately as they will occur across town and administrative boundaries.
- 4.3.6 The baseline context for the assessment of the retail impacts includes an analysis of both Kidlington and Woodstock town centres and how they currently operate including an assessment of their vitality and viability as retail centres.
- 4.3.7 The geographical area has been defined to reflect the area where the majority of impacts from a small food store are to be experienced including the diversion of trade and shopping trips. Figure 1.1 displays the boundary of the study area and the survey zones used for the retail analysis. This is designed to include the areas around Woodstock upon which the development may exert some influence. The area is based upon survey zones and the study areas used for both the Cherwell District Council Retail Study (2012) and the West Oxfordshire Retail Study (2012). In this way the household survey data for both can be used to inform our study.

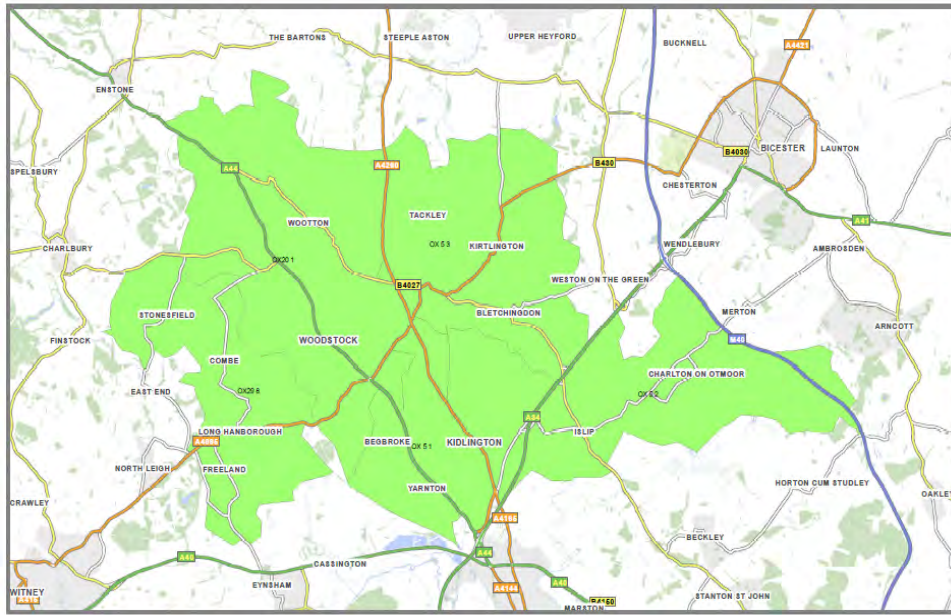


Figure 4.3.1: Survey Zones Plan

- 4.3.8 The Site is located immediately to the south east of the town of Woodstock, within the administrative boundaries of Cherwell District Council and West Oxfordshire District Council. The town centre of Woodstock lies around 500m to the north-west. The town centre mainly consists of hotels, restaurants, pubs, shops and services that serve the local population and the large numbers of visitors attracted to the area by the world heritage site.
- 4.3.9 Oxford (City), Bicester and Banbury provide the higher order retail centres for the area complemented by Witney and Chipping Norton in the middle tier. Close to Woodstock, some 3 miles to the southeast lies Kidlington town centre. Some villages within the study area, including Long Hanborough and Yarnton also contain a limited retail offering.
- 4.3.10 Following this introduction this reports sets out the current legislative framework; the planning policy context is detailed focusing on policies relating to retailing and town centre; the methodology for this assessment; the results from the desk top study giving a baseline context for the assessment of the role, function, vitality and viability of Woodstock and Kidlington town centres; economic analysis; a commentary of the impacts and recommends mitigation measures; a conclusion to the assessment.

## RELEVANT LEGISLATION

- 4.3.11 This section of the report outlines the relevant legislation to be taken into account through the EIA process, and identifies any specific areas of legislation that will inform the assessment of the economic effects of the proposed development.
- 4.3.12 The requirement for an EIA is set out in Article 3 of Directive 2011/92/EC – Environmental Impact Assessment. This states that EIA's should *"identify, describe and assess in an appropriate manner, in the light of each individual case and in accordance with Articles 4-12, the direct and indirect effects of a project on human beings, fauna and flora; soil, water, air, climate and the landscape; material assets and the cultural heritage; and the interaction between the factors referred to above"*.
- 4.3.13 For development in England, further legislation that applies the EU legislation is contained within the Town and Country Planning (Environmental Impact Assessment) (England) Regulations 2011. These regulations apply to certain types of development. The criteria for the development that is subject to EIA is included in schedules at the end of the legislation. Schedule 4 of the legislation sets out the information that should be contained within an EIA, to allow for a reasonable assessment of the effects of a

proposed development. Within schedule 4 reference is made to factors such as population, but there is no specific identification of socio-economic factors.

- 4.3.14 Although not legislation, in considering the socio-economic effects there are two key documents that can assist in this assessment. These are:
- HM Treasury, Appraisal and Evaluation in Central Government, January 2003 (referred to as “The Green Book”). The Green Book contains a high level discussion of the principles and best practice covering all issues relating to project appraisal.
  - English Partnerships’ Additionality Guide, Third Edition, October 2008. The Additionally Guide explains how to assess the additionality of a regeneration, renewal and regional development intervention.

## PLANNING POLICY CONTEXT

- 4.3.15 The development plan policy which covers the application site consists of the following documents:

- National Planning Policy Framework (NPPF)
- West Oxfordshire Adopted Local Plan (2001)
- West Oxfordshire Emerging Local Plan (2012)
- Cherwell District Council Adopted Local Plan (1996)
- Non-Statutory Cherwell Local Plan (2001)
- Cherwell District Council Emerging Local Plan (2014)

- 4.3.16 In addition to these planning policy documents the Oxford City Deal, The Cherwell Economic Development Strategy 2011- 2016, the Cherwell District Council Retail Study 2012 (CBRE) and the Retail Needs Assessment Update for West Oxfordshire District Council 2012 (GVA) are also considered.

### ***National Planning Policy Framework (NPPF)***

- 4.3.17 The NPPF was published in March 2012 and replaced the majority of planning policy and guidance in the form of Planning Policy Guidance notes (PPGs) and Planning Policy Statements (PPSs). The NPPF sets out the Governments planning policies for England and their implementation.
- 4.3.18 The ‘Golden Thread’ running through the NPPF is the presumption in favour of sustainable development. For decision making this means approving development proposals that accord with the development plan without delay. (NPPF Paragraph 14). The three dimensions to sustainable development, economic, social and environmental, as set out in the NPPF, should be considered simultaneously, and not in isolation when considering development proposals, to ensure that a sustainable development is achieved. Paragraph 17 details the Core Planning Principles of the NPPF and states that development should “proactively drive and support sustainable economic development to deliver the homes, business and industrial units, infrastructure and thriving local places that the country needs”.
- 4.3.19 The NPPF maintains the general thrust of retail planning policy advocating the town centres first approach and requires planning policies to positively promote competitive town centre environments and manage the growth of centres over the plan period. In planning for town centres LPA’s should~
- Recognise town centres as the heart of their communities and pursue policies to support their vitality and viability;
  - Define a network and hierarchy of centres that is resilient to future economic changes;

- Define the extent of town centres and primary shopping areas;
- Promote competitive town centres that provide customer choice and a diverse retail offer which reflect the individuality of town centres;
- Allocate a range of suitable sites to meet the scale and type of economic development needed in town centres. Where town centre sites are not available LPA's should adopt a sequential approach to site selection to allocate appropriate edge of centre or out of centre sites to meet the identified need.
- Set policies for the consideration of proposals for main town centre uses, which cannot be accommodated in or adjacent to town centres.
- Where town centres are in decline to plan positively for their future to encourage economic activity.
- The NPPF is clear in its proactive approach to enabling sustainable economic growth, and that this should be supported by the planning system.

4.3.20 Paragraph 26 (Ensuring the viability of town centres) states that when assessing applications for retail, leisure and office development outside of town centres, which are not in accordance with an up-to-date Local Plan, local planning authorities should require an impact assessment if the development is over a proportionate, locally set floor-space threshold (if there is no locally set threshold, the default threshold is 2,500 sqm m). This should include assessment of:

- The impact of the proposal on existing, committed and planned public and private investment in a centre or centres in the catchment area of the proposal; and
- The impact of the proposal on town centre vitality and viability, including local consumer choice and trade in the town centre and wider area, up to five years from the time the application is made. For major schemes where the full impact will not be realised in five years, the impact should also be assessed up to ten years from the time the application is made.

### ***West Oxfordshire Adopted Local Plan 2011***

4.3.21 The West Oxfordshire Local Plan 2011 was adopted in June 2006, and in line with legislation certain policies have been saved since 2009. The saved policies of relevance to this assessment are detailed below.

4.3.22 The retail hierarchy set out in the West Oxfordshire Local Plan 2011 is as follows:

- Principal Town Centre - Witney
- Primary Town Centres - Carterton and Chipping Norton
- Secondary Town Centres - Woodstock and Burford; and
- Local and Village Centres

4.3.23 Policy SH1 (New Retail Development states that proposals for retail development, other than to meet purely local needs, will be located according to the following sequence:

- 1) Within the town centres
- 2) On the edge of the town centres
- 3) In out of centre locations that are, or can be made, readily accessible by a choice of means of transport

4.3.24 Proposals for retail and other town centre uses in locations other than town centres will only be permitted where:

- a need for the development has been established;
- the sequential approach has been followed and there are no suitable sequentially preferable sites available;

- the development would not harm either directly or cumulatively the vitality and viability of any nearby town centre or planned measures to improve it;
  - the development proposed is appropriate in nature and scale to the location;
  - the proposal accords with other policies in the plan with regard to traffic impact, amenity and environment.
- 4.3.25 Policy SH4 (Shopping Facilities for the Local Community) states that proposals for small scale individual shops or groups of shops (Class A1), or other small-scale retail premises to meet the daily needs of the local community will be permitted within towns and villages, provided all the following criteria are met:
- the site would be readily accessible by bicycle and on foot;
  - the proposal would not harm the vitality and viability of an existing town centre or an established village centre for shopping;
  - there is no detrimental impact on the amenity of occupiers of residential property from noise, fumes, smell, lighting, activity levels or hours of operation at the site.
- 4.3.26 Policy SH5 seeks to retain local shops and or post offices where viable. Policy SH7 relates to Farm Shops and permits the in the open countryside provided there is a need to sell goods produced on the farm and it would not undermine the vitality or viability of shopping provision in existing villages.
- 4.3.27 Policy BE1 (Environmental and Community Infrastructure) states that development will not be permitted unless appropriate supporting, service and community infrastructure is available or will be provided.

**West Oxfordshire Draft Local Plan (2012)**

- 4.3.28 West Oxfordshire District Council is preparing a new Local Plan that will replace the now time expired plan adopted in 2006. The recent Local Plan Housing Consultation that closed on the 3rd October 2014 set out the council response to the findings of the Oxfordshire Strategic Housing Market Assessment and other relevant evidence.
- 4.3.29 WODC confirmed that there was a significant response to the consultation, so much so, that the planned timetable to forward the Submission Local Plan document to Cabinet has been postponed indefinitely, allowing the council time to undertake further technical studies.
- 4.3.30 At this time, there is considerable uncertainty on the timetable for taking the new Local Plan forward.
- 4.3.31 The objectives of the emerging Local Plan include the following:
1. Strong market towns and villages
 

*CO1 Provide new development, services and facilities of an appropriate scale and type in locations which will help improve the quality of life of local communities and where the need to travel, particularly by car, can be minimised.*

*CO2 Locate new residential development where it will best help to meet local housing needs.*
  2. Meeting the specific housing needs of our communities
 

*CO3 Ensure the timely delivery of new housing to meet forecast needs and support sustainable economic growth.*
  3. Sustainable communities with access to services and facilities
 

*CO7 Maximise the opportunity for walking, cycling and use of public transport.*

*CO8 Achieve sustainable economic growth, which improves the balance between housing and local jobs, provides a diversity of local employment opportunities, removes*

*potential barriers to investment and provides flexibility to adapt to changing economic needs.*

*CO9 Achieve a prosperous and sustainable tourism economy.*

*CO10 Promote safe, vibrant and prosperous town centres and resist proposals that would damage their vitality and viability or adversely affect measures to improve the centres.*

*CO11 Maintain or improve where possible the health and wellbeing of the District's residents through increased choice and quality of shopping, leisure, recreation, arts, cultural and community facilities.*

*CP15 (Local Services and Community Facilities) states that the Council will promote the development and retention of local services and community facilities to promote social interaction and healthy inclusive communities.*

4.3.32 Paragraph 6.44 considers town centres as follows:

*Town centre uses include retail development, offices, leisure, entertainment, arts, culture and tourism development and intensive sport and recreation uses. The evidence in our retail needs assessment and town centre surveys has identified that the main town centres of Witney, Carterton and Chipping Norton, Burford and Woodstock are generally vibrant with low vacancy rates. The 'high street' however faces a number of challenges in future not least from tightening of consumer spending and changing consumer behaviour including increasing competition posed by the internet and competing centres such as Oxford. Strategies which support our high streets are even more vital.*

4.3.33 The local plan picks out Woodstock and Burford for their historic and tourist role:

*6.46 The main centres are supported by a number of smaller town, village and neighbourhood shopping centres. The historic market towns of Burford and Woodstock have a relatively large number of shops and facilities for their size reflecting their historic and tourist roles.*

4.3.34 Paragraphs 6.49 and 6.50 consider the provision of new retail development as follows:

*6.49 To support our town centres we will seek to direct significant proposals for new shopping and town centre development, which provides for more than day to day needs, to our town centres wherever possible. Such proposals must follow the 'town centre first' approach established through national planning policy whereby the availability, suitability and viability of town centre sites to accommodate new town centre development should be fully explored, before edge of centre sites, and lastly out-of-centre sites are considered. New town centre development should be in accessible locations and appropriate in nature and scale to the role of the centre where it is located. Developments which are likely to attract customers from a significantly wider area than the centre's existing catchment may be considered out of scale with the role of that centre and may be better located within or adjacent to a larger centre.*

*6.50 The impact of proposed new town centre uses on the vitality of existing town centres and planned measures to improve them must also be fully considered. Impact assessments will be required for significant proposals (over 500m<sup>2</sup> net sales floorspace) where they are not in a centre or in accordance with a local or neighbourhood development plan and will be expected to be proportionate to the scale and type of development proposed. This threshold will help protect the town centres from medium and large out of centre food stores and other shops which could have significant impacts. Proposals which will have a significant negative impact on the vitality and viability of town centres will not be supported.*

4.3.35 The town centre hierarchy in the new local plan follow that of the 2006 version. Witney is identified as the Principal Town Centre, Chipping Norton and Carterton are identified as Primary Town Centres and Burford and Woodstock are identified as town centres with a significant tourist role.

4.3.36 CP16 (Town Centre) states that town, village and neighbourhood centres will be supported as the focus for shopping, leisure, community facilities and services. The

Council will work with local businesses, residents, parish and town councils to ensure town, village and neighbourhood centres remain vibrant, accessible and meet local needs.

- 4.3.37 The Council will apply the sequential and impact tests set out in the NPPF to new shopping and other town centre development. Impact assessments will be required for significant proposals (over 500m<sup>2</sup> net sales floorspace) where they are not in a centre or in accordance with a local or neighbourhood development plan.
- 4.3.38 Development proposals which significantly increase car parking demand in town centres will be expected to make appropriate public car parking provision or provide equivalent financial contributions.

### **Emerging Cherwell District Local Plan (2014)**

- 4.3.39 The Cherwell District Local Plan 2031 was submitted to the Secretary of State for Communities and Local Government for formal Examination on 31<sup>st</sup> January 2014. The Examination was commenced and postponed on the same day, 4th July 2014, to allow the Council additional time to put forward proposed modifications to the plan to increase new housing delivery to meet the full, up to date, needs of the district. As yet to be examined, the weight afforded to these emerging policies is reduced. The Inquiry recommences on 9th December 2014
- 4.3.40 Paragraph B.4 of the emerging Cherwell Local Plan (2014) states that protecting the role and function of existing town centres and employment areas, as well as enhancing the natural and built environment, will enable Cherwell to become as business-friendly as possible in support of jobs and prosperity.
- 4.3.41 Paragraph B.29 of the emerging Cherwell Local Plan (2014) states that the type of employment development the District wants to attract are:
- Advanced manufacturing/high performance engineering
  - The Green Economy
  - Innovation, research and development
  - Retailing
  - Consumer services
- 4.3.42 Policy BSC 8 (Securing Health and Well-Being) of the emerging Cherwell Local Plan (2014) states that the Council will support the provision of health/well being facilities in sustainable locations which contribute towards health and well-being.
- 4.3.43 Paragraphs B53 and B54 of the plan identify a town centres first strategy for retail development in line with the NPPF. B55 identifies the shopping hierarchy in the district with Banbury and Bicester being identified as the main town centres with Kidlington identified as a village centre. These larger centres we believe equate to the Principal town centres in West Oxfordshire (Witney) and Kidlington matches the Primary Centres (Carterton and Chipping Norton) but lies above Woodstock in the wider retail hierarchy.
- 4.3.44 Under paragraph B57 the plan identifies some additional capacity for retail growth in Kidlington as follows:
- Kidlington centre is considerably smaller than the two town centres, however it plays an important role in serving the local population. Additional shopping floor-space was opened in the centre in 2004 and there is capacity for further floor-space in the period up to 2031.*
- 4.3.45 Policy SLE2 covers retail development proposals in the district and follows the town centres first advice of the NPPF. It is noted that any new retail floor-space should serve two principal objectives, a reduction on the need to travel and be accessible by a choice of modes of transport.

4.3.46 The third chapter of the plan covers policies for specific places and includes a section on Kidlington reproduced at appendix 2 to this section. In retail terms the plan advocates the expansion of Kidlington's compact town centre to include additional sites and land. It does not advocate significant retail expansion but suggests that improvements in the town centre environment, night-time economy and accessibility are pursued.

**Policy Summary**

4.3.47 To summarise policy in relation to this site we need to consider the positive message of the NPPF in relation to promoting sustainable economic development. The emphasis for retail development is focussed upon a town centres first strategy and application of the sequential approach. The NPPF indicates however that where no town centre or edge of centre sites are available to meet an identified need for development then the planning system should not become an obstacle to delivery. In respect of need, the proposition in policy terms is that necessary retail provision can be made to reduce the need to travel and that it will be appropriate to meet the day-to-day needs of a community for shopping locally reducing that need to travel.

4.3.48 With respect to local policy the site straddles two districts and is covered by two emerging development plans. Both reiterate the town centres first policy and both identify that the objective to reduce the need to travel for food shopping is a recognisable and acceptable objective.

4.3.49 To satisfy retail planning policy in respect of this development it will be necessary to demonstrate that the proposal satisfies the sequential test (that there are no more suitable, viable and available sites in town centre or edge of centre locations on which the development can be accommodated). It will also be necessary to demonstrate that the proposed development will not have a material negative impact upon the vitality and viability of any nearby shopping centre or any plans for the enhancement of those centres. It is important also to show that the site is accessible by a variety of modes of transport and that provision of a food-store here will reduce the need for the local population to travel for their day to day shopping needs.

4.3.50 In respect of the retail hierarchy, looking jointly at the Cherwell and West Oxfordshire plans, the top tier for retailing (Regional Centre) is provided by Oxford then the Main town centres of Banbury, Bicester and Witney. The third tier (primary centres or village centres) is satisfied by Chipping Norton, Carterton and Kidlington. Woodstock functions as a smaller town centre intended only to meet the day-to-day service and shopping needs of the local population. The West Oxfordshire Local Plan recognises that for Woodstock this role is enhanced by the historic character of the town and the need to serve visitors to the adjoining World Heritage Site of Blenheim Palace.

4.3.51 The Cherwell plan is silent on the role and function of Woodstock but does consider Kidlington in some detail and again recognises the town centre as a focus to provide for the day-to-day and weekly shopping and service needs of the village population and those from surrounding villages without retail facilities.

**METHODOLOGY**

4.3.52 This Retail Assessment has been undertaken in line with the EIA scoping methodology and scoping opinions received from both Cherwell District Council and West Oxfordshire District Council, and the planning policy context.

4.3.53 The assessment has been underpinned by secondary research, desktop study, review of baseline information, commission of original data and, primary research through site assessment, data review and consultation with relevant stakeholders.

**Extent of the Study Area**

4.3.54 The extent of the study area for the economic considerations is principally the town of Woodstock. In addition a zone of influence around site has been selected to represent the



area over which the retail development proposed may exert some influence. In order to make use of available data this has been tailored to fit with the survey and data zones used for the Cherwell and West Oxfordshire retail studies that were carried out in 2012. The survey zones are shown on the plan below and this is reproduced in appendix 2. The post code sectors making up the zones and the relevant population data are included in fig 4.3.2 below:

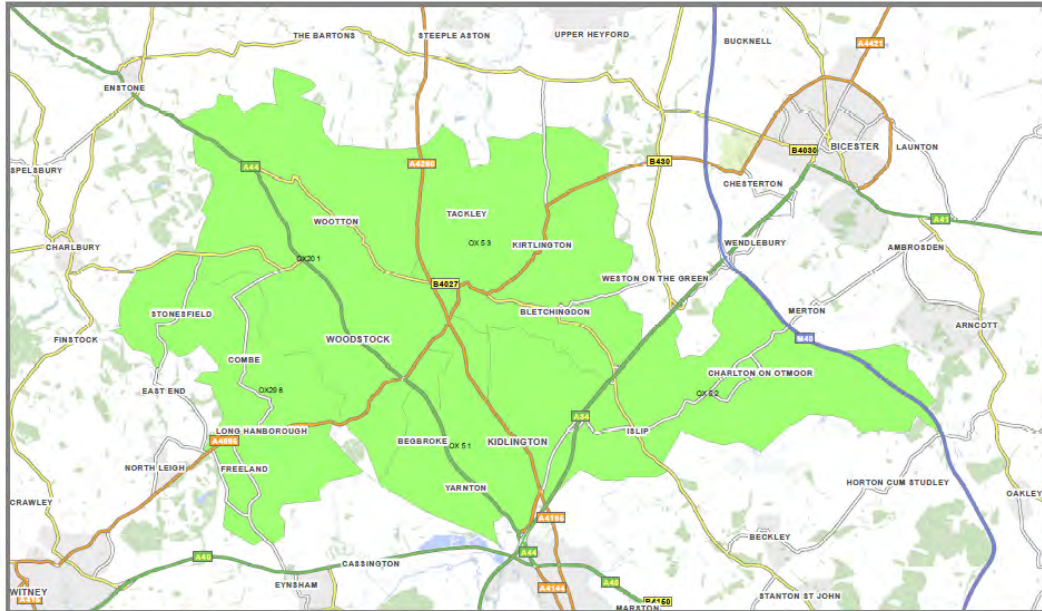


Figure 4.3.2: Survey Zones Plan

Zone	Postcode Sectors	Population (2011 Census)
1 Woodstock	OX20 1	4971
2 Long Hanborough	OX29 8	6633
3 Kirtlington	OX 5 3	2953
4 Kidlington	OX 5 1	11,327
5 Charlton on Otmoor	OX5 2	9,108
Total		34,992

Table 4.3.1: Population

4.3.55 Expenditure and population data for the above area has been commissioned from Experian to give an up to date understanding of their current performance, turnover and the expenditure available to support retail activity in each zone.

**Retail Policy Overview**

4.3.56 An overview of retail policy currently in place to support sustainable growth and development in the local, regional and national areas has been undertaken. This includes a review of the National Planning Policy Framework (NPPF), the Local Plans for Cherwell District Council and West Oxfordshire District Council. The policies relevant to the context of this proposed development have been highlighted, including key strategic objectives that the project may contribute towards.

**Town Centre Health Checks**

4.3.57 In preparation for this study and in response to the EIS scoping letters sent out by both Cherwell District Council and West Oxfordshire District Council the study will consider the retail impact effects specifically in relation to Woodstock (WODC) and Kidlington (Cherwell). Both centres have been reviewed and retail health checks prepared to understand both their current function and their health (and so susceptibility to retail impact). These assessments are detailed below.

**Retail Need and Capacity**

- 4.3.58 Using the up to date population data and newly commissioned expenditure data we have identified the amount of available expenditure to support different types of retail activity in each survey zone.
- 4.3.59 This expenditure is compared to the extent of retail floor-space present in each zone and the retail shopping patterns identified by the household shopping surveys undertaken by both Cherwell and WODC in 2012. The amount of expenditure captured by each centre or main food store can be identified to give an idea of centre turnover. This is compared with a benchmark turnover derived from identifying the extent of retail floor-space present and using published sales density data to understand expected retail turnovers.
- 4.3.60 The difference between the expected (benchmark) turnovers and the turnovers identified from apportioning expenditure according to the household surveys can identify whether a centre or floor-space is performing well or failing under current market conditions. A mismatch between benchmark and actual turnovers will inform the study in respect of retail capacity.
- 4.3.61 Where stores are identified as over-trading this can be used to identify the scope for additional retail provision to satisfy current demand. This need is also influenced by growth in per-capita expenditure and growth in population both of which will add to available retail expenditure and therefore retail capacity between the base year (2014) and design year (2019).
- 4.3.62 The distribution of expenditure according to the household survey will also inform the study about the inflow and outflow of retail expenditure from the key towns. Outflows of expenditure to larger competing centres elsewhere can evidence a need for greater retail provision to retain retail trade locally in a more sustainable manner.
- 4.3.63 Assumptions have been made that the retail shopping patterns identified in 2012 by both GVA and CBRE in the respective district shopping studies are unlikely to have changed significantly as there has been little or no significant retail development in this study area throughout that period.

**Retail Impact Assessment**

- 4.3.64 The pattern of shopping and distribution of expenditure across the study area gives us an idea of where current flows of expenditure are going. This model is then used as a baseline for the impact assessment. Projecting the current patterns forward to a design year when the proposed food-store will have been trading and achieved settled shopping patterns (assumed to be one year after opening) provides the base against which impact can be assessed.
- 4.3.65 The turnover of the new store is then calculated using published sales density data for convenience and comparison floor-space and shopping patterns are adjusted to introduce this store to the base line position (design year – no new store). Trade draw patterns are adjusted and the draw to the new store deducted from the turnover of existing stores within and beyond the study area to reflect the patterns likely to be created.
- 4.3.66 In this case it is also relevant to consider how the increase in population (and consequent retail expenditure) will impact upon the stores and centres in the study area. The expenditure of the new population will also be added in to the base line model at the design year. A model will also be run adding in the new population with no new retail floor-space to understand the need for the additional shopping floorspace properly.
- 4.3.67 This model is then compared to the base case and the extent of trade diversion from each store or centre identified to show retail impact. The levels of impact are then reviewed alongside the health check data to understand whether the impact will have a material effect on the stores and centres in question.

**Significance Criteria**

- 4.3.68 The likely changes to the baseline conditions and the effects of those changes as a result of the proposed development have been assessed to provide the likely significant economic effects within the study area.
- 4.3.69 No set of standards to assess these economic effects is established for this type of study. Each effect identified will be assessed considering the following:
- Change to baseline - Negligible, minor, moderate, major
  - Positive or negative change
  - Permanent or temporary change
  - Short, medium or long term change,
- 4.3.70 An assessment of the magnitude of the change and the residual effects of each is considered, and any mitigation measures considered relevant are included.

**TOWN CENTRE HEALTH CHECKS****Woodstock**

- 4.3.71 This section of the report provides an assessment of current role and function of Woodstock town centre and provides the baseline against which impacts upon the centre can be judged.
- 4.3.72 Woodstock is a town located to the north west of Oxford at the edge of the Cotswolds. It is an historic centre with a traditional Cotswold town centre based around a market square and adjoining streets. The town has enjoyed something of a renaissance in recent years with a significant rise in the number of tourist visitors to the town and strong growth in the towns heritage leisure market built around the success of the promotion of Blenheim Palace as a tourist destination alongside a strong resurgence in visitation to the Cotswolds including leisure-weekenders and domestic short-break visitors.
- 4.3.73 The town has been well placed to take advantage of this trend over recent years and hotels in the centre such as the Feathers, Kings Arms and Bear Hotel and the pub trade including six town centre pubs is thriving and supporting a significant day time and evening dining and leisure trade. This service role and its growth has masked to some extent a decline in the traditional shopping function of the centre. Comparison shopping is in decline (in line with national trends) and several business units in the centre have recently converted to residential uses.
- 4.3.74 The change is such that the leisure trade now dominates the centre and has influenced the range and nature of retailers present. Historically the town has served as a local service centre for the town's residents and those from surrounding smaller settlements. This would imply a centre dominated by convenience shopping, service shops and businesses and practical comparison retailing. The reality is a centre dominated more by meeting the needs of visitors and tourists through leisure, specialist retail and the pub and hotel trade.
- 4.3.75 Much of the retail business is oriented toward leisure based or visitor comparison shopping including galleries, gift shops, candles, antique shops, furniture shops, artisan food shops (bakery, delicatessen and patisserie). These outlets make up some 27 of the 68 (41%) commercial premises in the centre, which now caters mainly for the visitor trade. Other retailers will also benefit significantly from the visitor trade for example it would be unusual for a town of this size to support two book shops and a jewellers based on local trade alone. A schedule of retail outlets and our assessment of the trade they serve is included as appendix 3.

Heritage

- 4.3.76 Woodstock has a beautiful historic town centre with the majority of buildings within the defined town centre comprising old historic shops and houses and the entire centre being designated as a conservation area. All of the buildings in the town centre between Oxford Street in the east to the gates of Blenheim Palace in the west (Market Street, High Street and Park Street) are listed as is the majority of the town centre property on Oxford Street.
- 4.3.77 The historic nature of the town centre does have an impact on retailing in both a positive and potentially a negative fashion. On the positive side the historic town centre is a major attractor for visitors and this drives the popularity of Woodstock as a place to visit. The heritage protection afforded by the conservation area status, listed building designations and adjacent world heritage site suggest that the town centre will be well protected from inappropriate development and its current attractiveness to visitors will be sustained and remain a strong draw. To some extent this suggests that the centre in its current form may well be significantly immune to retail impact as its character, the principal draw to visitors, is so well protected. One concern would be further decline in retail activity as a result of further conversions to residential use.
- 4.3.78 There is also a down side to this level of heritage protection. There is nowhere in the town centre to add or provide additional shops or more modern retail outlets to suit modern retail requirements, this of itself will reduce the attractiveness of the centre to some outlet operators and will prevent new entrants to the retail market from becoming established in the town. Furthermore the town is locked in to a 17th century layout and pattern of development that is finding it hard to adjust to modern transportation needs, hindering modern servicing methods, preventing the provision of additional car parking in a convenient location close to the centre and again acting as a barrier to new entrants to the retail market. The existing centre is in effect set in aspic and change is very difficult to achieve or effect.

Land Uses and Retail Mix

- 4.3.79 Land uses in the centre can give a good impression of the health of a centre, taking account of the quality of outlets, multiple versus independent outlets, comparison, service and convenience outlets, the scope and nature of financial and professional services, the nature of A3, A4 and A5 outlets can all inform the role of the centre and its health. Vacancies are a key measure and these can be looked at historically to understand whether a centre is improving or declining as well as to give a snapshot comparable to national averages.
- 4.3.80 In Woodstock we have the benefit of the recent 2012 study of the town centre by GVA and this gives us a good understanding of how the centre is changing. It is noticeable that in this relatively short time there have been some significant changes. The table below (table 4.3.2) gives both the GVA figures for units in the centre in 2012 and our own figures for 2014. Our own analysis is finer grained than that done by GVA but key comparables can still be used.

Retail Category*	GVA 2012	%	LSH 2014	%	Change	% Change
A1 Convenience	4	5%	5	7.1%	+1	+2.1%
A1 Comparison	35	45%	28	40.8%	-14	-13.2%
Service Uses	35	45%	35	50.2%	+/-0	+0
(A1)			(10)	14.2%		
(A2)			(7)	10%		
(A3)			(6)	8.5%		
(A4)			(5)	7.1%		
(A5)			(1)	1.4%		
C1 Hotels			(4)	5.7%		
Vacant	4	5%	2	2.8%	-2	-50%
Total	78		70		-8	-11.4%

\* Retail uses are divided into five categories by the Town and Country Planning (Use Classes) Order A1 space is retail shops, A2 space is financial and professional services including banks, building societies, estate agents, employment agents, betting shops etc. A3 provision is restaurants, A4 provision is pubs and bars and A5 provision is takeaways. Retail A1 provision can be further divided into convenience, comparison and service outlets. Convenience shopping is food, newspapers and day-to-day consumables, comparison shopping is durable goods and non-consumable purchases and retail services are hairdressers, travel agents or other service outlets. Many A2 and A3/4/5 uses can be considered part of the "service" economy as they do not sell goods but provide retail services to visiting members of the public.

Table 4.3.2: Woodstock uses and retail mix analysis

- 4.3.81 The table tells us a number of things about the centre of Woodstock and how it is changing. The figures suggest a strong decline in the number overall of units in the town and we are aware of recent press reports that support this. Whilst some of the differential of 8 units may be down to different methods of cataloguing the centre, much is down to change of use.
- 4.3.82 The decline here has been on the basis of the change of use of former shops and service outlets into residential property and this reflects the massive price differential between residential and commercial property and a decline in demand for retail space during the "great recession" 2008 -2013. One of the notable closures and conversions is the loss of the Natwest Bank from Market Street which took place in 2014 and the loss of the butchers from the High Street in 2012.
- 4.3.83 Whilst the figures show a modest increase in convenience outlets this is likely to relate to the artisan food shops including the cake shop, bakers or delicatessen rather than a growth in independent food shops intended to serve the base population of the centre for day-to-day convenience needs. The specialist convenience shops are aimed at serving the visitors to the centre rather than the resident community.

#### Vacancies

- 4.3.84 The good news from the survey is that the vacancy rate is incredibly low at 2.8%, half the number of vacant outlets from 2 years ago and significantly less than the national average for shops which currently stands at around 13%. This may be because the alternative to vacancy is conversion to residential for which there is a ready market. Nevertheless vacancies always detract from a centre and such a low level is a positive indicator of health.

#### Multiple Representation

- 4.3.85 In respect of multiple outlets only the Barclays Bank and Coop fit into this category and this indicates a very strong independent sector but also reflects the size of the centre and catchment. Many high street multiple retailers, even those considering smaller centres, will operate a size and population threshold policy for towns within which they will locate. At less than 4000 people Woodstock will not sit well on any ranking of opportunities and this may dissuade multiple retailers from taking space here. Certainly the closure of outlets such as the Natwest will be based on population size and the number of

transactions that were taking place. An increasing population could well have altered or affected this earlier decision.

- 4.3.86 The scale of the town and its “ranking” in terms of population and the absence of multiple retailers may be both a benefit and disadvantage as it will protect the independent sector that many consumers profess to support and which gives the town some of its character but it will also dissuade the likes of Boots or M&Co and other successful multiple retailers from locating here reducing its attractiveness to many as a functioning shopping centre.

#### Accessibility and Car Parking

- 4.3.87 Woodstock sits in a discrete rural location close to major roads on the highway network. It is well connected by road to Oxford, (and Evesham) by the A44 and close to its junction with the A34. Adjacent to the town lies the junction with the A4095 a busy route across and into the Cotswolds linking Bicester to Witney.
- 4.3.88 Woodstock is not served by a rail station although the Main Road station near Long Hanborough to the south could be argued to serve the town but not the town centre directly. This station sits on the main line between London Paddington (and Oxford) and Hereford/Worcester/Ledbury to the north.
- 4.3.89 Woodstock is well served by bus routes including both express services to Oxford/ Chipping Norton/Charlbury and Witney and local services provided by Heyfordian. In all seven routes serve the town and it has regular (every 20 minutes) express connection with Oxford provided by Stagecoach.
- 4.3.90 Woodstock is well related to the national cycle network and a number of routes pass through or close to the town to link with nearby centres of Witney and Oxford. Separated and purpose built cycle-ways along the A44 give good access to Oxford.
- 4.3.91 The town centre is also well located to serve the rest of the town with all houses in the town being within a 20 minute walk of the centre. This compact nature should encourage walking trips to the shops and facilities of the town centre.
- 4.3.92 As with many rural towns however the vast majority of visits are made by private car. This is true both of local visitors and those travelling for heritage and leisure trips. Car parking in the centre is mainly on-street and largely free. Whilst there are some permit bays for residents the majority of road side parking is limited to either one or two hour windows. Within the town centre itself there is no off street car parking and workers, residents and visitors vie and compete for the limited on-street provision. The car parking is both road side and occupies the bulk of the town square in High Street. We estimate the centre has around 200 on-street car parking spaces. At peak times these are very well used and car parking was cited as an issue by both officers of West Oxfordshire and Cherwell in our discussions relative to the town.
- 4.3.93 In addition to the on-street car parking there is a small car park (115 spaces) provided by the library to the east of the town centre and some five minutes walk from the shops. Whilst this is not that popular with shoppers and most will try to park in the town centre first, it is often full at peak times.
- 4.3.94 The paucity of car parking in the centre and the restriction for most spaces to one hour duration will impact on the ability of the town centre to benefit properly from the visitor and heritage leisure trade. If visitors are prevented from staying for more than one hour the ability to lunch or browse the shops is curtailed and many could be dissuaded from stopping in the centre because of the restrictions on dwell time. Of course the historic nature of the centre presents a significant barrier to the provision of additional off-street car parking in the core area.
- 4.3.95 The Town Council have carried out their own parking study of Woodstock (included in the appendices to the supporting Highways and Transportation Statement). This recommends some limited changes to wait times in the centre to improve the ability of the centre to serve the longer stay visitor trade.

Crime and Safety

4.3.96 In considering the health and vitality of town centres one of the measures to look at is the feeling of public safety and the appearance of the centre relative to crime and vandalism. The village character of Woodstock, the well maintained public spaces and the visible absence of graffiti and vandalism give a strong perception of safety. This feeling of safety is reinforced due to the presence of many houses within the centre providing round-the-clock surveillance of the town centre area.

Summary and Conclusions of Heath Check

4.3.97 Woodstock is a healthy centre with low vacancies, an attractive historic core on which it has founded a strong business model catering for tourist trade and leisure/heritage visitors. The town centre fulfils an important economic function anchoring visitor trade and providing an attractive centre for servicing the visitors to the nearby World Heritage site at Blenheim.

4.3.98 In successfully fulfilling this function it has changed its role and moved away from satisfying the local service needs of the local population, a role it struggles to perform. It fails to retain the majority of local expenditure for food, convenience and servicing needs encouraging local residents to look elsewhere for their day-to-day service and shopping needs. So whilst as a town centre it is succeeding economically, it does not serve the local population perhaps in the way it should. Evidence later in this report will detail the extent of trade retention (around 10% of local convenience trade is retained here) but this points not to a failure in the centre but a need to enhance its service and convenience role.

4.3.99 Opportunities to build a bigger service and convenience function are constrained by the very foundation of its success, its heritage strengths and attractive town centre environment. There is little scope to provide for modern convenience retailing in its town centre and few opportunities to provide the infrastructure (enhanced car parking) and modern shop units required to retain a greater proportion of the locally generated and indeed visitor retail spend.

4.3.100 In terms of size it lacks the critical mass to support significant investment in new retail provision and it will always be too small a centre to support the level of shopping required to fully meet the demands of the local population for service, convenience and day-to-day comparison shopping.

4.3.101 The question is should these basic facilities to retain local expenditure be based around a town centre solution. The policy position suggests a town centres first approach but where there are no town centre or edge of centre development opportunities alternatives can be considered. With the new housing proposed as a part of the Woodstock East expansion, the critical mass of the village will grow to provide enhanced spending (an additional £4.7m in convenience retail spend). To make the town sustainable and able to feed itself, both figuratively and actually, an out of centre or remote retail development meeting the local needs of the town without harming its main and successful heritage function and without reducing its vitality and viability can be the most appropriate solution.

***Kidlington***

4.3.102 Kidlington is the second centre that may be affected by provision of new retail and residential development at Woodstock East. Kidlington lies a little over 3 miles to the south-east of Woodstock and is in effect only a five minute drive from the town and proposed development site.

Village Centre Environment

4.3.103 Whilst an historic settlement in its own right, the village is larger than Woodstock (around 11,000 people) and it has been the subject of more modern interventions and

development. Kidlington is profoundly affected by its close relationship to Oxford and provides a more service oriented function for its resident population and hinterland. The Cherwell Retail Study identified that Kidlington is "dominated by the proximity of Oxford, and that its future is intimately linked with the future of the city."

- 4.3.104 The retail centre is based around the High Street, Banbury Road and Oxford Road. The centre is far from attractive in terms of heritage and character but provides a functional town centre with some limited modern retail provision including the Kidlington Centre (a precinct of small retail units) and four significant convenience retail outlets including an out of centre Sainsbury, and a Tesco Metro, Iceland and a Cooperative Supermarket in the town centre. Two smaller Coop stores are located in residential areas in the town. Public spaces are good quality and street furniture is well provided.
- 4.3.105 The village centre fulfils a limited main food and top up shopping function for convenience shopping and has a limited comparison shopping base. The centre (and Sainsbury) serves a wider role than Woodstock and serves the Woodstock catchment as the main destination for food and top up shopping. The centre includes some local state service provision including a library, schools and sports centre on its outskirts.
- 4.3.106 The main focus of the centre is on the part pedestrianised High Street with good shopping provision on Oxford Road providing secondary frontage. The shopping and uses on Banbury Road are very much a tertiary shopping area and are separated and divorced in function from the main centre being also distant from available car parking.
- 4.3.107 In terms of the retail hierarchy Kidlington sits below Oxford City as a regional centre and Witney, Banbury and Bicester (including Bicester Village) nearby provide higher order comparison shopping. Kidlington does not compete with these centres in any meaningful way

#### Land Uses and Retail Mix

- 4.3.108 The centre has a broad mix of retail outlets and a well-developed service sector. It's strengths lie in convenience retail provision for day to day food shopping and everyday comparison purchases as well as service outlets including takeaways, hair dressers, banks, estate agents and low level comparison goods outlets. The following table details the current retail mix and compares provision today with the 2012 Retail Study.

Use type*	2012 (CBRE)	%	2014	%	Change
A1 Convenience	7	11.4%	9	13%	+2
A1 Comparison	24	39.3%	17	24.6%	-7
Service	28	45.9%	40	57.9%	+12
(A1)			(14)	20.2%	
(A2)			(14)	20.2%	
(A3)			(5)	7.2%	
(A4)			(2)	2.8%	
(A5)			(5)	7.2%	
Vacant	2	3.2%	2	2.8%	
Total	61		69		+8

\* Retail uses are divided into five categories by the Town and Country Planning (Use Classes) Order A1 space is retail shops, A2 space is financial and professional services including banks, building societies, estate agents, employment agents, betting shops etc, A3 provision is restaurants, A4 provision is pubs and bars and A5 provision is takeaways. Retail A1 provision can be further divided into convenience, comparison and service outlets. Convenience shopping is food, newspapers and day-to-day consumables, comparison shopping is durable goods and non-consumable purchases and retail services are hairdressers, travel agents or other service outlets. Many A2 and A3/4/5 uses can be considered part of the "service" economy as they do not sell goods but provide retail services to visiting members of the public.

Table 4.3.3: Kidlington Retail Study



- 4.3.109 The table illustrates that Kidlington is very much a service centre for local retail trade. Service uses dominate the centre and alongside strong retail service trade it has a large number of essential local outlets including banks, building societies and A1 service outlets. It also has a good range of comparison retail outlets although this is declining with a switch to more service based outlets common in centres of this size.
- 4.3.110 Convenience shopping also dominates and whilst the number of outlets compares to the national average, in terms of floorspace provision representation is high including three medium food stores operating at the value end of the market, Iceland, Tesco Metro and the Coop.

#### Vacancies

- 4.3.111 Vacancies in the centre at around 3% are low and have remained constant despite a decline in the comparison retail trade. This illustrates that where comparison units have declined the space has been filled by a growing number of service outlets. Nationally vacancies are running at around 13% and so performance here is good, bucking the national trend where higher vacancy levels are often hitting smaller service centres.

#### Multiple Outlets

- 4.3.112 The centre includes a number of multiple traders reflecting the size and catchment of the centre and in comparison to Woodstock, the availability of larger modern outlets. These include Lloyds Chemist, Superdrug, Costa Coffee, the four main High Street banks, M and Co, House of Cards and Ladbrokes. Multiple representation and low vacancies both imply a strong centre although the quality of provision serves the lower end of the market.

#### Accessibility and Car Parking

- 4.3.113 Service centres such as this are based around customer convenience and the availability of easy to access, cheap or free car parking are essential elements in drawing car borne customers to the centre. Car parks for both the Tesco and Coop provide an important resource for the centre and support its service function well. Because of the limited dwell time of convenience shopping visitors, by comparison with Woodstock and reflecting the nature of visits, the 100 space car park behind the Coop and the car parking behind the Kidlington Centre (150 spaces) is probably adequate to serve the needs of the centre well.
- 4.3.114 Kidlington is not currently served by a station but new provision is being provided as a Parkway Station at Water Eaton. Bus services are plentiful linking the centre to Oxford, Bicester and nearby towns including Woodstock. Buses tend to operate mainly along Oxford Road and Banbury Road passing through the town centre and giving a good central service to visitors.

#### Crime and Public Safety

- 4.3.115 The pedestrianised area and public square behind the Kidlington centre are in reasonable condition and there is little evidence of crime and vandalism. The limited night-time economy and few town centre residents gives a feeling of desertion after dark and an improvement to the night-time economy or development of more residential uses in the centre may improve perceptions of safety after dark.

#### Summary and Conclusions

- 4.3.116 Kidlington is a well-developed service centre meeting the day to day shopping and service needs of the settlement itself and wider hinterland. It has a mature local convenience function, which is well fulfilled by existing retail outlets. The comparison function has contracted in recent years, in line with national trends, but this has been replaced by an improvement in service outlets.

- 4.3.117 The centre has a very low vacancy rate implying good retail health, the car parks are well used and bus provision is very good. Whilst the environment suffers from some unfortunate modern interventions, it fulfils its service function very well and is a broadly convenient place for top up and day to day shopping supported by good parking provision and the safety and ease of movement enhanced by the part pedestrianised high street.
- 4.3.118 Its performance in the current economic climate has been surprisingly good but the Council need to be vigilant in ensuring that the centre based around the High Street retains its service function. The area of the centre along Banbury Road contributes little to the overall vitality and viability of the centre and if the centre were to contract from this area this would not cause harm to its overall function.
- 4.3.119 Because of its convenience shopping function the centre is susceptible to impact from further large scale out of centre retail proposals and the Sainsbury, whilst meeting an important main food function for the wider district will have drawn trade away from the centre historically. The centre has adjusted well to this long term impact and continues to trade very well.

**Long Hanborough**

- 4.3.120 In addition to the health and vitality and viability of Woodstock and Kidlington from the household surveys and our own research it is clear that the village of Long Hanborough derives significant convenience trade from the Woodstock catchment area. Whilst not comprising a full health check this study needs to understand the nature of retailing in that village centre and to ensure that provision here would not be significantly adversely affected by the new provision at Woodstock East.
- 4.3.121 Long Hanborough is a small linear village that runs predominantly along the A4095 to the south-west of Woodstock. The village does not have a formal town centre but there are a number of commercial premises spread along Main Road. These include several public houses, a parade of 4 small shop units which include a newsagents, dentist and hairdresser. At the western end of the village a new Coop Food store has been built of 450sq m net sales.
- 4.3.122 Whilst not in a town centre this store provides an important service to the village and serves a fairly wide catchment providing day-to-day and some weekly food shopping. According to the analysis from the GVA study for West Oxfordshire the village currently turns over around £6.29m drawn mostly from the Woodstock home zone or postcodes OX20 1 and OX29 8.
- 4.3.123 Total convenience floorspace in the village includes the Coop, the butchers and the newsagents. Assuming 100 sqm m each for the butcher and newsagents and nominal sales densities for these stores as well as Coop at company average the table below identifies the benchmark (expected) turnover of the village in convenience shopping terms.

Store	Sales Area	Sales Density	Notional Turnover
Coop	450 sqm m	£7,000	£3.15m
Newsagents	100 sqm m	£4500	£0.45m
			£3.6m

Table 4.3.4: Convenience floorspace in Long Hanborough

- 4.3.124 The identified GVA turnover derived from the household survey gives the village a turnover of £6.2m and an average sales density of £9676 sqm m. Since the GVA survey a Butchers shop has closed and this will have reduced the village turnover. Nevertheless the data indicates that the stores in Long Hanborough are trading well, probably a reflection of their niche position in the wider catchment area. Whilst this does not of itself give rise to a problem, it does indicate that the stores in Long Hanborough could withstand some impact without there being any likelihood of store closure or withdrawal from the market.

## RETAIL IMPACT ASSESSMENT

- 4.3.125 As noted above the methodology for this study will look very closely at the retail function of Woodstock and Kidlington and will assess the impact of a proposed new food store on these centres. We have used the retail studies and household surveys prepared for both Cherwell District Council and West Oxfordshire District Council to describe existing shopping patterns in the area, to determining the turnover of existing shopping centres and to understand how patterns may change as a result of the new development.
- 4.3.126 The base-line position for each centre has been identified through commissioning new population and expenditure data, based on relevant post code sectors covering the study area. These post code sectors are common to survey zones used in the above mentioned retail studies. Each town will be reviewed individually to understand the current retail economics and shopping patterns. These are set out within this section, which then goes on to identify the turnover and trade of the new store proposed and to assess the impact of that store on existing trading patterns. The base year for the economic work is 2014, the design year tested for the new store is 2019 and the price base for the economic data, sales densities, projections and turnovers is 2012.

### **Population and Expenditure Data**

- 4.3.127 New population and expenditure data has been commissioned from Experian as a Retail Planner Report (Appendix 2). This data gives us populations by post code sectors projected to base and design year from the 2011 Census. The study also gives us expenditure per capita figures for the area and these multiplied by population can be used to identify the available convenience and comparison expenditure from residents in the study area.
- 4.3.128 Tables 4.3.5 to 4.3.7 below identify the existing and projected convenience expenditure for the post code sectors covering the survey area. Tables 4.3.8 and 4.3.9 identify the comparison retail expenditure picture across the study area. For all expenditure data non-

		Population for study area (Experian Projections)			
		2012	2014	2019	2019+
Zone	Post Code	Population			
1	OX 20 1	4865	5080	5342	7689
2	OX 29 8	6489	6704	7116	
3	OX 5 1	11249	11562	12111	
4	OX 5 3	2919	3013	3159	
5	OX 5 2	9016	9291	9707	
Sources: Experian Retail Report and Experian Retail Planner Briefing Note October 2014.					
Special forms of trading and convenience growth rates drawn from Appendix 3 Retail Planner Briefing 12.1 October 2014.					
2019+ Equates to additional population from Woodstock East Development @ 2437 popIn					

stores sales (special forms of trading) have been stripped out of the overall figures.

Table 4.3.5: Population for study area

Expenditure Per Capita			2012	2013	2014	2019
Post Code	Expenditure Per capita	SFT	Adjusted Expenditure			
OX 20 1	£2,184	0.60%	£2,053.0	£2,016.0	£1,999.9	£2,026.0
OX 29 8	£2,333	0.60%	£2,193.0	£2,153.5	£2,136.3	£2,164.2
OX 5 1	£2,024	0.60%	£1,902.6	£1,868.3	£1,853.4	£1,877.6
OX 5 3	£2,276	0.60%	£2,139.4	£2,100.9	£2,084.1	£2,111.4
OX 5 2	£2,232	0.60%	£2,098.1	£2,060.3	£2,043.8	£2,070.5

\* SFT relates to non-store trading deductions, Growth rates are drawn from Experian (negative in 2012 and 2013)

Table 4.3.6: Expenditure per capita

Total Convenience Expenditure			
Zone	2014	2019	2019+
OX20 1	£10,159,384	£10,822,953	£15,578,002
OX29 8	£14,321,871	£15,400,681	
OX5 1	£21,428,634	£22,739,440	
OX5 3	£6,279,462	£6,669,774	
OX5 2	£18,989,244	£20,098,723	
<b>Total</b>	<b>£71,178,594</b>	<b>£75,731,572</b>	<b>£80,486,621</b>

Table 4.3.7: Total Convenience Expenditure

Comparison Retail Expenditure Per Capita				
Post Code	2012	Adjusted 2012 for SFT	2014	2019
OX 20 1	£3,404	£2,930.8	£3,194.4	£3,628.1
OX 29 8	£3,905	£3,362.2	£3,664.5	£4,162.0
OX 5 1	£3,140	£2,703.5	£2,946.6	£3,346.7
OX 5 3	£3,720	£3,202.9	£3,490.9	£3,964.9
OX 5 2	£3,551	£3,057.4	£3,332.3	£3,784.7

Table 4.3.8: Comparison Retail Expenditure per capita

Available Comparison Expenditure by Zone				
Post Code	2012	2014	2019	2019+
OX 20 1	£14,258,556	£16,227,344	£19,381,114	£27,896,179
OX 29 8	£21,817,348	£24,566,836	£29,617,083	£29,617,083
OX 5 1	£30,412,121	£34,068,797	£40,531,713	£40,531,713
OX 5 3	£9,349,323	£10,518,075	£12,525,004	£12,525,004
OX 5 2	£27,565,618	£30,960,454	£36,738,465	£36,738,465
<b>Total</b>	<b>£103,402,967</b>	<b>£116,341,507</b>	<b>£138,793,378</b>	<b>£147,308,443</b>
<b>Growth 2019+</b>	<b>0</b>	<b>£12,938,540</b>	<b>£22,451,872</b>	<b>£30,966,936</b>
				<b>£8,515,065</b>

Table 4.3.9: Available comparison expenditure by Zone

### Convenience Expenditure

4.3.129 The figures show available convenience expenditure across the whole study area as £71m in 2014 rising through population growth and expenditure growth to £75m in 2019.

In addition the 2019+ column gives us the additional turnover in convenience goods that would be generated by the additional population associated with the completed Woodstock East development area.

- 4.3.130 The additional housing adds £4.75m to the available convenience expenditure in the study area in 2019. This is on top of the growth of £4.6m between 2014 and 2019. Growth rates used are up to date from the Retail Planner Briefing Note produced by Experian in October 2014. Special forms of trading (non-store retail sales largely internet based have been stripped out).
- 4.3.131 Of key relevance to Woodstock is the area covered by Post Code Sector OX20 1 and OX 29 8, which cover its natural catchment area. Table 4.3.7 shows available convenience expenditure in this area amounts to £24.4 m in 2014 rising to £26.2 m in 2019 without the additional housing proposed and rising to £31m with the additional housing being promoted.

### **Comparison Expenditure**

- 4.3.132 The tables indicate that across the study area the population generates some £116.3m of comparison retail expenditure in the current financial year. This will grow to some £138.8m by 2019. Growth in the Woodstock postcode of OX29 8 alone amounts to £3.15m by 2019 and the additional population promoted by the development and assumed in place at 2019 would generate an additional £8.5m in comparison expenditure giving total growth available in this area alone of £11.65m.

### **Distribution of Convenience Expenditure**

- 4.3.133 The distribution of this expenditure to shops and centres in the study area is devolved from attributing the available expenditure by zone to the shops identified in both Cherwell and the West Oxfordshire retail household surveys (2012). There have been no material changes in retail provision in the period since then so it is safe to assume that trading patterns will reflect those from the studies. The tables below identify the convenience shopping patterns and the proportions of convenience expenditure from each zone directed to a range of different outlets and centres.

<b>Market Shares for Woodstock and Kidlington</b>				
<b>Zone 6 WODC Retail Study combines OX20 1 and OX29 8</b>				
		<b>2014</b>	<b>2019</b>	<b>2019+</b>
<b>Witney</b>	36.50%	£8,935,658	£9,571,627	£11,307,219
<b>Chipping Norton</b>	0.00%	£0	£0	£0
<b>Carterton</b>	0.00%	£0	£0	£0
<b>Woodstock</b>	10.60%	£2,595,013	£2,779,705	£3,283,740
<b>Hanborough</b>	18.50%	£4,529,032	£4,851,372	£5,731,056
<b>Charlbury</b>	0.80%	£195,850	£209,789	£247,829
<b>Burford</b>	0.00%	£0	£0	£0
<b>Kidlington</b>	14.50%	£3,549,782	£3,802,427	£4,491,909
<b>Banbury</b>	2.60%	£636,513	£681,814	£805,446
<b>Abingdon</b>	0.70%	£171,369	£183,565	£216,851
<b>Stow</b>	0.00%	£0	£0	£0
<b>Other</b>	15.60%	£3,819,076	£4,090,887	£4,832,675

Table 4.3.10: Market shares for Woodstock and Kidlington

- 4.3.134 This first table (4.3.10) identifies convenience shopping derived from the "home zone" for Woodstock. It illustrates that Woodstock attracts some £2.5m in available convenience expenditure from OX 20 1 and OX 29 8 (10.6% of the available spend in this zone). This gives a trade retention rate of 10.6%, a very low level of retention and illustrating how little Woodstock serves its home catchment area for convenience shopping. 89.4% of expenditure is lost from this zone to stores elsewhere with the largest outflows going to stores in Witney (36.5%) and Kidlington (14.5%).

4.3.135 The limited draw for Woodstock from the rest of the survey areas is illustrated by tables 4.3.11, 4.3.12 and 4.3.13 whilst table 4.3.14 identifies the total turnover of the centres from the study area.

<b>Zone 7 WODC Retail Study (OX5 3)</b>			
		<b>2014</b>	<b>2019</b>
<b>Witney</b>			
<b>Chipping Norton</b>			
<b>Carterton</b>			
<b>Woodstock</b>	2.90%	£182,104	£193,423
<b>Hanborough</b>			
<b>Charlbury</b>			
<b>Burford</b>			
<b>Kidlington</b>	20.80%	£1,306,128	£1,387,313
<b>Banbury</b>			
<b>Abingdon</b>			
<b>Stow</b>			
<b>Other</b>			

Table 4.3.11: Zone 7 WODC Retail Study (OX5 3)

<b>Zone 4 Cherwell Retail Study (Adjusted) OX 5 1</b>			
		<b>2014</b>	<b>2019</b>
<b>Witney</b>	14%	£3,000,009	£3,183,522
<b>Chipping Norton</b>			
<b>Carterton</b>	1.40%	£342,858	£363,831
<b>Woodstock</b>	1.60%	£342,858	£363,831
<b>Hanborough</b>			
<b>Charlbury</b>			
<b>Burford</b>			
<b>Kidlington</b>	30%	£6,428,590	£6,821,832
<b>Banbury</b>	11.20%	£2,400,007	£2,546,817
<b>Abingdon</b>	2.50%	£535,716	£568,486
<b>Stow</b>			
<b>Other</b>			

Table 4.3.12: Zone 4 Cherwell Retail Study (adjusted) OX5 1

<b>Zone 4 Cherwell Retail Study OX 5 2</b>			
		<b>2014</b>	<b>2019</b>
<b>Witney</b>	28.00	£5,316,988	£5,627,643
<b>Chipping Norton</b>			
<b>Carterton</b>	1.40	£265,849	£281,382
<b>Woodstock</b>	8%	£151,914	£160,790
<b>Hanborough</b>			
<b>Charlbury</b>			
<b>Burford</b>			
<b>Kidlington</b>	16%	£3,038,279	£3,215,796
<b>Banbury</b>	11.20%	£2,126,795	£2,251,057
<b>Abingdon</b>	2.50%	£474,731	£502,468
<b>Stow</b>			
<b>Other</b>			

Table 4.3.13: Zone 4 Cherwell Retail Study OX5 2

4.3.136 The three tables above show the home zones for Kidlington and its trade draw from this area. This highlights the strength of Kidlington in its local zones and illustrates its strong showing in convenience shopping supporting the Tesco Metro, Sainsbury, Iceland and Cooperative offer.

4.3.137 The final table (4.3.14) below gives the composite convenience turnover for the centres taking all of the survey zones and household survey shopping patterns together.

	Total Turnovers From Study Area		
	2014	2019	2019+
Witney	£17,252,655	£18,382,791	£20,118,384
Carterton	£608,708	£645,213	£645,213
Woodstock	£3,271,889	£3,497,750	£4,001,785
Hanborough	£4,529,032	£4,851,372	£5,731,056
Charlbury	£195,850	£209,789	£247,829
Kidlington	£14,322,779	£15,227,368	£15,916,850
Banbury	£5,163,315	£5,479,689	£5,603,320
Abingdon	£1,181,816	£1,254,520	£1,287,805

Table 4.3.14: Total turnovers from study area

- 4.3.138 The study shows that Woodstock has a combined convenience turnover of some £3.27m in 2014 rising to £3.5m in 2019 without any further growth or the additional housing. With the additional housing and assuming no change in shopping patterns (but with no new store) the centre turnover on existing patterns would rise to £4m. These figures are similar to those identified in the GVA study for West Oxfordshire. This is not however the full picture as they fail to register any spend locally on convenience goods from visitors to the centre from beyond the study area.
- 4.3.139 Given the nature of visitation to Woodstock and the nature of the convenience provision there it is likely that significant additional turnover from visitors is present and we have estimated this at an additional 15%. The final distribution table (4.3.15) incorporates this estimated extra spend.

Total Turnover plus Visitor Contribution			
	2014	2019	2019+
5%	£18,115,288	£19,301,930	£21,124,303
5%	£639,143	£677,474	£677,474
15%	£3,762,673	£4,022,412	£4,602,052
5%	£4,755,484	£5,093,941	£6,017,609
5%	£205,643	£220,279	£260,221
5%	£15,038,918	£15,988,736	£16,712,692
5%	£5,421,481	£5,753,673	£5,883,486
5%	£1,240,907	£1,317,246	£1,352,195

Table 4.3.15: Total turnover plus visitor contribution

- 4.3.140 Our estimate of overall convenience spend in Woodstock equates to £3.7m in 2014 rising to £4m in 2019. This compares with estimates by GVA in 2012 of £2.45m. This is assessed against an identified retail floor-space provision of 543sqm sales area, of which the Co-op provides 114 sqm, and gives a sales density for that space of £4511 per square metre. A standard sales density for small convenience outlets is identified by GVA as £4000 sqm.
- 4.3.141 GVA's study showed the stores in Woodstock as trading slightly ahead of company average and in effect doing well. Our own more refined figures give a sales density for Woodstock of £6929 per square metre in 2014 indicating significantly greater overtrading. Using a revised sales area (650 sqm) allowing for one extra convenience store identified by LSH (table 4.3.2) reduces this slightly to £5788 per sqm. This indicates that the convenience retailers in the town are trading well based on the current levels of trade available to the centre.
- 4.3.142 Allowing for growth to 2019 this figure, without additional floorspace provision will rise to a sales density of £6188 per sqm m.
- 4.3.143 For Kidlington the picture is slightly different. The tables indicate that Kidlington attracts some £15m of convenience retail turnover from the study area in 2014 rising to £16m in 2019. This falls below the combined sales density for the centre and Sainsbury, which one would expect to achieve significantly higher turnover figures. This reflects the limited nature of the catchment we have identified for this study. The Sainsbury at Kidlington will draw from a far wider study area given its size. The GVA report identified some £11m of

outflow expenditure to Kidlington from the study area and our work confirms this although covering a far smaller area. Our study is designed to assess the impacts only of a locally provided small store in Woodstock and therefore we need only look at the figures for locally derived retail expenditure in relation to this store and those in Kidlington. The CBRE study for Cherwell indicates that the stores in Kidlington attract some £55.8m in turnover from across their wider study area. This includes the following breakdown:

Store	Turnover (m)	From the Woodstock Study Area	Proportion	Unaffected
Sainsbury	£41.28	£10.8m		
Tesco Metro	£7.43	£1.93m		
Coop	£3.17	£0.82		
Iceland	£1.54	£0.4m		
Coop Banbury Rd	£1.25	£0.33m		
Other Stores	£1.15	£0.3m		
Total	£55.8m	£14.6m	26%	74%

Table 4.3.16: Breakdown of turnover of stores from Woodstock study area

4.3.144 From this table we can see that the catchment for our store can impact only on 26% of the overall identified expenditure drawn to the Kidlington study area. 74% of the centre's convenience turnover is drawn from elsewhere and would remain unaffected. Losing all of the trade from the Woodstock catchment would impact 26% but this is never likely to happen. As a starting point this indicates that the new store in Woodstock is unlikely to have far reaching effects for Kidlington, nevertheless the impact is calculated in the next section.

4.3.145 Our impact study will assume that the stores in Kidlington are trading at or about company averages.

### **New Store Turnover**

4.3.146 The new store in Woodstock is proposed to be a maximum of 950sqm retail sales area. To make this study robust in respect of convenience shopping we have assumed that all of the floorspace will be convenience based.

4.3.147 To be robust we are proposing the new store turnover will equate to a sales density of £9,041 per square metre reflecting the national average for main-store convenience floorspace (Experian Briefing Note October 2014). This gives the new store a potential turnover of £8.6m in current prices. Growth in Sales density for convenience stores from 2014 to 2019 will increase this to £8.9m (Experian Growth Rate Fig 3.a October Briefing Note 2014). Given the high sales density adopted this provides an extremely robust assessment of the likely impact of the new store.

### **Convenience Impact Assessment**

4.3.148 We are assuming that 90% of this stores turnover will be drawn from other stores in the study area used in this study implying a trade diversion from other stores of £8.1m in 2019. This must necessarily take account of growth across the study area of £4.6m from the study area without the new housing and an additional £4.7m in expenditure arising as a result of the additional housing promoted by this development.

4.3.149 These figures should be set against total available expenditure in the study area of £71m in 2014 and £75m in 2019. This rises to £80.5m if the additional population promoted at Woodstock East is added in.

4.3.150 The new store will be designed and operated by the retailer to cater for a mix of main food and top up shopping on a split of 75% and 25%, or £6.075m and £2.025m.

4.3.151 The table below gives the current trade draw pattern and makes assumptions about how this new turnover will be drawn in 2019. Logical assumptions about trade draw are made



reflecting current shopping patterns. Almost no main food shopping is currently carried out in Woodstock and only a proportion therefore of the top up trade attracted to the new store can be drawn from Woodstock's shops. The main food shopping is all currently carried out elsewhere and it is this that will be susceptible to the most diversion. The majority of trade drawn to the new store therefore is likely to be claw-back from centres and stores that cater for main food trade elsewhere.

4.3.152 In the home postcode for Woodstock, Witney dominates as the most popular centre for convenience shopping and it is therefore probable that in this zone, the greatest draw would be from Witney as local shoppers switch to a more local store. Similarly high outflows to Kidlington and Banbury are also likely to be cut.

Location	Turnover 2014	Turnover 2019	Turnover 2019+	Turnover 2019 with new store	Diversion to new store	Impact on Current trade
Witney	£18.1m	£19.3m	£21.1m	£19.1m	£2.m	+5.5%
Carterton	£0.64m	£0.67m	£0.67m	£0.65m	£0.2m	+1.5%
Woodstock	£3.76m	£4.02m	£4.6m	£4m	£0.6m	+6%
Long Hanborough	£4.75m	£5.09m	£6.02m	£4.8m	£1.32	+1%
Charlbury	£0.2m	£0.22m	£0.26m	£0.22m	£0.04m	+10%
Kidlington	£15.04m	£16m	£16.7m	£14m	£2.7m	-7%
Banbury	£5.42m	£5.75m	£5.9m	£4.5m	£1.4m	-17%
Abingdon	£1.2m	£1.3m	£1.3m	£1m	£0.3m	-17%
Total					£8.16m	

Table 4.3.76 Impact on stores

4.3.153 The impact conclusions drawn from the table are as follows. The new store will draw much of its trade from stores further away as providing a new local store will reduce the out-migration of expenditure.

#### **Woodstock Impact**

4.3.154 The impact on Woodstock will be negligible as this centre trades on top-up rather than main food, is well insulated by its visitor contribution and the stores, will, in any event benefit from the increased expenditure in the study area generated by both growth and the additional expenditure generated by the new housing. The actual impact between now and 2019 is positive taking account of the growth in available expenditure.

#### **Kidlington Impact**

4.3.155 For Kidlington the impact amounts to 7% of the trade drawn to the centre from this catchment. This area, it should be remembered, provides only 26% of the Kidlington stores turnover. The maximum impact therefore on the stores in Kidlington is a reduction of 7% in the trade drawn from this study area or an overall or maximum impact of 7% of £15m. This is an impact of £1m (against 2014 turnover) on stores with a combined turnover of over £50m or an impact of around 2%. This would in the main be focussed on the Sainsbury store in Kidlington, an out of centre store that enjoys no retail policy protection. It is safe to assume that the impact on Kidlington town centre would be less than 2%.

#### **Long Hanborough Impact**

4.3.156 For Long Hanborough the impact amounts to some £1.32m but this is trade that the centre largely would not enjoy if the additional housing were not to be built in Woodstock. Overall the turnover of the centre, assuming that Woodstock East is developed, will increase by 1% between 2014 and 2019 indicating a decrease in trade when improving returns could be expected. This should be balanced against the far better and more

accessible and sustainable provision of a food store to serve Woodstock. This level of impact upon a store that is at present substantially over-trading will not cause material harm.

- 4.3.157 None of the other diversions are significant and they simply represent the claw-back of trade from stores in more distant locations again with commensurate improvements in sustainability.

### ***The Sequential Approach***

- 4.3.158 The approach to retail development and development control in national and local planning policy is that the principle of town centres first should be applied to all new development of town centre uses and in particular in relation to retail development. This enshrines the sequential test in policy and in order to satisfy the sequential test it must be demonstrated that, for out of centre proposals, there are no more suitable, available and viable alternative sites within or on the edge of relevant town centres, upon which the proposed new development could be met. Alternatives must genuinely be suited to the proposed use, they must be available within a reasonable period of time for the proposed use and they must be viable for the proposed use.
- 4.3.159 With regard to the current proposals the application of this test is not so straight-forward. The proposed food-store comprises an element of a wider new development incorporating 1500 homes, 7500 sqm of new employment space, a 150 unit care-home, the relocation of the football pitch and development of a new primary school. The majority of this development is not considered to be town centre development.
- 4.3.160 The retail store proposed is intended to serve both the new residential area and the existing settlement for its day-to-day and weekly food needs. If there were a site available in or close to the existing town centre of Woodstock then this would meet the need identified for a food-store to serve the new residential area as it is intended that the new residents consider the existing town centre as the focus of activity for the wider settlement. New provision in Kidlington or Long Hanborough or indeed other settlements nearby would not serve the identified need or meet the needs of the existing residents of Woodstock and would not provide a sustainable solution to the problem of out migration of expenditure from the town.
- 4.3.161 The sequential search in relation to the new food-store proposed in Woodstock East must therefore be restricted to Woodstock town centre and edge of centre sites associated with the town centre. As noted in the Health Check of Woodstock the historic nature of the defined town centre area, the concentration of listed buildings therein and the tightly packed urban grain of the town suggest there are no sites within the centre that could be considered as sequential alternatives to the site at Woodstock East.
- 4.3.162 Looking beyond the town centre, edge of centre sites may be available. To be considered as “edge of centre” sites must be within 200m of the primary retail frontage or core of the town centre. The plan at appendix 4 illustrates a 200 m ring around the centre of Woodstock. We have considered two sites in Woodstock that may be available for food-store development. These are the existing Woodstock Football Club site and the site of the towns’ only car park on Hensington Road. We will consider each in turn below.

#### The Football Club Site

- 4.3.163 Given the proposals to relocate the football club to a new ground at the Woodstock East site it must be assumed that the current site of the football club may be available for redevelopment to provide a food-store.
- 4.3.164 The site however lies significantly more than 200 m from the town centre and cannot properly be considered a sequential alternative.
- 4.3.165 Furthermore its isolated location would dissuade food-store developers from taking the site as it has no prominence and is effectively in the town’s hidden hinterland. Such a

location would not be a commercial success and would be unlikely to attract a retail operator. The site is not viable for the proposed use.

4.3.166 The Council's policies seeking to protect sports pitches and open spaces would strongly indicate that redevelopment of the current site for a food-store would be resisted. The site is not suitable for the proposed use.

4.3.167 In summary the site is not a genuine sequential alternative and is neither suitable nor viable for the proposed use.

#### Woodstock Car Park

4.3.168 This site lies immediately to the east of the town centre and is within 200 metres of the core retail area of the town. It currently serves as the town's only car park and is accessed from the town centre via Hensington Road and Union Street. It currently accommodates some 115 car parking spaces serving the adjacent library and sits next to the Police and Fire Stations. The site is big enough to accommodate a small food-store.

4.3.169 Development of this site would be at the expense of its town centre car park function. As discussed earlier in the report the main problem facing Woodstock is a shortage of car parking spaces and this was highlighted in the Town Council parking study. Provision at this car park represents the only long stay parking in the town and local businesses are dependent upon it as well as town centre traders whose customers need somewhere to park when they shop.

4.3.170 Developing the site to provide a food-store and associated car parking would not only reduce parking provision here but increase demand making the situation for the remainder of the town centre worse. The site is not available as it is still required as a car park.

4.3.171 A solution here with decked car parking above or adjacent to a store would be expensive and out of character with the nature and grain for the settlement. I do not consider that decked car parking would be an acceptable solution in Woodstock.

4.3.172 This site is at present isolated from the town centre and whilst it is used as car parking for the centre provision of a food-store here would not necessarily lead to linkage between the two. An off-pitch food-store here may offer few advantages to the town centre over the proposal site, as linkage would be limited because of the convoluted access route to the centre. It is undisputedly currently used by visitors to the centre, but this is not necessarily convenient.

4.3.173 A food-store here would siphon off convenience trade from the town centre directly with less propensity for linked trips to the other shops in the centre. Casual top up visitors to this store would be less likely to use the town centres other stores and yet it would effectively challenge directly the town centre Coop store in a way that a store at Woodstock East will not. The store at Woodstock East will not supplement the Coop store for people who are visiting the town centre for other reasons whereas a store here on the car park site would. The advantages of a store at the edge of the town centre may not outweigh the disadvantages in these circumstances. The site offers no sequential advantages.

4.3.174 The vehicular route to the car park is very poor from the town centre. Hensington Road is effectively one way working where it approaches the town centre and food-store traffic here would make congestion and access problems worse. Putting regular service vehicles onto this route would further exacerbate problems and servicing the store would be a complex and troublesome activity. The site is not suitable.

4.3.175 As with the football club site the car park has no prominence and commercially would not be attractive to retailers. It has no visual link to the town centre and the pedestrian route is convoluted. Visitors to the town would find it hard to locate. A store here would not prove attractive to retailers and is unlikely to be commercially viable. The site is not viable.

Conclusion to the Sequential Test

4.3.176 There are no suitable, available and viable sites within Woodstock upon which a new food-store could locate that would serve as a sequentially preferable location for the proposed development.

**EVALUATION, IMPACTS AND MITIGATION**

4.3.177 This study forms a part of the Environmental Impact assessment of the proposals for development at Woodstock East. The study has been asked to consider the impact of the proposed new food store at Woodstock East on Woodstock Town Centre and Kidlington Centre. In addition we have considered the effect on retailing in Long Hanborough

4.3.178 The study is designed not only to consider the effects or retail impact on these centres but also to consider the effects of the additional housing and employment areas on the town centres identified. The following impacts have been considered:

- Retail Impact upon the vitality and viability of Woodstock Town Centre;
- Impact of growth in the settlement on the vitality and viability of Woodstock Town Centre;
- Retail Impact of the new store on upon the vitality and viability of Kidlington;
- Retail Impact of the new store on retailing in Long Hanborough;
- Impact Upon Shopping Patterns- Sustainability;
- Impacts of development in relation to retail planning policy;

4.3.179 Within the study it is clear that the impacts will affect different aspects of the centres and these are described in detail in each of the following paragraphs.

***Retail Impact - Woodstock Town Centre***

4.3.180 The proposed new store will affect shopping patterns in and around Woodstock. Currently 90% of the convenience retail trade that arises in the town is spent in other stores and centres. The convenience retail offer in Woodstock itself is restricted to a Cooperative convenience store of some 114sqm. To place this in perspective most modern petrol stations would have a shop of 150 sqm as a minimum.

4.3.181 The Co-op here offers only a very limited convenience shopping opportunity and clearly given the levels of outflow of expenditure it does not satisfy local demand to any significant degree. Even given the poor level of trade retention, the convenience floor-space in the town centre is considered to be over-trading.

4.3.182 Other convenience outlets in the town include Hampers Delicatessen, a patisserie and an Artisan bakers. Whilst all three will derive a significant proportion of their business from local residents, none would survive if it were not for the significant visitor trade attracted to the town.

4.3.183 The new food-store will not draw any significant trade from these stores, which will continue to serve the town centre well. The alternative offer in the new store will not compete directly with these stores and, whilst it will compete with the Co-op, for many users of the centre, the Co-op will remain the most convenient shopping option. The new store will not draw significant trade away from Woodstock Town Centre.

*Retail Impact on Woodstock Town Centre: Minor Negative. Mitigation: Limit size of store through planning conditions.*

***Impact on Woodstock - Settlement Growth***

4.3.184 The growth in the settlement provided by the additional housing at Woodstock East is likely to bring additional pressure on Woodstock Town Centre to meet the day to day and

weekly retail and service needs of the local community. The increase in available convenience and comparison expenditure (£4.7m Convenience and £8.5m in comparison expenditure) and the increase in local population will bring more people to the town centre.

- 4.3.185 This will have a positive effect on how retailers view Woodstock as a potential location increasing the settlement size to a scale that may attract more multiple operators.
- 4.3.186 It will certainly increase footfall in the town centre to the benefit of local traders and it may create the critical mass necessary to support additional convenience or comparison traders who currently struggle to operate serving the smaller community.
- 4.3.187 The greater population will promote additional pressure on existing car parking provision although the new residents will be able to access the town centre on foot, cycle or by public transport with relative ease.
- 4.3.188 The additional workforce accommodated in the 7500 sq m of new employment space at Woodstock East will also generate additional trips and business in the town centre as it will provide the service centre (banks/sandwiches/day to day shopping needs) for the new local workforce.

*Impact of Settlement Growth on the vitality and viability of Woodstock Town Centre: Minor –Positive.*

#### **Retail Impact of New Store on Kidlington town centre**

- 4.3.189 The new convenience store will divert trade away from some convenience outlets in Kidlington. In the main the diversion will be from the out of centre Sainsbury store in the town and this will have no impact on the town centre. There will inevitably be some limited diversion from the town centre but this will be on a scale that will have no material effect upon its vitality and viability.

*Impact of new food-store on the vitality and viability of Kidlington- Minor Negative. Mitigation- Limit through planning conditions the size of the new store.*

#### **Retail Impact of the New Store on Long Hanborough**

- 4.3.190 The new store will draw back trade from the food-store in Long Hanborough. This store is not protected by national or local retail policy. The store is currently very significantly over-trading against benchmark turnovers and will continue to do so after the Woodstock East development has taken place. The trade diversion suffered will be limited and the store will remain open serving the local community.

*Impact of new food-store on the retail businesses in Long Hanborough: -Minor- Negative. Mitigation: Limit the size of the new store through planning conditions.*

#### **Impact Upon Shopping Patterns - Sustainability**

- 4.3.191 The new food-store will provide the settlement of Woodstock with a modern convenience store designed to satisfy the day-to-day and weekly shopping needs of the settlement. This will have a significant impact on shopping patterns for the local community, it will reduce the journey distance for food-shopping for many in the local community and will provide an improvement in the range and choice of retail facilities available to local people improving the offer available and choice. This may well influence pricing and value for local shoppers in terms of providing greater competition for existing operators. The principal benefit will be in reducing food-miles for local shoppers, retaining a greater degree of retail expenditure locally and enhancing the availability of convenience shopping to local residents.

*Impact upon shopping patterns and sustainability: Significant- Positive*

## APPENDICES

- Appendix 1: Kidlington Specific Policies Cherwell District Local Plan 2014
- Appendix 2: Survey Zones Plan
- Appendix 3: Experian Retail Planner Report
- Appendix 4: Woodstock Land Use Assessment Table

## 5 TRANSPORT AND ACCESSIBILITY

### **Introduction**

- 5.1.1 This Chapter assesses the transport and highway impacts of the proposed development.
- 5.1.2 The description of development is as follows:
- *Outline planning application, with all matters reserved, for mixed use development comprising:*
  - *up to 1,500 houses, including a 150 unit care village with associated publicly accessible ancillary facilities;*
  - *Primary school (2 form entry);*
  - *Up to 930sqm of retail space;*
  - *Up to 7,500sqm of locally led employment (B1, B2 and B8);*
  - *Site for a Football Association step 5 football facility;*
  - *Public open space;*
  - *Public Transport Interchange with 300 car parking spaces; and*
  - *Associated infrastructure, engineering and ancillary works, with vehicular access.*
- 5.1.3 This assessment considers the potential transport and highway impacts of the proposals including the impact of construction traffic and development generated traffic on the capacity and safety of the surrounding road network, and the implications for public transport and pedestrian and cycling movements.
- 5.1.4 A detailed analysis has been carried out to assess the likely traffic generation from the proposals, the distribution of trips and the assignment of traffic onto the road network. In this way the traffic impact has been assessed, along with consideration of any measures required to mitigate the effect of the traffic generated by the proposed development.
- 5.1.5 The accessibility of the Site by non-car modes was also assessed along with consideration of opportunities to encourage travel to and from the Site by modes other than single occupancy car travel, in particular public transport, walking and cycling, and car sharing.
- 5.1.6 Full details of the above are provided within the Transport Assessment (TA). A Framework Travel Plan was also prepared to support the application.
- 5.1.7 Potentially significant environmental effects resulting from the traffic that are likely to be generated by the proposed development have been identified. The major direct potential impacts are increases in traffic congestion and delay. Indirect impacts of traffic on noise and air quality are assessed elsewhere within this ES.
- 5.1.8 This Chapter describes the overall impact of the proposed mixed use development on transport. It is assessed that the improvements proposed to the wider transport infrastructure network, particularly to walking, cycling and public transport would have a net beneficial impact.
- 5.1.9 In conclusion the development meets the key transport tests set out by the Local Highway Authorities in that it would allow for efficient maintenance and management of transport infrastructure, it will improve accessibility and provide healthier travel choices. In addition, it would provide for safer roads and communities and would reduce congestion, which might otherwise occur through less sustainable development growth.

### **Legislation**

- 5.1.10 Listed below are applicable Acts, Regulations and Codes of Practice:

- Health and Safety at Work Act 1974;
- Construction, Design and Management (CDM) Regulations 2007;
- Highways Act 1980;
- Road Traffic Act 1988;
- New Roads and Street Works Act 1991 (NRSWA);
- Traffic Signs Manual 2009 – Chapter 8 – Traffic Safety Measures and signs for Road works and Temporary Situations;
- Traffic Signs Regulations and General Directions 2002 (revised version 2015 - published May 2014);
- NRSWA – 3rd Edition – Code of Practice for the Co-ordination of Street Works & Works for Road Purposes & Related Matters;

### **Planning Policy Context**

5.1.11 Listed below are National and Local planning policy documents:

- Department for Transport (DfT), Transport White Paper: 'Creating Growth, Cutting Carbon: Making Sustainable Local Transport Happen', 2011
- DfT, Guidance on Transport Assessment, 2007
- Department of Communities and Local Government (DCLG), National Planning Policy Framework, 2012
- DfT Circular 02/2013, The Strategic Link Road Network and the Delivery of Sustainable Development
- DfT, Building Sustainable Transport into New Developments: A Menu of Options for Growth Points and Eco-towns, 2008
- DfT, Smarter Choices – Changing the Way We Travel, 2005
- DfT and DCLG, Manual for Streets (2007) and Manual for Streets 2 (2010)
- Design Manual for Roads and Bridges (DMRB) TD41/95, Vehicle Access to all Purpose Trunk Roads, 1995
- DMRB TD16/07, Geometric Design of Roundabouts, 2007
- National Road Transport Forecasts (2009)
- Oxfordshire Local Transport Plan 3
- Emerging Oxfordshire Local Transport Plan 4
- Cherwell Local Plan
- West Oxfordshire Local Plan
- Emerging West Oxfordshire Local Plan
- Oxfordshire Residential Design Guide

DfT, Transport White Paper: 'Creating Growth, Cutting Carbon: Making Sustainable Local Transport Happen', 2011

5.1.12 In January 2011 the Government set out in its Local Transport White Paper its approach for creating growth in the economy and to tackle climate change by cutting carbon emissions.

5.1.13 The White Paper sets the Government's approach to shorter local journeys (so, trips of five miles or less) with the intention to support its wider goals of promoting economic growth and reducing carbon.



- 5.1.14 It emphasises the key role of developing sustainable travel in delivering the Government's key objectives for Local Transport.

DfT, Guidance on Transport Assessment, 2007

- 5.1.15 The GTA document was issued by the DfT and DCLG in March 2007. It is intended to assist stakeholders in determining if an Assessment is required for a particular development and provides guidance on the content. As with the NPPF, this document should be reviewed in conjunction with other relevant statements of national planning policy.
- 5.1.16 In preparing a Transport Assessment (TA) the GTA identifies three key areas and advises the following considerations for each:

*Encouraging environmental sustainability*

- 5.1.17 **Reducing the need to travel, especially by car** – *reducing the need for travel, reducing the length of trips, and promoting multi-purpose or linked trips by promoting more sustainable patterns of development and more sustainable communities that reduce the physical separation of key land uses.*
- 5.1.18 **Tackling the environmental impact of travel** – *by improving sustainable transport choices, and by making it safer and easier for people to access jobs, shopping, leisure facilities and services by public transport, walking, and cycling.*
- 5.1.19 **The accessibility of the location** – *the extent to which a site is, or is capable of becoming, accessible by non car modes, particularly for large developments that involve major generators of travel demand.*
- 5.1.20 **Other measures which may assist in influencing travel behaviour (ITB)** – *achieving reductions in car usage (particularly single occupancy vehicles), by measures such as car sharing/pooling, High Occupancy Vehicle (HOV) lanes and parking control*

*Managing the existing network*

- 5.1.21 **Making best possible use of existing transport infrastructure** – *for instance by low-cost improvements to the local public transport network and using advanced signal control systems, public transport priority measures (bus lanes), or other forms of Intelligent Transport Systems (ITS) to improve operations on the highway network. It should be noted that the capacity of the existing public transport infrastructure and footpaths is finite, and in some areas overcrowding already exists.*
- 5.1.22 **Managing access to the highway network** – *taking steps to maximise the extent to which the development can be made to 'fit' within the available capacity by managing access from developments onto the highway network.*
- 5.1.23 **Mitigating residual impacts**
- 5.1.24 **Through demand management** – *using traffic control measures across a wide network to regulate flows.*
- 5.1.25 **Through improvements to the local public transport network, and walking and cycling facilities** – *for example, by extending bus routes and increasing bus frequencies, and designing sites to facilitate walking and cycling.*
- 5.1.26 **Through minor physical improvements to existing roads** – *it may be possible in some circumstances to improve the capacity of existing roads by relatively minor physical adjustments such as improving the geometry of junctions etc. within the existing highway boundary.*
- 5.1.27 **Through provision of new or expanded roads** – *it is considered good transport planning practice to demonstrate that the other opportunities above have been fully*

explored before considering the provision of additional road space such as new roads or major junction upgrades.

DfT, National Planning Policy Framework, 2012

5.1.28 In March 2012, the Department of Communities and Local Government published the National Planning Policy Framework (NPPF). The NPPF confirms that the Government will continue to encourage sustainable development and in relation to the transport issues it notes that:

*“Transport policies have an important role to play in facilitating sustainable development but also in contributing to wider sustainability and health objectives. Smarter use of technologies can reduce the need to travel. The transport system needs to be balanced in favour of sustainable transport modes, giving people a real choice about how they travel. However, the Government recognises that different policies and measures will be required in different communities and opportunities to maximise sustainable transport solutions will vary from urban to rural areas.”*

Para 29

5.1.29 It confirms that:

*“All developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment. Plans and decisions should take account of whether:*

- the opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;*
- safe and suitable access to the site can be achieved for all people; and*
- improvements can be undertaken within the transport network that cost-effectively limit the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe. (Para 31)*

5.1.30 The policy test in terms of new development in the NPPF relate to the need to ensure traffic impacts are not severe whilst cost effectively limiting infrastructure. To ensure high quality development the NPPF confirms that:

*“Plans should protect and exploit opportunities for the use of sustainable transport modes for the movement of goods or people. Therefore, developments should be located and designed where practical to:*

- accommodate the efficient delivery of goods and supplies;*
- give priority to pedestrian and cycle movements, and have access to high quality public transport facilities;*
- create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zones;*
- incorporate facilities for charging plug-in and other ultra-low emission vehicles; and*
- consider the needs of people with disabilities by all modes of transport.*

5.1.31 A key tool to facilitate this will be a Travel Plan. All developments which generate significant amounts of movement should be required to provide a Travel Plan.

5.1.32 Planning policies should aim for a balance of land uses within their area so that people can be encouraged to minimise journey lengths for employment, shopping, leisure, education and other activities.

- 5.1.33 *For larger scale residential developments in particular, planning policies should promote a mix of uses in order to provide opportunities to undertake day-to-day activities including work on site. Where practical, particularly within large-scale developments, key facilities such as primary schools and local shops should be located within walking distance of most properties. (Para 35)*
- 5.1.34 The proposed development has been designed with precisely these issues in mind and the accessibility of the site to all users and modes other than private are given specific emphasis in this report.

DfT Circular 02/2013, The Strategic Link Road Network and the Delivery of Sustainable Development

- 5.1.35 The document sets out the way in which the Highways Agency will engage with communities and the development industry to deliver sustainable development, and thus, economic growth, whilst safeguarding the primary function and purpose of the strategic road network.
- 5.1.36 In determining its contribution to the development of Local Plans, the Highways Agency's aim will be to ensure that the scale and patterns of development are planned in a manner which will not compromise the fulfilment of the primary purpose of the strategic road network. To this end, the Agency will assess the cumulative and individual impacts of Local Plan proposals on the ability of the various road links and junctions to accommodate the forecast traffic flows in terms of capacity and safety.
- 5.1.37 The Highways Agency will work with local authorities and developers in identifying potential development sites and can provide information and expertise in helping to understand the transport implications of proposals.
- 5.1.38 DfT, Building Sustainable Transport into New Developments: A Menu of Options for Growth Points and Eco-Towns, 2008
- 5.1.39 The document published in 2008 sets out its plans to increase housing growth. This document, which forms part of the Government's advice on transport within Ecotowns and New Growth Points, is aimed at all those involved in the planning, design and construction of new housing developments. It sets out advice on how to build an effective sustainable transport system in new developments, from the planning to the implementation stage. It recommends a variety of transport options to integrate and adopt according to the location and needs of the individual development.
- 5.1.40 Section 1 of the document emphasises how the layout of a development can have a significant impact on how people choose to travel. Good design is key to maximising sustainable transport usage and reducing the need to travel. Streets should be primarily designed to accommodate the needs of pedestrians, cyclists and public transport to make sustainable modes of travel attractive, convenient and accessible.
- 5.1.41 Design features that encourage sustainable transport usage include:
- Comprehensive direct networks for walking, cycling and public transport, with routes for private motor traffic taking a lower priority;
  - Limited private vehicle access to homes and services;
  - Situating key services such as health centres and schools in central locations within the town;
  - Inclusive street environments that aim to integrate the activities of pedestrians, cyclists and motorists;
  - Car-free areas within a development;
  - Pedestrianised shopping areas (preferably with cycling access if this can be safely accommodated) which are served by direct cycle routes and public transport;

- A 'legible' development design i.e. it should be easy for people to work out where they are and where they are going in order to navigate easily around the community;
  - Joined-up transport networks, with good interchanges.
- 5.1.42 Decisions regarding transport will inevitably depend upon location, the scale and type of development and what (if any) capacity is available on the existing network.
- 5.1.43 The following headings highlight the ways in which sustainable transport can be provided in and around Growth Points and Eco-towns:
- promoting cycling and walking;
  - reducing car usage;
  - providing access to public transport;
  - goods and emergency vehicles.

DfT, Smarter Choices – Changing the Way We Travel, 2005

- 5.1.44 The report, published in June 2005 examines the impact of soft measures, using evidence from the UK and abroad, case study interviews and the experiences of stakeholders.
- 5.1.45 'Soft' measures typically include workplace and school travel plans, personalised travel planning, travel awareness campaigns, public transport information and marketing, car clubs and car sharing schemes, teleworking, teleconferencing, and home shopping.
- 5.1.46 The report concluded that sufficient evidence now exists to have some confidence that soft factor interventions can have a significant effect on individual travel choices.

DfT and DCLG, Manual for Streets (2007) and Manual for Streets 2 (2010)

- 5.1.47 Manual for Streets was published in 2007 and provides guidance on residential street design. Manual for Streets recognises that there is a need to transform the quality of residential streets, and this requires a new approach to their provision. The Manual is aimed at any organisation or discipline with an interest in residential streets, ranging from access officers to the emergency services. The importance of joint working among practitioners is a key feature of the Manual.
- 5.1.48 Manual for Streets 2 published in 2010 builds on the guidance contained within Manual for Streets, exploring in greater detail they can be extended beyond residential streets to encompass both urban and rural situations. It fills the perceived gap in design advice that lies between Manual for Streets and the design standards for trunk roads set out in the Design Manual for Roads and Bridges.

DMRB TD16/07, Geometric Design of Roundabouts, 2007

- 5.1.49 This document sets out the design standards and advice for the geometric design of roundabouts.
- 5.1.50 DMRB TD41/95, Vehicle Access to all Purpose Trunk Roads, 1995
- 5.1.51 This document sets out the design requirements for accesses on to an all-purpose trunk road, including geometric and visibility standards.

National Road Transport Forecasts (2009)

- 5.1.52 Department for Transport's National Transport Model (NTM) produces forecasts of road traffic growth, vehicle tailpipe emissions, congestion and journey times up to 2035.

Oxfordshire Local Transport Plan 3, 2011 – 2030

5.1.53 The County Council adopted the third LTP in April 2011 and it focuses on attracting and supporting economic investment and growth, delivering transport infrastructure, tackling congestion and improving quality of life. Oxfordshire has significant plans for future economic and housing growth, with a focus on the Local Enterprise Partnership hubs – the Science Vale UK area, Bicester and Oxford City.

5.1.54 In terms of supporting development in Oxfordshire, the Local Transport Plan sets out the following transport policies:

**Policy SD1**

- i. the location and layout of new developments minimise the need for travel and can be served by high quality public transport, cycling and walking facilities;
- ii. developers promote sustainable travel for all journeys associated with new development, especially those to work and education, and;
- iii. the traffic from new development can be accommodated safely and efficiently on the transport network.

**Policy SD2**

- i. secure contributions from new developments towards improvements for all modes of transport. This can be financial contributions or direct works for the mitigation of adverse transport impacts in the immediate locality and/or wider area improvements;
- ii. ensure that all infrastructure associated with the developments is provided to appropriate design standards;
- iii. set local routeing agreements to protect environmentally sensitive locations from traffic generated by new developments, and;
- iv. normally seek commuted sums towards the long term operation and maintenance of facilities, services and infrastructure.

5.1.55 In terms of specific transport policies Policy PT3 states that Oxfordshire County Council will support and promote the development of high quality public transport interchanges and infrastructure in appropriate locations. Policy CW5 states that Oxfordshire County Council will seek opportunities for network improvements and initiatives to better meet the needs of walkers, cyclists, and horse riders, including people with disabilities, for local journeys, recreation, and health.

5.1.56 Within the Local Transport Plan, Woodstock lies within the rural Oxfordshire area. Particular transport objectives for rural Oxfordshire are:

- supporting access to work, education and services for the residents of rural Oxfordshire;
- supporting the rural economy through access to rural Oxfordshire for all (local residents and non-residents); and
- maintaining and improving the condition of local roads, bridleways, footpaths and cycleways, supporting access by all modes.

Emerging Oxfordshire Local Transport Plan 4

5.1.57 Since LTP3 was adopted in 2011, much has changed, especially the way in which transport improvements can be funded, with less money coming directly to the council. To ensure that the county's transport systems are fit to support population and economic growth, in 2014/15 the Council will be developing a new Local Transport Plan, that will give Oxfordshire the best chance of success when bidding for projects and securing new infrastructure to support new development.

5.1.58 The key objectives include:

- Minimising the need to travel;
- Make more efficient use of available transport capacity through more innovative management of the network and encouraging the use of public transport, walking and cycling;
- Improve transport connections to support economic growth: between housing and jobs/ education/ services, and in networks of businesses and their supply chains;
- Influence the location of development to maximise the use and value of existing and planned strategic transport investment;
- Minimise overall journey times and increase journey time reliability on strategically important routes;
- Develop a high quality, resilient integrated transport system that is attractive to customers and generates inward investment;
- Manage the impacts of transport on human health and safety, and the environment, including reducing carbon emissions; and
- Encourage and facilitate physically active travel to support health.

### Cherwell Local Plan Policies

#### *Cherwell Local Plan – Submission*

- 5.1.59 The Proposed Submission Local Plan was submitted to the Secretary of State for Communities and Local Government for formal Examination on 31 January 2014. It sets out the broad planning framework for meeting the future needs of Cherwell and would replace the Cherwell Local Plan 1996.
- 5.1.60 The plan addresses a number of broad parameters, such as:
- A strategy for Cherwell;
  - Policies for development in the district;
  - Policies for Cherwell's places;
  - Infrastructure; and
  - Delivery.
- 5.1.61 The document sets out how the Council, as Local Planning Authority (LPA) will decide what new infrastructure and facilities need to be provided as a consequence of development and to assess requirements for "in kind" provision and / or financial contributions towards provision.
- 5.1.62 The Local Plan is split into two sections. Section 1 includes items relating to the provision of facilities on the development site that will be required as a direct result of the impact of the proposed scheme. Section 2 includes items that are considered to be general community infrastructure or service items where the LPA seeks a partial financial contribution towards enhancing provision to meet the needs of the development.
- 5.1.63 The changes within Section 2 are calculated against a tariff system based on a contribution figure per dwelling type. The document states at Para 1.10 that the tariff items detailed in Section 2 will not normally be applied to the affordable housing element of the residential development.
- 5.1.64 Sustainable transport, general transport and access impacts form part of both Section 1 and Section 2 of the document.
- 5.1.65 During the Examination in Public of the Submission Draft Local Plan, the Inspector requested that Cherwell District Council (CDC) objectively assesses its housing needs against the Oxfordshire Strategic Housing Market Assessment (2014). Accordingly, the Examination in Public was suspended whilst the Council explores options to increase the

housing delivery within the plan period. Accordingly the Council is reviewing its evidence base. The proposed Main Modifications to the Submission Local Plan was submitted to the Secretary of State for Communities and Local Government for formal examination in October 2014. The Examination process will be undertaken in December 2014. Subject to the Examination concluding in accordance with the defined timescales, it is understood that the Local Plan is likely to be adopted in spring 2015.

#### West Oxfordshire Local Plan, 2011

- 5.1.66 The Local Plan sets out a comprehensive list of policies relating to all aspects of social and economic development and environmental protection in the district. In terms of transport the Local Plan identifies the following policies:

##### **Policy T1 – Traffic Generation**

*Proposals which would generate significant levels of traffic will not be permitted in locations where travel by means other than a private car is not a realistic alternative.*

##### **Policy T2 – Pedestrian and Cycle Facilities**

*Measures will be sought to protect, improve and extend facilities for cyclists and pedestrians, and particularly to extend the cycle and pedestrian route network within and between settlements, within and through new development areas and through the countryside generally.*

- 5.1.67 The proposed development has been designed with precisely these issues in mind and the accessibility of the site to all users and modes other than the private car are given specific emphasis in this report. Woodstock has good transport links including public transport (bus and rail) foot and cycle links to adjacent communities and good road links to the principle road network.
- 5.1.68 The site is also well located with respect to accessing education, retail, health and leisure with a convenient supermarket, doctors and dentist surgeries, which are a short distance from the proposed development.

#### Emerging West Oxfordshire Local Plan

- 5.1.69 West Oxfordshire District Council are in the process of replacing the adopted Local Plan with a number of documents known collectively as the Local Development Framework. It will include the Local Plan (Part 1) which deals with strategic issues and sites and Local Plan (Part 2) which deals with more local issues and smaller sites.
- 5.1.70 The new Local Plan (Part 1) will set out an overall strategy to guide development across the District in the period up to 2029 and will focus on strategically important issues and sites. A draft version of the plan was published in November 2012 with a further round of consultation on housing issues recently closing in September 2014.
- 5.1.71 The key transport objectives of the emerging Local Plan include:
- Providing new development, services and facilities of an appropriate scale and type in locations which will help improve the quality of life of local communities and where the need to travel, particularly by car, can be minimised;
  - Ensure that land is not released for new development until the supporting infrastructure and facilities are secured;
  - Maximised the opportunity for walking, cycling and use of public transport;
  - Improve access to services and facilities without unacceptably impacting upon the character and resources of West Oxfordshire;
  - Reduce the causes and adverse impacts of climate change, especially flood risk;
  - Achieve improvements in water and air quality; and

- Minimise use of non-renewable natural resources and promote more widespread use of renewable energy solutions.

5.1.72 Core Policy 24 – Transport and Movement states that:

*“Priority will be given to locating new development in areas with convenient access to a reasonable range of services and facilities and where the need to travel by private car can be minimised, particularly where this would help to reduce traffic congestion around Oxford and the Air Quality Management Area at Witney and Chipping Norton”.*

5.1.73 All new development will be designed to maximise opportunities for walking, cycling and the use of public transport, ensure the safe movement of vehicles and minimise the impact of parked and moving vehicles on local residents, business and the environment.

#### Oxfordshire’s Residential Design Guidance

5.1.74 This guide is primarily aimed at developers of residential sites and outlines the Council’s guidelines on a range of transport related issues, including cycling and walking.

5.1.75 The Main Objectives are:

- To ensure that housing layouts contribute towards encouraging more sustainable travel by minimising the need to use cars particularly for shorter trips to local facilities;
- Provision of quality facilities for pedestrians, cyclists and public transport, particularly bearing in mind users with mobility difficulties, with a view to reducing car usage. However the need to accommodate vehicle movement and parking will remain, and has to be fully considered in the design process;
- To help create attractive developments that are enjoyable to live in and safe for all users bearing in mind the 'order of priority';
- To help create developments that are accessible, legible and convenient to all users, including the Mobility Impaired - includes those with difficulty seeing, hearing, walking, finding their way around, or any combination of all these;
- To provide developments designed to emphasise a sense of place and community, with movement networks to enhance these qualities, but with full links with adjacent areas to ensure permeability;
- Provision of sufficient non-prescriptive standards to enable more rapid appreciation of the Highway Authority's requirements by developers/ Planning Authorities to minimise negotiation times for both layout determination and future adoption;
- To secure by design, traffic speeds commensurate with the safety and convenience of all users of the road network. The target speed in such residential areas will be 20 mph or less; and
- To secure an adoptable movement network at a reasonable cost with an extensive design life and low maintenance costs.

## **METHODOLOGY**

5.1.76 The assessment of likely significant transport impacts was carried out to conform with current practice in that:

- a fully compliant TA has been produced in accordance with ‘Guidance on Transport Assessment’ published by DfT and DCLG in March 2007; and
- other relevant government guidance, including DTLR Circular 02/2013; and

5.1.77 The TA includes the following:

- description of National and Local Policy context and local transport issues;



- assessment of accessibility of the site including description of existing highway and public transport networks and walking and cycling facilities;
  - description of the development proposals;
  - description of proposed access strategy to facilitate the development of the Site;
  - consideration of initiatives to improve accessibility to the Site by modes other than the private car including the production of a Framework Travel Plan;
  - assessment of traffic generation and distribution from the proposed development; and
  - appraisal of the impact of development generated traffic on the adjacent highway network and identification of transport improvements proposed to mitigate the impact of development traffic.
- 5.1.78 The findings of the TA, as far as they relate to the EIA, are summarised in this Chapter of the ES.
- 5.1.79 The transport impacts of the proposed development would manifest themselves mainly during the post completion occupation of the Site. However, the timescales for construction are relatively long and therefore likely significant construction - related transport impacts were also assessed.
- 5.1.80 The main source of information used in determining the baseline conditions is the TA. This includes a detailed analysis of the existing transport network and includes reference to material published by the highway authorities and surveys undertaken on behalf of the applicant.

### ***Study Area***

- 5.1.81 The following junctions have been assessed within the Transport Assessment:
- A44 Oxford Road/ A4095 Bladon Road/ A4095 Upper Campsfield Road/ A44 Woodstock Road;
  - A4095 Main Road/ Lower Road;
  - A4260 Banbury Road/ A4095 Upper Campsfield Road;
  - A44 Woodstock Road/ Langford Lane;
  - A44 Woodstock Road/ Spring Hill Road;
  - A44 Woodstock Road/ Begbroke Science Park;
  - A44 Woodstock Road/ Sandy Lane/ Rutten Lane;
  - A44 Woodstock Road/ Cassington Road;
  - Loop Farm Roundabout; and
  - Peartree Roundabout.
- 5.1.82 A plan showing the highway network is attached at **Figure 1 in appendix 1**.

### ***Traffic Flow Assessment Methodology***

- 5.1.83 Traffic flows before and after the proposed development are quantified in terms of the AM peak hour (0800-0900) and the PM peak hour (1700-1800), and daily traffic movements. The development will pass through a number of stages in its lifetime during which the volume and type of traffic will lead to different environmental impacts. The scenarios considered within this traffic and transport chapter include for the purposes of appraisal:
- Base Year (2014): This is representative of existing traffic levels;

- Base Year (2031): This is the future year without the proposed scheme. DfT GTA guidance requires an assessment of future base line conditions 10 years following submission of the planning application. However, for this case and given the long build out of the site and to allow for appropriate local plan growth a future year assessment of 2031 has been adopted;
- Base Year (2031) + Development + OCC Transport Strategy + Improvements to S3 + Link-and-ride Reductions; and
- Base Year (2031) + Development + OCC Transport Strategy + Improvements to S3 + Link-and-ride Reductions + Mitigation Measures (where required).

### **Calculation of Traffic Generation and Distribution for the Proposed Development**

- 5.1.84 An estimate of the trips by the site has been undertaken on a person and vehicular trip basis with reference to Guidance on Transport Assessments published by the DfT in March 2007. The total person and vehicular trips have been derived from the TRICS online database 2014 v7.1.2.
- 5.1.85 The distribution of employment and residential traffic is based on the 2011 Census journey to work data. Distribution for the school and retail is based on the local Woodstock area. Full details are provided in chapters 5 and 6 of the TA.

### **Assessment Approach**

- 5.1.86 The Institute of Environmental Assessment (IEA) has published 'Guidelines for the Environmental Assessment of Road Traffic'. The purpose of the guidelines is to provide a systematic, consistent and comprehensive approach to the assessment of the environmental impacts of traffic associated with major development projects.
- 5.1.87 In accordance with the Institute of Environmental Management & Assessment (IEMA) document "Guidelines for the Environmental Assessment of Road Traffic (Guidance Note 1)" the following rules-of-thumb have been applied to determine the scale and extent of the assessment:
- Rule 1: include highway links where traffic flows will increase by more than 30% (or the number of HGVs will increase by more than 30%).
  - Rule 2: include any other sensitive areas where traffic flows have increased by 10% or more.
- 5.1.88 In addition, the IEMA guidelines detail the recommended list of impact matters which could be considered as potentially significant whenever a new development or modifications to an existing operation are likely to give rise to changes in traffic flows:
- Severance;
  - Driver Delay;
  - Pedestrian Delay;
  - Pedestrian Amenity;
  - Fear and Intimidation;
  - Accidents and Safety; and
  - Hazardous Loads.
- 5.1.89 The environmental impact of traffic on noise and air quality will be considered in detail in specific sections of the Environmental Statement.

## Impact Significance

5.1.90 The significance of a road traffic impact is determined by the interaction of two factors:

- the magnitude, scale or severity of the effect or change;
- the value, importance or sensitivity of the environmental resource being affected.

5.1.91 The significance of levels of traffic change vary depending upon the environmental impact criteria being considered e.g. severance, driver delay and so on. Reference is made to the IEMA Guidelines on each criterion. Reference is also made to DMRB Vol II Section 2 Part 5 HA205/08 – Determining Significance of Environment Effects in terms of definition of measure of magnitude and significance of impact.

5.1.92 As set out in paragraph 4.5 of the IEMA Guidelines:

*“For many effects there are no simple rules or formulae which define thresholds of significance and there is, therefore, a need for interpretation and judgement on the part of the assessor, backed up by data or quantified information wherever possible.”*

5.1.93 Having regard to this, the approach to determining the significance of identified impacts that has been followed in this assessment is explained in the following paragraphs. The approach has had regard to the guidance given in ‘DMRB Vol II Section 2 Part 5 HA205/08 – Determining Significance of Environment Effects’ in terms of defining the measure of magnitude and significance of impact. As such, a series of tables are produced below, describing in turn how the following are defined within this report:

- Value or Sensitivity of the receptor (Table 5.1)
- Magnitude of the impact (Table 5.2)
- Quantified significance of effect (Table 5.3)

5.1.94 These represent slightly refined versions of the tables within Section 2 Part 5 of HA205/08. The refinements reflect the type of development proposed and the changes being affected.

Sensitivity/value of a Receptor	Description
Very High	Facility of international or national significance.
High	Close proximity to schools, colleges, accident black-spots.
Medium	Close proximity to congested junctions, hospitals, community centres, conservation areas.
Low (or Lower)	Close proximity to public open space, nature conservation areas, residential areas with adequate pavements including receptors of low sensitivity

Table 5.1 Sensitivity/value of receptor

Magnitude of Impact	Description
High	Very large or large change in environmental conditions (e.g. pollution levels, destruction of habitat). This could result in exceedance of Statutory objectives and/or breaches of legislation.
Medium	Intermediate change in environmental conditions.
Low	Small change in environmental conditions.
Negligible	No discernible change in environmental conditions.

Table 5.2 Magnitude of Impact

		Sensitivity of Receptor			
		High	Medium	Low	Negligible
Magnitude of Effect (degree of change)	Large	Major	Major	Moderate	Minor
	Moderate	Major	Moderate	Minor	Negligible
	Small	Moderate	Minor	Minor	Negligible
	Negligible	Minor	Negligible	Negligible	Negligible

Table 5.3 Impact significance matrix

## RESULTS OF DESK STUDY

### Site Location

- 5.1.95 The site is located to the south east of Woodstock and is approximately 13 miles (21km) northwest of Oxford in West Oxfordshire.
- 5.1.96 The site is bounded by Shipton Road to the north, the A4095 Upper Campsfield Road to the east, the A44 Oxford Road to the south and the existing residential settlement of Woodstock to the west.
- 5.1.97 The site is currently agricultural land.

### Road Network

- 5.1.98 The main strategic access from Woodstock is via the A44 Oxford Road. This provides access to Oxford, around 13 miles (21km) to the South. The A34 (T) lies around 5 miles (8km) to the south, which provides strategic Trunk Road access to the M40 and M4.
- 5.1.99 A44 Oxford Road runs in a northwest-southeast direction providing connections to Oxford to the southeast and Chipping Norton to the northwest. The road varies in width from a single carriageway to a dual carriageway. In the vicinity of the site the road is a single lane carriageway and is subject to a 50mph speed limit. This reduces to 30mph when entering the built up area of Woodstock. There is a shared foot/ cycle route along the northbound side of the carriageway but no footway provision on the southbound side of the carriageway.
- 5.1.100 The A44 Oxford Road connects to the A4095 Upper Campsfield Road/ A44 Woodstock Road/ A4095 Bladon Road at a large priority roundabout. The A4095 routes through the village of Long Hanborough to Witney.
- 5.1.101 The A4095 Upper Campsfield Road runs between the A44 Oxford Road/ A44 Woodstock Road/ A4095 Bladon Road roundabout to the A4260 Banbury Road and is approximately 2km long. The road is a single lane carriageway and subject to a national speed limit, which reduces to 50mph through Upper Campsfield village. There is no footway provision on either side of the carriageway.
- 5.1.102 Shipton Road runs east to west and is approximately 1.8km long. At its eastern end it links to Upper Campsfield Road. The initial eastern section is rural in character with agricultural land both sides of the road. The alignment of the road on this section is relatively straight except for two ninety degree bends, a right hand bend followed by a left hand bend at which point the road becomes more urban in character. Within Woodstock, Shipton Road provides access to existing residential areas and to Marlborough School. To the west it links via a mini-roundabout to Hensington Road, which in turn links to the A44 Oxford Road.
- 5.1.103 Shipton Road is a single carriageway approximately 6.5m wide. There is a footpath (approx. 1.8m wide) running along the frontage of the Marlborough Church of England School and to the new Marlborough Place residential area. The road is well marked and maintained between the mini-roundabout and the school. On street parked also occurs along Shipton Road, which in itself can create lower speeds and may discourage use of the road into Woodstock.

- 5.1.104 Shipton Road itself is heavily traffic managed, subject to a 20mph speed limit and is well lit up to the Marlborough Church of England School. From here to the A4095 Upper Campsfield Road, the road is typically rural in nature with a national speed limit and no footway provision and no street lighting.
- 5.1.105 There is a zebra crossing within close proximity to the site, providing a linkage from the school to the cricket ground/ playing fields.
- 5.1.106 The stretch of Shipton Road between the entrance to the school and Randolph Avenue has been upgraded as part of the consent for the Marlborough Place residential development to include a give-way build out restricting traffic to one-way flow and improved footway links.

**Public Transport Network**

Current Bus Services

- 5.1.107 The nearest bus stops are located on the A44 Oxford Road adjacent to Blenheim Palace approximately 900m north of the proposed site access. The northbound bus stop has a layby with bus stop flag and timetable information. The southbound bus stop has a layby with bus stop flag, timetable information and bus shelter.
- 5.1.108 Bus service S3 connects Woodstock and Oxford city centre, serving George Street and Gloucester Green bus station and the railway station. This provides connections with Oxford’s extensive and frequent bus network, and with national and regional train and coach services. North of Woodstock, service S3 branches, with routes to Chipping Norton and to Charlbury.
- 5.1.109 S3 is a Stagecoach ‘Gold’ standard service. The buses have leather-trimmed seats, free WiFi and Euro5 low-emission engines. Drivers are trained to provide a high standard of customer care in addition to professional driving standards. Real-time information on bus departure times is available online and by SMS text.
- 5.1.110 S3 operates seven days a week. On weekdays, the first departure to Oxford leaves Woodstock at 0620 and arrives in the George Street at 0645, continuing to the railway station at 0650; the last departure from Oxford’s Gloucester Green bus station is at 2345, arriving in Woodstock at 0010. A summary of first and last departures by day of week is presented in Table 5.5.

Direction of Travel	Weekday	Saturday	Sunday
From Woodstock to City Centre – first departure	Depart: 0620 Arrive: 0645 [0650 at railway station]	Depart: 0647 Arrive: 0720 [0725 at railway station]	Depart: 0835 Arrive: 0900 [0905 at railway station]
From City Centre to Woodstock – last departure	Depart: 2345 Arrive: 0010	Depart: 2345 Arrive: 0010	Depart: 1945 [1940 from railway station] Arrive: 2019

*Table 5.5 Service S3 first and last departures to/from Oxford City Centre*

- 5.1.111 S3 is a frequent service, with departures every 10 minutes towards Oxford at the busiest time in the morning peak; every 15 minutes from Oxford in the afternoon peak; and every 20 minutes during the weekday and Saturday inter-peak. Sunday departures are at 30 minute intervals during the daytime. Evening departures are once per hour. A summary of service frequencies is presented in Table 5.6.

Direction of Travel	Weekday Peaks	Weekday and Saturday Inter-Peak	Sunday Daytime	Evenings
From Woodstock to City Centre	AM [0630-0930]: - from 0732 to 0802 – every 10 minutes  - other times – every 15 to 20 minutes	Every 20 minutes	Every 30 minutes	Once per hour [mostly regular interval of 60 minutes]
From City Centre to Woodstock	PM [1630-1830]: - from 1615 to 1815 – every 15 minutes  - other times – every 20 minutes	Every 20 minutes	Every 30 minutes	Once per hour  [mostly regular interval of 60 minutes]

Table 5.6 Service S3 departure intervals to/from Oxford

5.1.112 Journey times on service S3 between Woodstock and Oxford city centre vary between 43 minutes in the morning peak and 24 minutes in the off-peak; see Table 5.7. These journey times are in a range that it is considered car drivers would find bus an acceptable travel option. Peak period punctuality is supported by bus lanes on the Woodstock Road within the Oxford ring road.

Direction of Travel	Weekday Peaks	Weekday and Saturday Inter-Peak	Sunday Daytime	Evenings
From Woodstock to City Centre	AM [0630-0930]: between 38 and 43 minutes	33 minutes	25 minutes	23 minutes
From City Centre to Woodstock	PM [1630-1830]: between 33 and 35 minutes	28 minutes	24 minutes	24 minutes

Table 5.7 Service S3 running times to/from Oxford City Centre

5.1.113 Stagecoach's service 233 provides a connection between Woodstock, Long Hanborough including the rail station at Long Hanborough, Witney and Burford on weekdays and Saturday. The weekday service operates between approximately 6.30am and 6.30pm, the precise times depending on the location and the direction of travel. Morning and afternoon departures between Woodstock, Long Hanborough and Witney are at intervals tailored to school travel, with a regular 60-minute interval service during the middle of the day. The Saturday service starts at approximately 8am.

5.1.114 Services W10, W11 and W12 provide connectivity to Woodstock and Kidlington from the smaller villages in the vicinity. These services provide limited travel-to-work commuter services in Woodstock.

#### Bus Ticketing

5.1.115 Stagecoach's Megarider Gold ticket provides unlimited travel on their services in Oxfordshire. It is available in periods from weekly to annual, plus a monthly direct-debit

option; see Table 5.8 for prices. Tickets valid for up to one month are delivered on a smartcard platform.

- 5.1.116 The Oxford SmartZone is a ticketing scheme that enables travel on the services of Stagecoach, Oxford Bus Company and Thames Travel. Woodstock lies outside the Oxford SmartZone core area; Stagecoach offers a SmartZone add on to their Megarider Gold ticket for one-third of the price of a stand-alone SmartZone ticket.

Service Coverage	1-Week	4-Week and Monthly	13-Week	Annual
Oxfordshire Megarider – Stagecoach only	£26.00	£78.00	£232.00	£812.00
Delivery method:	Smart	Smart	Paper	Paper
Oxfordshire Megarider plus Oxford SmartZone multi-operator	£31.20	£95.20	£276.10	£956.80
Delivery method:	Smart	Smart	Smart	Smart

Table 5.8 Stagecoach Megarider ticketing

#### Coach Services

- 5.1.117 Stagecoach's 'Oxford Tube' and Oxford Bus Company's 'Express X90' operate between Oxford and London at frequent intervals on weekdays and at weekends. The Oxford Tube service operates throughout the night. Both these services can be accessed at Gloucester Green bus station which bus service S3 from Woodstock services, at Thornhill Park & Ride site round 10 miles south-east of the from the development site, and at M40 Junction 6.
- 5.1.118 National Express provides direct coach services in Oxford to/from 65 locations across Britain. Stagecoach's X5 service to Cambridge via Milton Keynes provides an additional coach link. These services all call at Gloucester Green bus station.
- 5.1.119 Oxford Bus Company's 'Airline' services to Heathrow and Gatwick airport operate at intervals of between every 30 minutes and every two hours, including overnight. These services run from Gloucester Green bus station and the Thornhill Park & Ride site.

#### Access by Rail

- 5.1.120 Hanborough railway station is the nearest station to the site located approximately 3km to the south west of the site. The station is served by First Great Western trains on the Oxford to Worcester Shrub Hill line. Bus service 242 also routes pass the station with a bus stop situated outside of the station entrance. The bus service provides an average journey time of 3 minutes. A summary of the rail services is provided in Table 5.9.

Route	Monday to Saturday Frequency	Sunday Service	Journey times
Oxford	20-60 minutes	60-120 minutes	8-17 minutes
London Paddington	20-60 minutes	60-120 minutes	1hr 15 minutes
Worcester Shrub Hill	45-120 minutes	60-120 minutes	1hr-1hr 15 mins

Table 5.9: Rail Services and Frequencies

- 5.1.121 The 55 space station car park was expanded in 2013 to create a new 191 space car park to accommodate the increase in commuters using the station for services to Oxford, Reading and London. There are proposals to increase this further in the future.

5.1.122 In terms of facilities on site, there are 10 sheffield stands for cycle storage, self-service ticket machines, customer help points and access for the mobility impaired.

### **Cycle Network**

5.1.123 Cycling has been considered in accordance with best practice guidance. Short trips, typically those of up to 5km equivalent to a 20 – 30 minute ride, have the greatest potential to be made by cycle rather than by car. The advantages of cycling include greater speed and range than walking. However, issues such as topography may be important, and it is essential that appropriate provision is not only made along the route but also at the trip ends, i.e. secure parking and changing facilities.

5.1.124 This guidance does not reflect the inevitable variability in actual trip lengths, but it should give a reasonable indication of the likely catchment area. The 5km radius area encompasses the whole of Woodstock and the employment area at Begbroke Science Park.

5.1.125 In general the A44 Oxford Road from the site entrance into Woodstock has a high quality segregated footway/cycleway network to serve the area.

5.1.126 In addition to this, the Sustrans Route 5 runs along the A44 Oxford Road and through Woodstock. This route forms part of a nationwide cycle network and connects Reading and Holyhead via Oxford, Stratford-upon-Avon, Bromsgrove, Birmingham, Stoke on Trent, Chester, Colwyn Bay and Bangor.

### **Pedestrian Network**

5.1.127 The existing site is currently a group of agricultural fields and as a result this is reflected in the pedestrian permeability of the site.

5.1.128 Footpath provision within Woodstock is good and in line with that expected in an urban environment.

5.1.129 There is a shared pedestrian/ cycle path along the northbound side of the A44 Oxford Road. This provides connections into Woodstock. There is currently no footway provision on the southbound side of the carriageway. Footway provision is limited along the A4095 Upper Campsfield Road and Shipton Road.

5.1.130 The site currently has designated public rights of way (PROW) skirting along the edge of the site from the A44 Oxford Road to the existing residential area on Crecy Walk.

### **Access to Local Services and Facilities**

5.1.131 The centre of Woodstock has a range of local facilities and services including independent stores, churches, post office, pubs, museums, health services. All of these facilities and services are located approximately 1.2km from the centre of the site.

5.1.132 The nearest convenience store to the site is Premiere Stores located on Shipton Road. The store is located approximately 870m from the centre of the site which equates to a 9-10 minute walk.

5.1.133 Blenheim Palace located adjacent to the site on the A44 Oxford Road is a designated World Heritage Site. The building and grounds attract visitors from all over with various events taking place all year round. The Palace attracts around 650,000 visitors per annum. Access into the grounds is taken from the A44 Oxford Road.

5.1.134 Leisure facilities are within walking distance of the site, in particular, the Woodstock heated outdoor swimming pool is located to the north of the site.



## Education

- 5.1.135 The proposed residential development will increase the demand for education however the site is well located with respect to existing schools and the proposals provide a primary school on site.
- 5.1.136 Given the timing for educational trips, these will overlap with the network AM peak hour, indeed according to the national travel survey (2008) around 43% of trips in progress during the AM peak (08:00 – 09:00) are school related. Education trips are therefore, one of the most significant factors influencing the ‘garden gate’ vehicle trip generation of a residential site particularly given the apparent sensitivity to distance.
- 5.1.137 As shown by the 2008 national travel survey, for primary school trips, pupils are over three times more likely to travel to school by private car if their journey to school is 1.6 to 3.2 km compared to those whose journey is under 1.6 km. Nationally, the average journey length is 2.6 km. A similar relationship is also apparent for secondary school pupils although they are more likely to take the bus rather than be driven for long journey lengths. Nationally the average journey length is 5.4 km.

Percentage	Under 1.6km	1.6km to 3.2km	3.2km to 8.0km	8.0km and over	Total
Walk	80	31	3	0	49
Bicycle	1	2	1	0	1
Car/van	18	61	76	70	42
Bus	1	6	18	28	7
Other	0	0	2	2	1
Total	100	100	100	100	100

Table 5.10 Primary school trips by mode and length (2007-08 data)

Percentage	Under 1.6km	1.6km to 3.2km	3.2km to 8.0km	8.0km and over	Total
Walk	91	65	10	0	41
Bicycle	1	4	3	0	2
Car/van	6	21	34	22	22
Bus	2	11	50	68	32
Other	0	1	3	10	3
Total	100	100	100	100	100

Table 5.11 Secondary school trips by mode and length (2007 - 08 data)

- 5.1.138 The nearest primary school to the site is Woodstock Church of England Primary School located on Shipton Road approximately 750m from the centre of the site. As can be seen from the above table the door to door walk distances are likely to be well within the national average and within the under 1.6km category and therefore the propensity to walk should be high.
- 5.1.139 It is proposed to build a new primary school on the site. It is therefore likely that the majority of trips will be internal to the site and therefore not interact with traffic on the wider road network.
- 5.1.140 The nearest secondary school is Marlborough Church of England School located on Shipton Road, approximately 700m from the centre of the site. Distance to secondary school is therefore much closer, and accordingly accessibility much higher than the

national average. The majority of pupils are likely to travel independently and therefore walk or cycle.

### Employment

5.1.141 Journey to work Origin-Destination statistics as reported by the 2011 Census have been obtained from the Office of National Statistics for the Super Output Area Mid Layer - West Oxfordshire 001 which includes Woodstock. This data provides the broad distribution of workplaces for residents within the study area and their main mode of transport.

5.1.142 The main workplace and study-place destinations for the population of this ward are shown below in Table 5.12. The data does not include those that work at or mainly from home and therefore the statistics relate to those who must commute. It shows that a high proportion of the West Oxfordshire 004 population travel to work within the local District. As set out above, however, the site does straddle both West Oxfordshire and Cherwell and therefore it is unsurprising that 15.9% actually travel into nearby Cherwell. A further 30% travel to work to Oxford. The data therefore describes a fairly tight distribution of work trip ends with 87.5% within Oxfordshire as a whole.

Workplace Destination	West Oxfordshire 004
West Oxfordshire	34.3%
Oxford	30.0%
Cherwell	15.9%
Vale of White Horse	5.3%
South Oxfordshire	2.0%
Other	12.5%
Total	100.0%

Table 5.12 Workplace destinations from West Oxfordshire 004 (2011 Census)

5.1.143 The 2011 Census 'Journey to Work' statistics provides modal share data for current residents of West Oxfordshire 004. These are summarised in Table 5.13 together with data on national modal shares.

Mode	Woodstock and Bladon	England and Wales
Work mainly from home	9.7%	9%
Underground	0.2%	3%
Train	2.8%	4%
Bus/mini-bus	8.2%	7%
Motorcycle	1.1%	1%
Driving a car	55.4%	55%
Passenger in a car	6.8%	6%
Taxi/minicab	0.0%	1%
Bicycle	4.1%	3%
On foot	11.4%	10%
Other	0.4%	0%
Total	100%	100%

Table 5.13 Journey to work mode share for West Oxfordshire 004 (2011 Census)

5.1.144 It can be seen from the above data that notwithstanding the relatively small size of Woodstock, that bus use, walking and cycling are higher than the national average that includes the large conurbations including Greater London, Greater Manchester and the West Midlands Conurbation. Clearly, for new residential development, the main demand for travel to work is in and around the local area itself.

5.1.145 In addition a good frequency of bus services and access is available along the A44 to provide for longer distance journey to work trips to Oxford and Witney. There is therefore scope to significantly to enhance overall modal share for walking, cycling and public transport within the area as a result of development of the site.

### **Future Baseline Traffic Flows and Cumulative Development**

5.1.146 The existing traffic flows on the local network have been quantified using surveys, the majority of which were commissioned for this study. There are however significant changes in the number of households and workplaces planned within Oxfordshire which must be taken into account within this study.

5.1.147 In accordance with DfT Guidance, the assessment requires an assessment of future base line conditions 10 years following submission of the planning application. However, for this case and given the long build out of the site and to allow for appropriate Local Plan growth a future year assessment of 2031 has been adopted. The growth has been estimated with reference to the National Trip End Model (NTEM) using TEMPRO. Local TEMPRO growth factors have been used for Cherwell (rural 38UB0) which covers the majority of the site and the A44 corridor (growth for the adjacent West Oxfordshire area would be slightly lower). The resulting factors are shown in Table 5.14. These are equivalent to 1.2 – 1.4% growth per annum over a 17 year period.

Year	AM Peak	PM Peak
2014-2031	1.2193	1.2347

Table 5.14 Traffic Growth Rates from TEMPRO (NTM)

5.1.148 For robustness the growth rates have not been adjusted for any double counting with the explicitly allowed traffic for the development site or committed development sites. As agreed with the Local Planning Authorities, in addition to wider traffic growth, specific reference has been made to the cumulative impact of the developments at Northern Gateway, Begbrook Science Park and Shipton Road where appropriate.

5.1.149 The development at Northern Gateway comprises:

- Up to 90,000m<sup>2</sup> of employment development;
- Up to 500 new dwellings;
- A range of local scale retail uses (up to 2,500m<sup>2</sup> GIA); and
- A hotel with associated leisure facilities (up to 180 bedrooms)
- The development at Shipton Road comprises 58 residential dwellings.

5.1.150 Flows for the Northern Gateway Development have been derived from the North Oxford Transport Strategy (NOTS) and these are assessed in detail where the junction impact assessments overlap and this principally relates to the A34 Pear Tree Roundabout. No discounting has been made for trips between the development and Northern Gateway i.e. a trip from the development to Northern Gateway will appear as two trips in the calculations. In addition to considering the cumulative of the traffic generated by both developments, the assessment assumes in that case that the mitigation measures identified in NOTS are also in place.

5.1.151 In addition to the Northern Gateway Development, OCC are progressing and have funding for significant improvements to the Wolvercote and Cuttleslowe Roundabouts. Capacity constraints at the Wolvercote and Cuttleslowe junctions result in traffic congestion on all junction approaches, but particularly on the A40. As well as congestion, there are concerns about poor pedestrian and cycle access, noise and air pollution.

5.1.152 The OCC proposed improvements are designed to address the current problems and ensure development in Oxfordshire does not lead to worse problems in future. These improvements are assessed in NOTS at a local level.

- 5.1.153 Development at Begbroke Science Park cannot be explicitly represented in the absence of detailed proposals of scale and mitigation. The development is already operating however and the access has been implemented in advance of an application for additional development and the operation of this junction has been assessed. In accordance with the above, TEMPRO has been applied to the development arms, equating to around 23% in uplift in flows.
- 5.1.154 The West Oxfordshire Scoping response requested that implications of new development in the Cherwell and West Oxford local Plans be considered as part of the cumulative impact assessment. The only areas within the agreed geographic scope of the assessment (as defined in the WODC scoping opinion) could be development at Witney which in traffic terms interacts with the A40 and A44.
- 5.1.155 There are no fixed proposals for development in this area at present and significant objections are outstanding to the potential sites that WODC have identified. Furthermore, there is no defined assessment by the Council of the mitigation measures that such development would have to bring forward as part individual or cumulative impact.
- 5.1.156 On this basis and in the absence of any wider assessment by the Council the cumulative impact of those sites has been approached on the basis of the TEMPRO based core scenario (which allows for a 24% growth in traffic flows on the network). This is likely to be at the upper end of growth possible on the network due to wider and localised constraints across the area. For robustness the transport strategies and mitigation delivered by specific sites has not been included in the cumulative impact assessment.

### ***Change in Flows as a result of OCC North Oxford Transport Strategy (NOTS)***

- 5.1.157 The current high levels of flow on the A4095 from Witney to Woodstock and consequently on the A44 south of Woodstock are a result, in part, of significant congestion at Wolvercote. This coupled with poor accessibility from the A40 to the A34 at Pear Tree results in significant assignment of Oxford and A34 bound traffic from the west of Woodstock using the A44 in preference to the A40.
- 5.1.158 Whilst the NOTS assessment considers the localised impact of the junction changes it is clear that significant additional capacity will be created on the A44. At present and based on the traffic modelling in NOTS, the junction constrains link capacity to around 800 PCUs (passenger car unit) per hour on the inbound approach, with a queue of at least 36 PCUs.
- 5.1.159 The proposed improvements will provide stop line capacity (3 lanes) of around 2,160 PCUs an hour (assuming 30-40% green time is allocated to the entry), and therefore the capacity of the A40 link itself will become the constraining feature – circa 1,500 PCUs an hour.
- 5.1.160 On this basis, there is significant scope of strategic reassignment of flows from the A44 corridor to the A40 for extraneous traffic from Witney in particular. It is beyond the scope of this assessment to define that affect but it is likely to amount to at least 150 – 200 vehicles in peak direction during peak periods.
- 5.1.161 Furthermore, strategic plans exist to improve the bus service between Witney, Hanborough and Woodstock, to operate two times per hour. Furthermore, there is an aspiration to extend this service to Water Eaton (and possibly Headington) via Langford Lane and Kidlington. OCC are collecting Section 106 contributions from various sites to assist in achieving this desired improved bus service and extended route towards Kidlington and beyond. This will have a further effect of reducing background growth.

### ***Proposed Development***

- 5.1.162 As set out in the Transport Assessment, the forecast development flows for the site are set out below.

	AM			PM		
	In	Out	Total	In	Out	Total
Full Development	230	426	656	413	268	680

Table 5.16: Vehicular Traffic Generation

5.1.163 The Transport Assessment within Technical Appendix 5.1 sets out the expected person trip generation resulting from the Site. It includes an assessment of how the Travel Plan initiatives would seek to maintain a reasonable and robust target for non-car use. Based on these assessments, Table 5.17 below summarises the key traffic changes on the main routes in and around the proposed development.

Route	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	IN	OUT	TOTAL	IN	OUT	TOTAL
A34 N	9	20	29	21	13	33
A34 S	35	91	126	94	53	147
A40 (Oxford)	13	37	49	38	21	58
A40 East	14	27	41	27	19	46
Frieze Way	0	0	0	0	0	0
A4095 West	49	81	130	73	51	124
A4095 East	8	7	16	6	7	12
A4260	2	4	6	4	3	7
A44 north	69	110	178	101	71	172
Kidlington	18	40	58	40	24	64
Shipton Road	13	8	21	9	7	16
Total	230	426	656	413	268	680

Table 5.17: Traffic Flows by Route

## RESULTS OF FIELD SURVEYS

### Traffic Flows and Safety Assessment

5.1.164 To quantify the existing traffic flows on the local road network surveys were undertaken at key junctions on the local road network by a specialist independent traffic survey company. These traffic surveys were undertaken in July 2014 during school term time. The surveys including manual classified counts (MCC) with queue lengths and automatic traffic counts (ATC). The MCC's were undertaken on Tuesday 15th July 2014 for the following junctions:

- A44 - A4095 Bladon Roundabout;
- A4095 Main Road / Lower Road;
- A4260 Banbury Road / A4095 Bunkers Hill / A4095 Upper Campsfield Road;

- A44 Woodstock Road / Spring Hill Road;
- A44 Woodstock Road / Sandy Lane / Rutten Lane;
- A44 Woodstock Road / The Turnpike / Cassington Road;
- Loop Farm Roundabout; and
- A34 / Services / A44 Woodstock Road.

5.1.165 The ATC's were undertaken between 10/07/2014 to 16/07/2014 for the following links:

- A44 Oxford Road;
- A44 Woodstock Road;
- A4095 Upper Campsfield Road;
- A44 Manor Road;
- A4095 Grove Road;
- Hensington Road; and
- Shipton Road.

5.1.166 The five day average ATC results for the A44 Oxford Road, A4095 Upper Campsfield Road and Shipton Road are summarised in the Table 5.18 below.

Link	0800-0900			1700-1800		
	N/B	S/B	Two-way	N/B	S/B	Two-way
A44 Oxford Road	448	869	1317	842	631	1473
	N/B	S/B	Two-way	N/B	S/B	Two-way
A4095 Upper Campsfield Road	510	448	958	521	486	1007
	W/B	E/B	Two-way	W/B	E/B	Two-way
Shipton Road	145	132	277	102	53	155

Table 5.18 Existing Traffic Flows

5.1.167 Personal Injury Collision (PIC) data has been obtained by Oxfordshire County Council for the most recent five and a half year period from 01/01/2009 to 30/06/2014. A breakdown of the recorded collisions is set out in Table 5.19 below and the study area is set out in Appendix C of the Transport Assessment report.

	Fatal	Serious	Slight	Total
Number of collisions	3	20	64	87
% of collisions	3%	23%	74%	100%

Table 5.19 Personal Injury Accident Data (2009 - mid-2014)

5.1.168 There were 87 recorded collisions in the last five year period, three of which were recorded as fatal in severity, 20 recorded as serious in severity and 64 recorded as slight in severity.

5.1.169 There were 24 collisions involving motorcycles and pedal cycles, of which one was fatal in severity, 8 were serious in severity and 15 were slight in severity.

5.1.170 The review of PIC can identify clusters in collisions. The following cluster junctions are:

- Bladon Roundabout (A4095 – A44);
- Upper Campsfield Road/ Banbury Road Crossroads (A4095 – A4260);
- A44 Woodstock Road/ Langford Lane;
- A44 Woodstock Road/ Spring Hill Road; and
- A4095 Main Road/ Lower Road.

5.1.171 At Bladon Roundabout there were around 14 incidents (including incidents on the immediate approaches). This is equivalent to an accident rate of 2.55 incidents per year. TD16/07 reports that on average a large four arm roundabout will have 2.65 incidents per year of which 7.1% would be KSI (Killed or Seriously Injured). The frequency of incidents at this location is therefore broadly in line with the national average although the severity (%KSI) is higher at 28.6%. The majority of collisions were recorded as rear shunts, vehicle lost control, or failing to give way. The four serious incidents were all on the southern approach to the roundabout. One involved a collision between a car and a pedal cyclist. The other three incidents were all single vehicle loss of control, two of which involved car drivers where the drivers were impaired by alcohol and the third involved a motor-cyclist. Overall there is a downward trend in incidents at this location from 2010 when there were 5 incidents.

5.1.172 In the vicinity of the A4095 Upper Campsfield Road/ A4260 Banbury Road junction there were 9 incidents. This is equivalent to an accident rate of 1.64 incidents per year of which 44% were classified as KSI. The frequency of incidents at this location does not appear to be high although the severity is higher than expected. Of the four incidents that were classified serious, two were single vehicle loss of control incidents on a bend on the approach to the junction rather than the junction itself. Of the other two serious incidents, both involve collisions between entering or exiting Upper Campsfield Road. One of these involved a motorcyclist. There is no clear trend in terms of accidents at this location over time although over half of the incidents occurred at the weekend. A third of incidents involved motorcyclists.

5.1.173 There are traffic signals at the junction of A44 Woodstock Road and Langford Lane. Here there were six reported incidents from the start of 2012 including a serious and a fatal incident. Four incidents were classified as slight and these were generally shunts or lane change manoeuvres. The fatal and serious incidents both involved collisions between a southbound vehicle on the A44 and a right turn movement out of Langford Lane.

5.1.174 In the vicinity of the A44 Woodstock Road/ Spring Hill Road junction the majority of collisions were recorded as a failure to negotiate the roundabout, braking hard resulting in losing control and hitting sign.

5.1.175 In the vicinity of the A4095 Main Road/ Lower Road junction the majority of collisions were recorded as vehicle overtaking motorcyclist failed to give enough distance and hit wheel of motorcycle, failure to give way, driving on the wrong side of the road (foreign driver) and rear shunts.

## EVALUATION, IMPACTS AND MITIGATION

### **Construction Phase**

5.1.176 During the construction of the proposed development, it would be necessary for various plant, equipment and material to be transported to the site. The construction of the site

will take place in 4 phases. The first phase will be adjacent to the A44. With the remaining starting from the A4095 and moving generally in a north westerly direction.

- 5.1.177 It is proposed that the majority of construction traffic will enter or leave the site via the A4095 Upper Campsfield Road. Some access will be required directly off the A44. The principal route taken by construction traffic on the local highway network would be along the A44 Woodstock Road south of the site.
- 5.1.178 The construction operation will be the subject of a Construction Environmental Management Plan (CEMP), a draft of which is included in Appendix C1. In addition to vehicle routing, this would also set out items such as periods of operation and construction workers parking within the site.
- 5.1.179 The types of vehicles and number of vehicles that will deliver construction material to the site will vary depending on phasing and the materials collected or delivered. Typically, the final rate of project completion reflects many competing factors, such as access to the development, completing the sales of buildings and availability of labour and materials, as well as maintaining a quality environment during the early phases of a project during these construction phases.
- 5.1.180 It is therefore estimated that the number of HGV and LGV movements associated with the construction of the site based on 5 day delivery and collection schedule over 48 working weeks per year, there is likely to be in the order of 40 HGV movements and 40 LGV movements per day. These numbers will be refined at the reserved matters stage and following the appointment of the relevant parties.

### **Significance of Effect**

#### Severance

- 5.1.181 Given the low levels of daily flows generated by construction traffic, no significant severance effect will result. The resulting significance of effect is negligible.

#### *Driver delay*

- 5.1.182 Given the low levels of traffic flows generated by construction traffic there will be no significant effect on driver delay. Background traffic peak hour movements are unlikely to coincide with any peak (however limited in view of overall numbers) in construction traffic. The resulting significance of effect is negligible.

#### *Pedestrian delay*

- 5.1.183 Pedestrian activity will not be significantly affected by construction traffic and the recommended routing. Construction traffic will be routed along the A44 south of the site and then utilise the A40/ A34. Construction traffic will be prohibited from using Shipton Road and Hensington Road and restricted from using the A44 north of the site and the A4095 Bladon Road, where possible. Routing of vehicles reflects the objective of minimising the areas of residential development affected and hence pedestrian activity. The resulting significance of effect is negligible.

#### *Accidents and safety*

- 5.1.184 The expected changes in traffic are too small in comparison to base flows to have any statistically meaningful effects upon the observed local accident rate record. The resulting significance of effect is negligible.



*Hazardous loads*

5.1.185 Due to the nature of the construction activities it is not anticipated that the construction process will require carriage of materials listed on The Carriage of Dangerous Goods in the UK. The resulting significance of effect is negligible.

Development Traffic

5.1.186 The completed development would be likely to give rise to a range of transport related impacts. These would be likely to include longer term benefits to the amenity of local pedestrians, cyclists and public transport users once the development is completed through the provisions of new and improved routes and facilities. It is expected that these would be of beneficial impact of moderate significance, offering localised improvements to local routes and reduction in journey times and distances.

5.1.187 In addition, whilst not specifically relevant to the assessment of environmental impacts, the Transport Assessment sets out the wider beneficial impacts the Development would have in terms of meeting local and national policy objectives of achieving sustainable development growth in the area.

5.1.188 Adverse impacts from increased traffic flows would be likely on both local and strategic routes.

5.1.189 The percentage change on the key local highway links is set out in Table 5.18 below.

Link	2031 Base + Development Flows	Percentage Change
A4095 Upper Campsfield Road	18,095	18.1%
A44 Oxford Road	25,522	5.3%
A4095 Grove Road	23,966	4.0%
A44 Woodstock Road	41,003	4.4%
A4260 Banbury Road	14,716	0.3%
A34	93,020	1.0%
A40	61,137	0.0%

Table 5.18: Percentage Change on Local Highway Links

5.1.190 In terms of traffic on the local road network, the main development site accesses are located on the principal road network directing the majority of flows onto A44 and A4095. The site does also connect onto Shipton Road. This is important for the integration of the site into the town to allow existing residents access to the facilities within the site. It is therefore to facilitate traffic which is already on the local road network. As such no material change in traffic flow conditions on local access roads including Hensington Road and Shipton Road are forecast.

**Significance of Effect**Severance

5.1.191 Severance is the perceived division that can occur within a community when it becomes separated by a major traffic route. Whilst the IEMA Guidelines refer to the effect of traffic on severance of 30%, 60% and 90% changes producing “slight”, “moderate” and “substantial” changes in severance respectively, it is suggested that caution be applied to relying on these quantum of change. The assessment of severance pays full regard to specific local conditions, in particular, the location of pedestrian routes to key local facilities and whether crossing facilities are provided or not.

- 5.1.192 There are few existing pedestrian routes that would be adversely affected by the proposed development given the location of the site relative to the existing urban area.
- 5.1.193 The development impact on the links in Table 5.18 are below the 30% “slight” impact of severance. There are a small number of residential properties to the south east of Upper Campsfield Road which are potentially affected by an increase in traffic flow. The pedestrian demand is however low (by virtue of small number of dwellings and distance to local services etc.) and there no existing provision for pedestrians by way of footways or crossing points.
- 5.1.194 The proposed development will increase traffic flows on the A4095, in particular between the site access and the Bladon Roundabout. Moreover, the public transport interchange and facilities within the site are likely to increase pedestrian demand. To mitigate this impact it is proposed to introduce a footway on the south eastern side of the A4095 along the site frontage and provide pedestrian crossing points on all arms of the site access roundabout so that pedestrians and cyclists can cross the carriageways in two stages.
- 5.1.195 Overall it is considered that the proposed mitigation reduces the potential impact such that the residual impact is negligible.

#### Driver Delay

- 5.1.196 The IEMA’s Guidelines for the Environmental Assessment of Road Traffic sets out that impacts on driver delay are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system. In this case this only tends to occur for short periods during the day such as the peak network periods.
- 5.1.197 The results of the junction capacity assessments summarised in the Transport Assessment shows that in the 2031 Base scenario without the development the junctions will operate with increased delay and queuing. With the addition of the development flows the increase will be minimal; however where junctions operate over capacity with the development flows, mitigation measures are proposed to deal with this. These mitigation measures are detailed in full in the Transport Assessment.
- 5.1.198 The overall significance of effect is negligible.

#### Pedestrian Delay

- 5.1.199 The IEMA Guidelines recommend that rather than rely on thresholds of pedestrian delay the assessor should use judgement to determine whether pedestrian delay is a significant impact.
- 5.1.200 The development will bring about increases in the number of vehicle movements and pedestrian movements. In general, increases in traffic levels are likely to lead to greater increases in delay to pedestrians seeking to cross. The significance of effect therefore is likely to be minor adverse. However, mitigation measures are proposed as set out in the Mitigation section below. These mitigation measures will result in a minor benefit.

#### Pedestrian Amenity

- 5.1.201 Pedestrian amenity is broadly defined as the relative pleasantness of a journey, and it is affected by traffic flow, traffic composition, footway width and degree of separation from traffic.
- 5.1.202 There is an existing good level of pedestrian and cycling infrastructure in Woodstock and along the A44 Woodstock Road south of the site. The highway links in the vicinity of the proposed development, such as the A4095 Upper Campsfield Road and the A44 Oxford Road will experience increases in traffic flows which will affect the pedestrian amenity between the proposed development and Woodstock. The significance of effect therefore is likely to be minor adverse.

5.1.203 Enhancements by way of footway and cycle connections from the proposed development to Woodstock are proposed and these are set out within the Mitigation below. These mitigation measures will result in a minor benefit.

#### Highway Accidents and Safety

5.1.204 As set out within the Transport Assessment report there are a number of areas where clusters of collisions were identified. An analysis of the data showed there are no trends in the collisions recorded. Whilst the accident record is broadly in line with national averages in terms of the number of incidents, there were a locations on the A44 where the speed of traffic clearly contributes to a higher than average severity in incidents.

5.1.205 The change in additional traffic flows on the network as a result of the proposed development would be unlikely to have any significant effect on existing personal injury collision rates, although the number of personal injury collisions would increase as a function of flow increase. However mitigation measures are proposed for a number of junctions as detailed within the TA. The residual significance of effect would be negligible.

#### Air Quality and Noise

5.1.206 Increased traffic flows arising from the development have the potential to raise issues relating to Air Quality and Noise impacts. Traffic flow data has been provided to the appropriate consultants and this is dealt with in Chapters 8 and 9.

#### Hazardous Loads

5.1.207 There would be no change in the level of hazardous loads in the area as a result of the proposed development. The overall significance of effect would be negligible.

### **Mitigation**

5.1.208 The applicants have considered the mitigation measures set out below and will ensure that the implementation of these measures as part of the planning conditions (if necessary) to prevent, reduce or offset the above adverse impacts.

#### Construction Phase Mitigation

5.1.209 As set out above, the construction phase of the development would be unlikely to result in significant traffic impacts. However, as with all major construction projects, a Construction Environmental Management Plan (CEMP) should be developed. The aim of this will be to ensure the contractors meet the requirements of all relevant environmental legislation, agreements, authorisations and commitments.

5.1.210 As part of the CEMP the routing of construction traffic should be agreed with the relevant authorities and should form part of the construction methodology adopted by the contractor. The contractors should be encouraged to require employees to share vehicles or use public transport to reduce the impact of employee's cars.

5.1.211 Given the additional traffic generated from the construction works is considered to be within the capacity of the local road network, and with the adoption of the CEMP the residual impact is considered to be insignificant.

#### Completed Development Mitigation

5.1.212 In developing the proposals for development, careful consideration was given to ways of reducing and mitigating the likely significant effects of development traffic. This has involved consideration of the development content, with the consequent implications for travel demand and the delivery of key elements of highway infrastructure serving the development.

5.1.213 'Guidance on Transport Assessment' suggests that an iterative approach may need to be taken to Transport Assessment, dealing with: reducing the need to travel by car, sustainable accessibility, dealing with residual trips and mitigation measures. The guidelines indicate that an iterative approach ensures that the stages of the Transport Assessment are not viewed in isolation and ensures that the full implications of each stage are thought through and modifications made to the proposals if necessary, with the objective of reducing the need to travel.

5.1.214 In developing the proposals, the overall policy guidance was considered with the objective of reducing the need to travel. This in turn led to the consideration of the type and mix of uses and how this affects travel demand. Furthermore, it is fundamental that the Transport Strategy focuses on the following key criteria:

- reducing the need to travel, especially by car, and managing traffic growth and congestion;
- significantly improving opportunities for walking and cycling;
- improving the reliability, capacity, quality accessibility and coverage of the public transport network;
- making better use of the existing transport network through better management; and
- only developing additional highway capacity when all other measures have been considered.

5.1.215 Following a detailed review of travel demand for residents, employees and other users of the site by trip mode and purpose, the Transport Assessment sets out a detailed strategy as to how the site can be best and most appropriately served from a transport perspective. In accordance with existing OCC transport policies.

#### Travel Plan

5.1.216 Although a fundamental part of the scheme, the Travel Plan includes a wide range of initiatives and strategies, which would further reduce the dependency on the private car and the need to travel generally. The Travel Plan includes a process of monitoring to ensure that the success can be continually tested and further mitigation measures required if necessary in the future.

#### Walking and Cycling

5.1.217 Pedestrian desire lines between the site and local facilities have been reviewed previously. Principal destinations from the site include the following:

- Woodstock Town Centre;
- Leisure facilities;
- Places of education
- Medical practices; and
- Places of employment.

5.1.218 There will, as part of the redevelopment of the site, be a number of improvements to the pedestrian accessibility and permeability of the site to provide a coherent pedestrian access strategy within the site to the surrounding areas.

5.1.219 The aforementioned pedestrian links will all be fully integrated into the proposed site's internal road layout and residential scheme. This will significantly increase the permeability of the site and provide a coherent pedestrian route between the site and the local area. This will afford pedestrians more direct routes to local facilities and integrate the site to the local pedestrian network.

5.1.220 The footpath connections to the site therefore include:

- Direct Access to Shipton Road / Marlborough School via a new 3m wide combined walking and cycling route;
- Connections to Hedge End to the west;
- Connections to the A44 towards Woodstock;
- Connections via Upper Campsfield Road to Bladon Roundabout

5.1.221 The development will adopt contemporary design guidance, including Manual for Streets, to establish the 'place' function within the site that will seek to manage vehicle speeds to around 20mph to the benefit of cycling by all. Development within the site will be provided with secure locations to store bicycles. This may be within garages, bespoke cycle storage or incorporated within the streetscape.

5.1.222 The site benefits from being well located in terms of the existing cycle network and this will be maintained and increased as part of the development. The proposed cycling infrastructure within the site will connect the development to the existing cycle network and create an integrated network that permeates the site.

5.1.223 There are three key links that will need to be provided as part of the development:

- An enhanced off-road cycle path from the site along Shipton Road to Marlborough School;
- An enhanced off-road cycle path from the Bladon Roundabout to the site access roundabout on A4095 Upper Campsfield Road; and
- An enhanced off-road cycle path from the Bladon Roundabout to the priority site access on A44 Oxford Road.

5.1.224 In addition to these links it will be necessary to provide appropriate crossing facilities at key local junctions. The site access roundabout on A4095 Upper Campsfield Road will include splitter islands on all approaches. The preliminary designs have made allowance for the inclusion of uncontrolled crossings on all arms. Similar provision will be made on the A4095 Upper Campsfield Road arm of the Bladon Roundabout.

5.1.225 In this regard the residual beneficial impact is considered to be of moderate significance.

5.1.226 The detailed pedestrian and cycle connections are shown on **Figure 2 (see appendix 1)**.

#### Public Transport Strategy

5.1.227 Woodstock already benefits from a significant and high quality public transport network. This is broadly based around the S3 service but OCC are progressing proposals to also improve other routes which serve the town, most notably the 233.

5.1.228 The public transport strategy for the site has been devised in consultation with the local operator, Stagecoach, who have recommended that the S3 be upgraded to three to four departures per hour each way between Woodstock and Oxford city centre during the weekday and Saturday inter-peak periods, and that enhancements to off-peak, i.e. evening and Sunday, service frequency would also be desirable. The site layout has been designed to offer flexibility in terms of future bus accessibility and to account for likely development phasing.

5.1.229 As an overall principle, the site access strategy has been developed to allow a direct route for bus services into the site. This includes two points of access onto the A44 and the A4095 to allow services to route from either road through the site. Internally the site layout has been designed to facilitate penetration of buses to enable residents and employees of all parts the development to access public transport services. The route into the site will also position approximately 100 residential dwellings within a 400m travel distance of the bus stop.

5.1.230 This is reflected in the overall internal layout of the roads, including routes with 6.5m carriageways able to easily accommodate two-way bus movements, and the location of stops to provide good coverage and excellent accessibility. As such all of the

development would be within 250m of a local bus service stop and within 400m of the inter-urban service stops. The layout of the development ensures that all pedestrian routes to these stops are convenient and safe.

- 5.1.231 In addition to this stopping provision will be made on the A44 itself, to allow the site to be served by the S3. Two sets of stops are proposed, the first at the northern site access. This will serve, at least in the early phases, all of the northern element of the site which will be within 500m of the bus stops. It is expected that a heritage type shelter will be provided on the southbound stops.
- 5.1.232 A further set of stops will be provided adjacent to the Bladon Roundabout with a pedestrian route through the frontage landscaping to provide access to the existing S3 / A44 route.
- 5.1.233 In addition to this, it is proposed that a transport interchange will be created on the site that would allow a wider catchment area to be served by the bus services by enabling users from adjacent villages to drive or cycle into the interchange before travelling onwards to Woodstock or Oxford. The transport interchange will also support the Local Transport Plan 3 Policy PT3 which states that Oxfordshire County Council will support and promote the development of high quality public transport interchanges.
- 5.1.234 The interchange would be located to the East of the site adjacent to the site access roundabout. The interchange would have circa 300 car parking spaces as well as cycle parking spaces.

#### The existing Shipton Road route from the A4095 Upper Campsfield Road to Hensington Road

- 5.1.235 The linking of Shipton Road through the site also significantly improves access to Marlborough School particularly for school coaches. At present however there are no dedicated set down provision for these coaches. It is proposed that this will be addressed by the creation of a dedicated coach park area to allow the safe boarding of coaches. A design for this facility is shown in the TA.
- 5.1.236 Overall, the proposals significantly enhance the opportunity for future residents to travel by passenger transport options to all popular journey purpose destinations, including health, employment, retail, leisure, education and transport interchanges. The proposals also enhance public transport provision for existing residents in Woodstock and in a wider area within the catchment of the proposed link-and-ride interchange.

#### Driver Delay

- 5.1.237 Off-site highway works to enhance highway capacity are proposed and these are detailed within the Transport Assessment. This would result in a minor beneficial effect.

#### Severance / Pedestrian Amenity / Pedestrian Delay

- 5.1.238 Enhancements by way of footway and cycle connections from the proposed development to Woodstock. Overall it is considered that the development would result in a minor beneficial effect.

#### Highway Accidents and Safety

- 5.1.239 There are no specific mitigation measures proposed to deal the highway accidents and safety; however off-site highway works to enhance highway capacity are proposed for a number of junctions, which will enhance the overall safety of the junctions.
- 5.1.240 The overall significance of effect would be negligible.

Hazardous loads

5.1.241 The proposed development will not be associated with the movement of hazardous loads. No mitigation measures are therefore proposed.

**Residual Effects**

5.1.242 Residual effects refers to those environmental effects predicted to remain after the application of the mitigation measures outlined in this ES chapter.

5.1.243 Table 5.19 below summarises the significance of effect arising from the planned growth in Cherwell and West Oxfordshire. Based on the NTEM forecasts, vehicular peak hour traffic demand will increase by 24% across the area which includes sections of the local transport network that already experiences excess demand during the peak hour period. At present there is no explicit strategy which sets out the mitigation measures required to accommodate this growth. A summary of significance of effect of the planned growth excluding development but within its area of influence is set out in Table 5.19.

Potential Effect	Significance of Potential Effect (Pre-Mitigation)	Mitigation Measures	Significance of Residual Effect	Duration
Severance	Minor Adverse	Undefined	Minor Adverse	Long Term
Driver Delay	Moderate Adverse	Undefined	Moderate Adverse	Long Term
Pedestrian Amenity / Pedestrian Delay	Minor Adverse	Undefined	Minor Adverse	Long Term
Highway Accidents and Safety	Minor Adverse	Undefined	Minor Adverse	Long Term
Hazardous Loads	Negligible	Undefined	Negligible	Long Term

*Table 5.19: Summary of Significance of Effect – Planned Growth excluding Development*

5.1.244 The development will generally give rise to a small change in traffic patterns that the wider growth plans will deliver. The cumulative impact of the planned growth, committed developments sites (as set out within the TA) and the development at East Woodstock are set out in Table 5.20. This table shows that the significance of potential effect (pre-mitigation) is the same as planned growth, i.e. cumulatively the change in magnitude is insufficient to reclassify the future impacts (pre-mitigation). The tables do however differ significantly in the significance of residual effect. The Transport Strategy and mitigation measures do effectively address the impacts within the area of influence of the development such the residual effects are negligible or minor beneficial.

Potential Effect	Significance of Potential Effect (Pre-Mitigation)	Mitigation Measures	Significance of Residual Effect	Duration
Severance	Minor Adverse	On and off-site pedestrian and cycle measures to be delivered	Negligible	Long Term
Driver Delay	Moderate Adverse	Off-site highway works to enhance highway capacity is proposed at a number of junctions	Negligible	Long Term
Pedestrian Amenity / Pedestrian Delay	Minor Adverse	On and off-site pedestrian and cycle measures to be delivered	Minor beneficial	Long Term
Highway Accidents and Safety	Minor Adverse (Bladon Roundabout)	Off-site highway works to enhance highway capacity and safety is proposed	Minor beneficial	Long Term
Hazardous Loads	Negligible	Not required	Negligible	Long Term

Table 5.20: Summary of Significance of Effect – Cumulative Development

5.1.245 Table 5.21 sets out a summary of significance of effect arising from the construction traffic during the early stages of build out of the site. Construction traffic will be managed in accordance with a Construction Traffic Management Plan which will set out routes as well as any restrictions on timings etc. In this context, as can be seen from this Table 5.21 the significance of potential effect is negligible. As the development progresses the mitigation measures set out above will be implemented such that the cumulative effect within the area of influence will be managed.

Potential Effect	Significance of Potential Effect (Pre-Mitigation)	Mitigation Measures	Significance of Residual Effect	Duration
Severance	Negligible	CEMP	Negligible	Temporary
Driver Delay	Negligible	CEMP	Negligible	Temporary
Pedestrian Amenity / Pedestrian Delay	Negligible	CEMP	Negligible	Temporary
Highway Accidents and Safety	Negligible	CEMP	Negligible	Temporary
Hazardous Loads	Negligible	CEMP	Negligible	Temporary

Table 5.21: Summary of Significance of Effect – Construction Traffic

### **Cumulative Impact**

5.1.246 As agreed with the Local Planning Authorities, in addition to wider traffic growth, specific reference has been made to the cumulative impact of the developments at Northern Gateway, Begbrook Science Park and Shipton Road where appropriate.

5.1.247 The development at Northern Gateway comprises:

- Up to 90,000m<sup>2</sup> of employment development;
- Up to 500 new dwellings;



- A range of local scale retail uses (up to 2,500m<sup>2</sup> GIA); and
  - A hotel with associated leisure facilities (up to 180 bedrooms)
  - The development at Shipton Road comprises 58 residential dwellings.
- 5.1.248 Flows for the Northern Gateway Development have been derived from the North Oxford Transport Strategy (NOTS) June 2014 and these are assessed in detail where the junction impact assessments overlap and this principally relates to the A34 Pear Tree Roundabout. In addition to considering the cumulative impacts of the traffic generated by both developments, the assessment assumes in that case that the mitigation measures identified in NOTS are also in place.
- 5.1.249 In addition to the Northern Gateway Development, OCC are progressing and have funding for significant improvements to the Wolvercote and Cuttleslowe Roundabouts. Capacity constraints at the Wolvercote and Cuttleslowe junctions result in traffic congestion on all junction approaches, but particularly on the A40. As well as congestion, there are concerns about poor pedestrian and cycle access, noise and air pollution.
- 5.1.250 The OCC proposed improvements are designed to address the current problems and ensure development in Oxfordshire does not lead to worse problems in future. These improvements are assessed in NOTS at a local level.
- 5.1.251 Development at Begbroke Science Park cannot be explicitly represented in the absence of detailed proposals of scale and mitigation. The development is already operating however and the access has been implemented in advance of an application for additional development and the operation of this junction has been assessed. In accordance with the above, TEMPRO has been applied to the development arms, equating to around 23% in uplift in flows.
- 5.1.252 The West Oxfordshire Scoping response requested that implications of new development in the Cherwell and West Oxford local Plans be considered as part of the cumulative impact assessment. The only areas within the agreed geographic scope of the assessment (as defined in the WODC scoping opinion), could be development at Witney which in traffic terms interacts with the A40 and A44.
- 5.1.253 There are no fixed proposals for development in this area at present and significant objections are outstanding to the potential sites that WODC have identified. Furthermore, there is no defined assessment by the Council of the mitigation measures that such development would have to bring forward.
- 5.1.254 On this basis and in the absence of any wider assessment by the Council the cumulative impact of those sites has been approached on the basis of the TEMPRO based core scenario (which allows for a 24% growth in traffic flows on the network). This is likely to be at the upper end of growth possible on the network due to wider and localised constraints across the area. For robustness the transport strategies and mitigation delivered by specific sites has not been included in the cumulative impact assessment.

### **Monitoring**

- 5.1.255 A fundamental part of the mitigation strategy is the provision of the Framework Travel Plan as described above. This document provides a comprehensive monitoring process, which will ensure that all sustainable travel proposals are provided, published and promoted. The travel plan also sets out the funding streams which will be released to ensure mitigation is provided at the appropriate time throughout the development period.

### **CONCLUSIONS**

- 5.1.256 This Chapter has reviewed the highways and transport implications of the proposed residential-led mixed use development to the East of Woodstock.

- 5.1.257 There is a significant amount of development planned within Cherwell and West Oxfordshire and as a result of which there will be a moderate/significant impact on the transport system without appropriate strategies to deal with the additional demand.
- 5.1.258 The proposed development provides expanded employment and services for Woodstock including a new local centre and a primary school. These will minimise the need to travel and contribute to increased sustainability of the wider community. Overall it is considered that the proposed development makes good use of existing infrastructure.
- 5.1.259 The proposed development however does represent a significant increase in size of the town of Woodstock. Forecasts of both wider growth and the development have been produced and a Transport Strategy has therefore been devised to address the cumulative impact in a cost effective manner. This includes enhancements to infrastructure and a rebalancing of the transport system to be more efficient and sustainable. This strategy has been developed to be consistent with current OCC policies and complementary with committed transport infrastructure schemes.
- 5.1.260 A key element is the public transport strategy for the site which develops existing direct bus services increasing demand through more development which is served directly and by the provision of a new interchange within the site which will be accessible by pedestrians, cyclists and car users. Car (circa 300 spaces) and cycle parking will be provided at this interchange.
- 5.1.261 Localised capacity improvements are planned for the local road network. These include works at Bladon Roundabout together with bus priority measures on the A44 corridor including reallocation of road space and junction improvement works at Loop Farm roundabout and Cassington Lane roundabout.
- 5.1.262 Works are already planned to the East of the A34 by Oxfordshire County Council and others and the developer will seek to work with OCC to ensure that a programme of works is co-ordinated to ensure that a high level of accessibility to Oxford is attained.
- 5.1.263 The above measures do directly address the forecast additional demand such that the residual demand is appropriately managed so that the residual impact will be negligible.
- 5.1.264 With respect to the planning policy requirements set out in the NPPF, it is considered that the development is sustainable in transport terms. Specifically in terms of the requirements of paragraph 32 it has been demonstrated that safe and suitable access can be achieved moreover that the impacts of the development can be appropriately mitigated and that the residual impact will not be severe.

## REFERENCES

- Health and Safety at Work Act 1974;
- Construction, Design and Management (CDM) Regulations 2007;
- Highways Act 1980;
- Road Traffic Act 1988;
- New Roads and Street Works Act 1991 (NRSWA);
- Traffic Signs Manual 2009 – Chapter 8 – Traffic Safety Measures and signs for Road works and Temporary Situations;
- Traffic Signs Regulations and General Directions 2002 (revised version 2015 - published May 2014);
- NRSWA – 3rd Edition – Code of Practice for the Co-ordination of Street Works & Works for Road Purposes & Related Matters;
- Transport White Paper: 'Creating Growth, Cutting Carbon: Making Sustainable Local Transport Happen'
- National Planning Policy Framework (2012)

- The Strategic Link Road Network and the Delivery of Sustainable Development (DfT Circular 02/2013)
- Guidance on Transport Assessment (2007)
- Building Sustainable Transport into New Developments
- Smarter Choices – Changing the Way We Travel (2004)
- Manual for Streets (2007) and Manual for Streets 2 (2012)
- Vehicle Access to all Purpose Trunk Roads – DMRB TD41/95 (1995)
- Design of Roundabouts – DMRB TD16/07 (2007)
- Oxfordshire Local Transport Plan 3
- Cherwell Local Plan
- West Oxfordshire Local Plan
- Oxfordshire Residential design Guide
- National Road Traffic Forecasts (2009)
- IEA Guidance
- Transport Statistics Great Britain
- National Travel Survey (2008-2013)
- 2011 Census ([www.ons.gov.uk](http://www.ons.gov.uk))
- Stagecoach Timetables ([www.stagecoachbus.co.uk](http://www.stagecoachbus.co.uk))
- Oxford Bus Company Timetables
- National Rail Timetables
- Personal Injury Accident Data
- North Oxford Transport Study

## APPENDICES

- Appendix 1: Figures
  - Figure 1 Junctions subject to detailed appraisal in TA
  - Figure 2 Proposed Transport Connections

## 6 FLOOD RISK, DRAINAGE AND WATER RESOURCES

### INTRODUCTION

- 6.1.1 This chapter of the EIA assesses the possible risks associated with the development of the Woodstock East site with respect to the hydrological and wider water environment.
- 6.1.2 This report establishes the current baseline conditions of the water environment, identifies possible risks and also mitigation measures that can be implemented to prevent, reduce or offset any detrimental effects on the environment.
- 6.1.3 This chapter also assesses the likely residual effects once the mitigation measures have been implemented.
- 6.1.4 This chapter makes reference to the Flood Risk Assessment produced by Infrastruct CS Ltd (ICS) Ref: 13-1363.08.003 dated September 2014, which should be read in conjunction with this report.

### LEGISLATION AND POLICY

- 6.1.5 This chapter has been compiled and assessed in accordance with current European, national and local policies on both flood risk and hydrology. Below is a summary of the relevant documents and policies, the aims and recommendations of these documents are incorporated into the proposed strategy to be adopted within the Woodstock East Development.

<b>Document/ Policy</b>	<b>Date/ Revision</b>	<b>Standards to be achieved</b>	<b>Strategy to be adopted for the Woodstock East Development</b>
National Planning Policy Framework and associated Planning Practice Guidance	March 2012 and March 2014	The National Planning Policy Framework (NPPF) establishes the policy between development and flood risk. As such the risk of flooding should be addressed at an early stage within the development proposals. The policy also steers development into areas considered as low risk from flooding. The NPPF and Guidance also set out the requirements of the content of an FRA.	As part of the proposed planning submission ICS have undertaken a Flood Risk Assessment (Ref: Ref: 13-1363.08.003) to identify and categorise the flood risks to and from the development site. The FRA accompanying this application concluded that the site does not lie within an area associated with flood risk and that through the implantation of Sustainable Drainage Systems (SUDs), surface water generated from the development can be safely managed on-site to replicate the current Greenfield conditions of the site.
The Water Framework Directive	2000/60/EC October 2000	This European directive establishes a regime for the protection of surface water, estuaries, coastal waters and ground water. The sole objective of this document is to prevent further damage to the water and associated eco-systems. The document also promotes the sustainable use of water, the reduction of pollution of water and pollution of groundwater. The overriding aim of the directive is that all inland and coastal waters must attain a 'good' status by 2015.	The Woodstock East development aims to utilise Sustainable Drainage Systems as part of the surface water drainage strategy to improve the quality of the surface water runoff from the site. Reference should be made to the ICS FRA and Drainage Strategy Document (Ref: 13-1363.08.003)
Groundwater Protection in Europe	European Commission 2008	European policy associated with specific protection of groundwater by assessing the Driving Forces, related pressures, the statutes and impacts these may have on groundwater quality.	The Woodstock East development aims to utilise Sustainable Drainage Systems as part of the surface water drainage strategy to improve the quality of the surface water runoff from the site. Reference should be made to the ICS FRA and Drainage Strategy Document (Ref: 13-1363.08.003)
Cherwell and West Oxfordshire Level 1 Strategic Flood Risk Assessment	April 2009	The SFRA document aims to assess and map the different levels and types of flood risk across the Cherwell and WODC study area for the land use planning process.	The Woodstock East development aims to promote development in line with this document and reference should be made to the ICS FRA and Drainage Strategy Document (Ref: 13-1363.08.003)

Document/ Policy	Date/ Revision	Standards to be achieved	Strategy to be adopted for the Woodstock East Development
The Flood and Water Management Act	2010	<p>The Flood and Water Management Act aims to provide better, more comprehensive management of flood risk for people, homes and businesses, to help safeguard community groups from unaffordable rises in surface water drainage charges, and protects water supplies to the consumer.</p> <p>The Flood and Water Management Act encourages the use of sustainable drainage in new developments and re-developments and aims to produce a national standard for the design, construction, operation and maintenance of associated systems.</p>	The Woodstock East development aims to utilise Sustainable Drainage Systems as part of the surface water drainage strategy. In doing so it has been concluded within the ICS FRA and Drainage Strategy document that the development will not be subject to a high risk of flooding nor will it increase the risk of flooding to third parties through the development of the site.

Table 6.1: Legislation and Policy

## METHODOLOGY

### Scope of study area

6.1.6 The assessment of the Woodstock East development site is being undertaken in conjunction with the relevant standards and guidelines set within the following documents;

- National Planning Policy Framework (NPPF) and Guidance
- The Water Framework Directive
- Groundwater protection in Europe
- The Flood Water Management Act

6.1.7 The study area relates to the proposed Woodstock East development site together with the immediate area to ensure that the flood risks potentially generated by the development of the site do not impact on the surrounding area. Where considered necessary, the study area has been extended to encompass strategically important areas such as the adjacent World Heritage Site at Blenheim Palace.

### Existing Baseline Information

6.1.8 The impact of the proposed development needs to be assessed against the current conditions found within the development site. These current conditions, known as the Baseline Data, set the benchmark for assessment to establish the scale and type of impact.

6.1.9 In order to establish the baseline conditions for the Woodstock East development site, reference has been made to the following information;

- a) Topographic survey produced by Ground Surveys Job No. 5761, August 2014
- b) Site Investigation Report produced by Listers Job No. 14.08.005a

- c) Field Investigation work undertaken by ICS to map and define existing surface water features across and adjacent to the development site.
- d) Flood data provided by the Environment Agency
- e) Information contained within WODC/Cherwell SFRA
- f) Water abstraction points and licenses provided by the Environment Agency
- g) Consultation with Thames Water

**Potential impacts from the development site**

6.1.10 The development of the Woodstock East site has the potential to cause both negative and positive impacts on the wider water environment and these have been considered and detailed below.

6.1.11 Each attribute to the wider water environment needs to be assessed at the current baseline condition. This report achieves this by assessing each attribute in relation to a 'value', giving it a very high, high, medium or low classification. Table 6.2 below provides an example to the type of value assigned to specific hydrological and wider water environmental attributes.

Value of attribute	Description	Example	
Very High	Associated with an area considered important on a national/regional scale.	Flooding	Major risk flood plain (regional)
		Surface Water	UK wildlife protected site, Designated fishery sites or Class RE1 River Quality Objective River Ecosystem.
		Groundwater	Regional Major Aquifer classed as Source Protection Zone 1 or a principle aquifer supporting water supply and/or base flow on a strategy scale
High	Associated with an area considered important on a local scale.	Flooding	Major risk flood plain (local)
		Surface Water	UK wildlife protected site, major fishery sites or Class RE2 River Quality Objective River Ecosystem.
		Groundwater	Local Major Aquifer classed as Source Protection Zone 2 or a principle aquifer supporting water supply and/or base flow on a strategy scale
Medium	Associated with an area considered as having medium significance on a local scale.	Flooding	Minor risk flood plain (local)
		Surface Water	Class RE3 and 4 River Quality Objective River Ecosystem.
		Groundwater	Local Minor Aquifer classed as Source Protection Zone 2 utilised mainly for agricultural purposes
Low	Associated with an area considered as having low significance on a local scale.	Flooding	Low risk flood plain (local)
		Surface Water	Class RE5 River Quality Objective River Ecosystem.
		Groundwater	Ground classed as a non-aquifer

Table 6.2: Baseline classification of attributes

6.1.12 The scale of the impact on the attribute should be assessed for both the construction and operational phases of the proposed Woodstock East development, as each phase will have varying degrees of magnitude. These can offer both negative and positive effects on the wider water environment, and so the magnitude of the impact has been assessed based on table 6.3 below;

Magnitude		Criteria
Major	Adverse	Loss of attribute and/or quality
Moderate	Adverse	Part loss of attribute and/or quality
Minor	Adverse	Measurable change in attribute and/or quality
Negligible		No improvement/change
Minor	Beneficial	Measurable improvement in attribute quality
Moderate	Beneficial	Moderate improvement of attribute quality
Major	Beneficial	Major improvement of attribute quality

Table 6.3: Magnitude of Impacts

- 6.1.13 The combined effect associated with the magnitude of the impact upon the value of the attribute needs to be assessed in relation to one another. This assessment can then be used to determine the overall significance.
- 6.1.14 A high value attribute such as major flood plain combined with a major impact, has the ability to dramatically affect the wider water environment. Conversely, a low value attribute impacted by a minor affect is likely to have neutral significance. Table 6.4 below provides an assessment for each scenario;

		Magnitude of Impact			
		Major	Moderate	Minor	Negligible
Value of Attribute	Very High	<b>Very Large</b> Development will dramatically enhance or degrade the water environment	<b>Large</b> Development will significantly enhance or degrade the water environment	<b>Moderate</b> Development has the potential to either enhance or degrade the water environment	<b>Neutral</b> No positive or negative impact
	High	<b>Large</b> Development will significantly enhance or degrade the water environment	<b>Moderate</b> Development has the potential to either enhance or degrade the water environment	<b>Slight</b> Development has the potential to slightly enhance or degrade the water environment	<b>Neutral</b> No positive or negative impact
	Medium	<b>Large</b> Development will significantly enhance or degrade the water environment	<b>Moderate</b> Development has the potential to either enhance or degrade the water environment	<b>Slight</b> Development has the potential to slightly enhance or degrade the water environment	<b>Neutral</b> No positive or negative impact
	Low	<b>Moderate</b> Development has the potential to either enhance or degrade the water environment	<b>Slight</b> Development has the potential to slightly enhance or degrade the water environment	<b>Neutral</b> No positive or negative impact	<b>Neutral</b> No positive or negative impact

Table 6.4: Significance of Impacts

## EXISTING BASELINE CONDITIONS

- 6.1.15 This report has considered the existing baseline conditions for the Woodstock East development site within the following areas;



- Wider Water Environment Features
- Surface Water
- Flood Risk
- Water Quality
- Foul Water

***Wider Water Environment Features***

6.1.16 The existing baseline standards for the study area associated with the water environment have been listed below in table 6.5.

Section 6 Flood Risk, Drainage and Water Resources (Infrastruct CS Ltd)

Feature	Attribute	Information	Value at Source	Value at development site
Local Watercourse – Rowel Brook	Abstraction	There are no recorded abstraction licences for the Rowel Brook downstream of the site	Low	Low – No recorded abstraction
	Recreation	There are no known recreational areas associated with the Rowel Brook downstream of the site. The route follows the A44 before running south through agricultural land. Further to the southwest it runs through the village of Begbroke before discharging into the Oxford Canal.	Low	Low – No local recreational use.
	Ecology/ Biodiversity	The Rowel Brook is known to dry up within the summer months and therefore the quality of the aquatic habitat is likely to be limited.	Low	Low – Infrequent/ inconsistent flows
Local Watercourse – River Glyme	Abstraction	There are recorded abstraction licences for the River Glyme within the grounds of Blenheim Palace. Abstracted water is recorded as being used for agricultural purposes	Medium	Low – The abstraction location is over 2.5km from the southern boundary of the development site.
	Recreation	The River Glyme runs through the estate of Blenheim Palace which is classified as a World Heritage Site. The Estate holds activities which utilise the lake and river.	High	Low – The river and associated lake within the grounds of Blenheim Palace lie 1.5km to the southwest of the site
	Ecology/ Biodiversity	The River Glyme conveys a constant flow of water and provides an ecological habitat although the current WFD classification is 'poor'	Low	Low – The proposed development should not impact on this watercourse as it lies 1.5km from the development site.
Flooding	Areas providing flood storage	Within the study area only the River Glyme is recorded as having a flood plain.	Medium	Low – The development site lies outside of the flood plain
Groundwater	Water Supply	The classification of the underlying strata is Secondary A within the bedrock with non-productive strata within the superficial deposits	Medium	Medium – there are water abstraction points 50m from the western boundary of the site, which are referenced as having low abstraction volumes for land irrigation purposes.
	Base flows to watercourse	The classification of the underlying strata is Secondary A within the bedrock with non-productive strata within the superficial deposits	Medium	Medium – The rainfall infiltrating on the development site is likely to feed the bedrock aquifer
Ground Water Springs	Water Supply	There are no known springs within or close to the development site	Low	Low

Table 6.5: Value of wider water environment

## **Surface Water**

- 6.1.17 An inspection and assessment of the Woodstock East development site has been made which has identified several surface water drainage systems serving both the site and the area in close proximity to the development site. These are listed below;

### A44 Oxford Road

- 6.1.18 Along the western half of the southwestern boundary associated with the A44 there is an existing land drainage ditch running parallel to the main road. This drainage feature is thought to take highway run off from the public highway via kerb outlets with piped connections into the ditch system. This report also considers that the ditch provides an area for land drainage for the less permeable western half of the development site.
- 6.1.19 Midway along the southwestern site boundary this system becomes culverted via a headwall structure. A visual inspection suggests that from this point the culvert continues along the A44 in a westerly direction before emerging as the Rowel Brook on the north side of the A44 adjacent to the London Oxford Airport.

### A4095 Upper Campsfield Road

- 6.1.20 Along the site side of this road there is a land drainage ditch system into which the surface water from the adjacent highway would discharge, however this ditch doesn't appear to have any associated outfalls and given the permeable nature of the ground in this location, this report concludes that this ditch acts predominantly as an infiltration ditch/swale, allowing surface water to collect prior to discharge into the underlying ground conditions.

### Shipton Road

- 6.1.21 The Shipton Road is served by road gullies on either side of the road which discharge surface water into the ditch systems that run adjacent to each side of the road. On the development site side of the carriageway the ditch system varies from a defined channel to a localised depression within the site adjacent to the boundary. Again, given the permeability of the underlying ground conditions, it is the understanding of this report that these ditches do not convey a flow of water and act as storage facilities to allow surface water to infiltrate into the underlying ground conditions.

### Within the site

- 6.1.22 There are no visible signs of any piped drainage systems within the Woodstock East site, although there is a land drainage ditch system which follows and runs parallel to the hedge field boundaries. At the time of inspection (August 2014) these were dry.
- 6.1.23 The extent and location of the land drainage ditches has been highlighted on Fig 6.1 below.

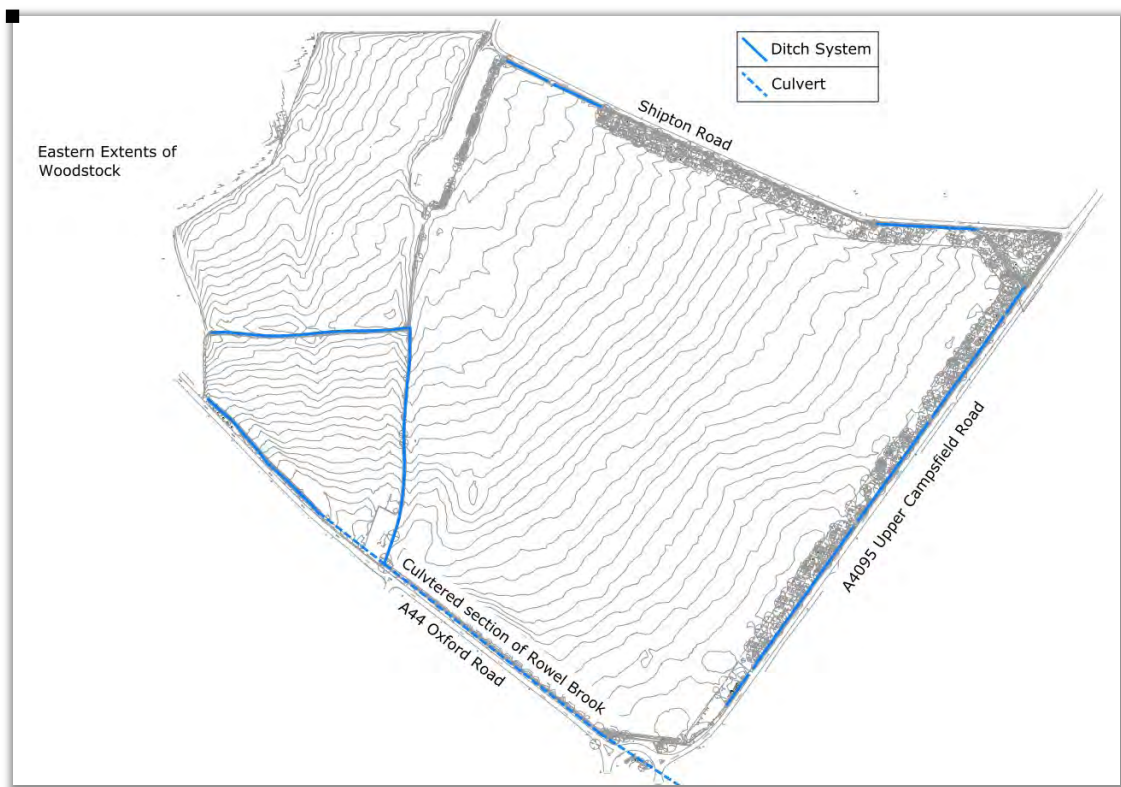


Figure 6.1: Local Drainage Features

#### Local rivers and water courses

6.1.24 The nearest main watercourse to the development site is the River Glyme, classified by the Environment Agency as main river, which runs in a southerly direction 1km to the northwest of the site. There is the smaller watercourse, the Rowel Brook which runs parallel to the A44 within a culverted system as noted above.

#### **Surface Water Run-off**

6.1.25 The site investigation report undertaken by Lister Geotechnical has established that the underlying ground conditions for the development site offer varying degrees of permeability, with the western half of the development site having less permeable strata associated with the Forest Marble Clays, and the eastern half of the site having good levels of permeability associated with the gravels of the limestone brash.

6.1.26 The topographic survey shows that the ground levels fall from west to east across the development site. There is an area associated with less permeable strata to the west of the site which drops down towards the land drainage ditch running along the A44 Oxford Road to the Southern boundary.

6.1.27 This report considers that the current baseline condition of the surface water regime is that the majority of the development site infiltrates into the underlying ground conditions through infiltration. This in turn will have connectivity and provide percolation into the bedrock aquifer at depth.

6.1.28 The western, non-permeable half of the site will generate surface water flows across this half of the development site at Greenfield run off rates into the land drainage ditches which ultimately discharge into the Rowel Brook.

## **Flood Risk**

- 6.1.29 Flood risk for the development site has been considered in more detail within the ICS Flood Risk Assessment Report Ref: 13-1363.08.001. The Woodstock East development site lies within Flood Zone 1 (low risk) and outside of the flood plains associated with the nearby watercourses. These have been detailed below;
- River Glyme – The River Glyme runs in a north-south orientation approximately 1km to the west of the development site. It is classified as Main River and has been artificially dammed to create the lake within the grounds of Blenheim Palace. The flood envelope associated with this watercourse is retained within the valley to the northwest of the development site mainly to the north of the A44 Oxford Road. This therefore presents no risk.
  - Rowel Brook – The Rowel Brook runs in a northwest-southeasterly direction parallel to the A44 Oxford Road with a section of this system being culverted. There have been no reported instances of flooding associated with this minor watercourse. This therefore presents no risk.

## **Water Quality**

- 6.1.30 Reference to Water Quality has been made in accordance with the Water Framework Directive (WFD), which establishes the standards of water quality within rivers, estuaries, coastal waters and aquifers. In terms of the Woodstock East development site reference has been made to rivers and aquifers given the geographic location of the site.
- 6.1.31 The WFD aims to implement River Basin Management Plans (RBMPs) to protect and improve the water environment by identifying issues associated with catchments and identifying the means of achieving specified targets.
- 6.1.32 There is no water quality monitoring data for the Rowel Brook in the vicinity of the Woodstock East development site, however as the catchment associated with this brook appears to originate close to the southern boundary of the development site, this report considers the catchment to be associated with the historic usage of the development site, namely agricultural. As such the water quality can be assumed to be good, although it is likely to be subjected to agricultural-origin pollutants such as pesticides and high nutrient run off.
- 6.1.33 The River Glyme is classified as 'poor status' for ecological quality in accordance with the Water Framework Directive, and is predicted to be of 'moderate status' by 2015. However, this watercourse has not been assessed as the Flood Estimation Handbook (data) suggests that the development site falls outside of the catchment of this watercourse and with the topographic levels of the site, solely feeds the Rowel Brook.
- 6.1.34 The Water Framework Directive requires no deterioration in the current ecological status of watercourses and wherever possible development should aim to improve that status.

## **Foul Water**

- 6.1.35 Consultation is currently on going with Thames Water to assess the potential impact and flow rates of the development site on the existing sewerage infrastructure network. Discussions to date have established that the town of Woodstock is primarily served by an existing gravity network, which leads to a foul pumping station. This in turn pumps effluent up and into the sewerage treatment plant to the north of the town where sewage is treated.
- 6.1.36 Thames Water have confirmed that the current pumping station and associated gravity network serving Woodstock are at capacity and as such would not be able to accommodate flows from the new Woodstock East development.

- 6.1.37 As such Thames Water have identified that new flows generated from the Woodstock East site will need to bypass the current Woodstock foul drainage system and discharge directly into the Woodstock Sewage Treatment plant via a dedicated sewage system.
- 6.1.38 Thames Water have been instructed by the applicant to undertake an impact assessment to assess the required improvements to the Sewage Treatment works to ensure this facility is able to accommodate the proposed flows from the development. Sewerage network impact assessments undertaken by the water authority, Thames Water, take, by their nature, a lengthy period of time as it is necessary for the assessment period to cover a range of external influences e.g. weather and seasonal loadings etc. Therefore results are not available for inclusion in this report.
- 6.1.39 Foul water from the development site will be collected by a piped system which will gravitate to an on-site pumping station. From there, effluent will be pumped via a rising main into the sewage treatment works.
- 6.1.40 Inspection of the initial ground investigation logs indicate that there is no expectation of impact piling systems being required for construction works. However, should such systems subsequently be found necessary, then the contractor will be required to submit and have approved a method statement for working in the proximity of sewers, water mains, or any other plant that may be affected by vibration. Method statements will require approval from the appropriate utility prior to any works being undertaken.

#### **PROPOSED MITIGATION THROUGH DESIGN FOR CONSTRUCTION AND OPERATIONAL PHASES**

- 6.1.41 Consideration needs to be given to the impacts on the water environment both during construction and operational phases of the development. These can, where fully considered, be mitigated through design intent.

#### ***Construction Phase***

- 6.1.42 Processes associated with the development of the site have the potential to have a detrimental impact on the water environment and as such any adverse effects should be minimised. These potential impacts and the associated duration will be limited to the development of each individual land parcel within the site and as such the possible impacts need to be assessed both as a whole but also on a site-by-site basis. As such these processes should be outlined within a Construction Environmental Management Plan compiled by the main contractor prior to starting works on site and subsequently used for following phases of development and should follow the recommendations of CIRIA's 'Environmental Good Practice On Site'. This document should address the following areas;
- Benefits and obligations - Relationship between environmental, social & economic, legislation and contract conditions
  - General site management issues - Setting the scene, enabling works, site offices, management and site control, site clearance following completion, communication and community relations and positive environmental impacts
  - Dust, emissions and odours - How to avoid problems and dust prediction and monitoring
  - Ecology, protected species and habitat - Wildlife surveys, potential project impacts, dealing with key animals and noxious and invasive plants
  - Historic or ancient remains & built heritage - Managing Archaeology on site
  - Land contamination - The source-pathway-receptor model, how problems may arise, getting to know your site, dealing with unexpected contamination and remediation
  - Materials - Buying materials, storing materials and managing materials

- Noise and vibration - Control of noise at source, noise monitoring and how to avoid vibration problems
- Traffic management and vehicle use - Traffic management plans and managing site traffic
- Waste - Definitions of waste types, the waste hierarchy, Waste management on site, landfill tax and hazardous waste
- Water - Abstraction and discharging, avoiding spillages, emergency preparedness and response, managing effluent from vehicles and boot washing and managing run-off.

**Operational Phase**

6.1.43 The design of the development site will be carefully considered to ensure the operational phase of the development will mirror the current status of the site in terms of the water environment by replicating the Greenfield characteristics of the surface water drainage regime (refer to ICS FRA and Drainage Statement Ref: 13-1363.08.001). As such, the development lies outside of the flood plains associated with the local watercourses and so the impact of flooding on the development site can be considered as low. The potential for surface water impacting the local area can and will be addressed through the use of SuDs drainage techniques as outlined in the ICS FRA and Drainage Strategy Document.

6.1.44 The recommendations of this report will be to follow the CIRIA SuDs Hierarchy as illustrated below;

Most Sustainable	SuDS technique	Flood Reduction	Pollution Reduction	Landscape & Wildlife Benefit
	Living roofs	✓	✓	✓
	Basins and ponds - Constructed wetlands - Balancing ponds - Detention basins - Retention ponds	✓	✓	✓
	Filter strips and swales	✓	✓	✓
	Infiltration devices - soakaways - infiltration trenches and basins	✓	✓	✓
	Permeable surfaces and filter drains - gravelled areas - solid paving blocks - porous paviers	✓	✓	
Least Sustainable	Tanked systems - over-sized pipes/tanks - storms cells	✓		

Figure 6.2: SuDS hierarchy

- 6.1.45 The findings of the site investigation works on site have substantiated the infiltration potential of the ground conditions and support the use of infiltration devices to discharge surface water into the permeable ground associated with the eastern half of the site.
- 6.1.46 Surface water from the western half of the site will look to discharge water into the adjacent Rowel Brook to maintain the important base flow at the head of this watercourse, whilst ensuring the flow rates do not exceed the existing Greenfield run off rates. This arrangement should support the current ecology associated with this feature.
- 6.1.47 The proposed incorporation of SuDs systems into the drainage design will replicate the current conditions on site and seek to provide improvement to the water quality by utilising natural biological treatment measures.

## ASSESSMENT OF THE EFFECTS FOR CONSTRUCTION AND OPERATIONAL PHASES

6.1.48 The impacts to the wider water environment identified within table 6.5 have been assessed below in conjunction with the significance of the impacts identified in table 6.4 above;

### **Construction Phase**

#### Abstraction

6.1.49 By following the recommendations contained within the Construction Environmental Management Plan the impact on the adjacent Rowel Brook will be minimised. Furthermore as this system appears to originate close to the development site and the frequency of running dry, the scale of the impact is considered to be neutral.

#### Recreation

6.1.50 The development proposals do not include water associated recreational activities or facilities, neither do they involve works to water associated recreational activities. As such the impact on recreation during construction has been assessed as neutral.

#### Ecology

6.1.51 Control of sediments and surface water flows associated with the development of the site will reduce the impact on the adjacent Rowel Brook, however as this system is known to run dry during the summer months, the likelihood of impact to aquatic ecology is likely to be slight adverse. This impact is attributed to the possible ingress of muds and silts from construction traffic entering the drainage system, however this can be mitigated through the Construction Environmental Management Plan with bunding and wheel washing facilities for vehicles exiting the development site. This impact will reduce once the main spine road and associated drainage swales have been fully constructed and so the duration of this impact is considered temporary.

#### Flood Risk

6.1.52 The risk of flooding associated with the construction phase of the Woodstock East development site together with measures to manage any potential localised flooding should be contained within the Construction Environmental Management Plan for the site. As such given the topographic location of the site, the risk is considered slight adverse. This impact is attributed to the period of time between installation of the access road and the associated drainage measures associated with it. Once the road and swales, together with the detention basin, have been implemented, the impact can be considered as neutral as the site drainage will be following the proposed strategies.

#### Groundwater

6.1.53 The classification of the underlying aquifer are is reported as a Secondary A bedrock capable of supporting water supplies at a local rather than strategic scale and in some cases forming an important source of base flows to rivers. There are however no ground water protection zones in close proximity to the development site.

6.1.54 This report considers that as the site does not have superficial aquifer deposits which would be prone to contamination, the risk to the bedrock aquifer at depth is insignificant. It is considered that there will be a considerable zone of unsaturated ground below the site, which will filter and dilute any contaminants arising from the development site.

6.1.55 As the superficial geological deposits do not support an aquifer, the risk to local abstraction points to the north of the site is considered slight adverse, however these abstractions are recorded as being only used for land irrigation purposes.



## **Operational Phase**

### Abstraction

- 6.1.56 The proposed widespread use of SuDs drainage techniques across the Woodstock East development site has the potential to filter and biologically treat the surface water leaving the site and as such have the potential to have a slight benefit. This is of significance as the current agricultural usage of the site has the potential to introduce agricultural-origin pollution into the underlying groundwater. Although development of the site into residential/urban areas, the quality of the surface water can be managed through the affective implementation of biological treatment associated with swales and microbial treatment associated with permeable block pavements.

### Recreation

- 6.1.57 The development does not propose to introduce recreational water facilities. The implementation of such measures has been omitted from the development proposals due to the increased potential to attract aquatic birds, which in turn could elevate the risk of bird strike associated with the adjacent Oxford Airport. A detention pond will be provided for surface water disposal that functions by temporarily collecting surface water during storm events, but draining down at a controlled rate afterwards. The pond therefore does not constitute a permanent water feature and as such cannot provide recreational benefit. The proposed drainage strategy detailed with the ICS report ref 13-1363.08.001 Rev A does propose the use of swales and drainage ditches to collect and convey the flow of surface water and have the potential to enhance recreational spaces and biodiversity within the development.
- 6.1.58 As such this will result in a Medium benefit to the recreational spaces proposed in the Woodstock East development site.

### Ecology

- 6.1.59 Incorporation of water related aspects of the surface water drainage strategy such as swales and drainage ditches have the potential to offer water based ecological corridors through the development site and as such will bring a slight benefit.

### Flood Risk

- 6.1.60 Although the development is located solely within flood zone 1, low risk, the uncontrolled discharge of surface water from the development site has the potential to increase flood risk further downstream and to surrounding areas. The proposed use of SuDs measures within the site will mitigate this by controlling and gradually releasing surface water. Flows will replicate the current Greenfield arrangement and release flows into both the Rowel Brook and the underlying permeable ground conditions.
- 6.1.61 The risk of elevated flooding as a result of the development is therefore considered as neutral.

### Groundwater

- 6.1.62 The proposal of implementing a SuDs drainage strategy for the development site will help to mitigate against adverse effects to groundwater, and the ICS drainage strategy specifically references areas of the development which may have a high potential to introduce contaminants such as the link and ride facility and in these instances enhanced protection measures such as petrol interceptors will be employed to make the significance of the effects neutral.

Foul Drainage

- 6.1.63 The consultation exercise undertaken to date with Thames Water has identified the limitations of the existing drainage network serving the town of Woodstock and these are mainly contained within the existing foul pumping station within the town.
- 6.1.64 The current strategy being developed with Thames Water is to bypass this system and make a new connection immediately upstream of the sewage treatment works to ensure additional flows do not have a detrimental impact on the sewerage network currently serving Woodstock.
- 6.1.65 Network Impact Analysis of Thames Water's Woodstock network will assess the ability of the existing sewerage treatment plant to take the additional flows and make recommendations for any associated upgrading works, should they be identified as necessary.
- 6.1.66 Additional flows from the development site can be mitigated by implementation of upgrade works, should they be identified as necessary through on-going consultation with Thames Water, and the significance of the effect is considered neutral.

**CONCLUSIONS**

- 6.1.67 The proposed Woodstock East development can be implemented without increasing flood risk to either the development site or the surrounding area. This has been achieved by proposing the development within flood zone 1 which is classified as suitable for all classes of development in line with the National Planning Policy Framework (NPPF) and Planning Practice Guidance.
- 6.1.68 Implementing SuDs for the proposed surface water drainage strategy will replicate the current surface water regime for the development site and not increase the risk of flooding to areas surrounding the development site. Details of the full foul and surface water drainage strategy has been discussed and detailed within the associated Flood Risk Assessment and Drainage Strategy Report ref 13-1363.08.001 rev A produced by Infrastruct CS Ltd.
- 6.1.69 The scheme does not impact or seek to provide water based recreational areas, however the scheme proposes to utilise drainage ditches and swales within the development proposals to enhance the recreational spaces and streetscapes.
- 6.1.70 Through development of the site, the scheme has the potential to remove current agricultural-origin pollutants from run off entering the underlying ground water table which will in turn help to improve the WFD classification of the adjacent watercourses.
- 6.1.71 This section of the report has identified the potential wider water environmental features and has assessed them in terms of value, magnitude of impact and significance of impact and finds the following;

***Construction phase of the development***

<b>Feature</b>	<b>Magnitude of Impact</b>	<b>Significance of Impact</b>
Water Abstraction	Low	Neutral
Water Recreation	Low	Neutral
Aquatic Ecology	Low	Slight Adverse
Flooding	Low	Slight Adverse
Groundwater	Medium	Slight Adverse
Foul Drainage	High	Neutral

*Table 6.6: Impacts of Construction phase of the development*

**Operational phase of the development**

<b>Feature</b>	<b>Magnitude of Impact</b>	<b>Significance of Impact</b>
Water Abstraction	Low	Slight Benefit
Water Recreation	Low	Medium Benefit
Aquatic Ecology	Low	Slight Benefit
Flooding	Low	Neutral
Groundwater	Medium	Neutral
Foul Drainage	High	Neutral

*Table 6.7: Impacts of Operational phase of the development***REFERENCES**

1. National Planning Policy Framework (NPPF)
2. The Water Framework Directive
3. Groundwater protection in Europe
4. The Flood Water Management Act

## 7 LIGHTING

### INTRODUCTION

- 7.1.1 This report assesses the likely significant effects of the proposed development on the environment in respect of electric light.
- 7.1.2 The Lighting Impact Assessment considers potential light pollution and light trespass from the proposed development and its potential to cause a statutory nuisance.
- 7.1.3 An initial assessment of the baseline condition has been carried out which has recorded existing electric lighting installations in the local area and identified potential receptors which may be impacted by the proposed development.
- 7.1.4 There will be permanent lighting installations provided for safety and amenity during the operational phase of development, which will have the potential to impact on the local environment through light spill, light pollution and glare. These lighting installations will include street lights, light spill from the interior of dwellings, lighting for car parks and other amenity areas and floodlighting from the proposed new sports ground. Such lighting has the potential to cause sky glow and affect views from sensitive locations such as the Blenheim Palace grounds and also to potentially cause visual conflict with the operation of the adjacent Oxford London Airport.
- 7.1.5 The proposed development will also introduce temporary lighting during the construction phase which may temporarily cause adverse impacts which will require mitigation. With appropriate mitigation measures in place it is considered that there will be no adverse impacts or residual effects.

### SITE CONTEXT

- 7.1.6 The site is located to the South East of Woodstock town. The North East Boundary is Shipton Road (with agricultural land beyond); the South East Boundary is Upper Campsfield Road with London Oxford Airport beyond. The South West Boundary is the A44 Oxford Road with Blenheim Estate beyond and the North West Boundary is the existing residential development of Woodstock.
- 7.1.7 The Site is currently used as farmland. It is bounded by hedgerows and trees which create a natural screen which is denser on the Northern boundary which has a greater number of mature trees.
- 7.1.8 The planning application is for a Hybrid Planning Application for a mixed-use development comprising: Outline Planning Application for up to 1,500 dwellings, including affordable housing and up to a 150 unit care village with associated publicly accessible ancillary facilities; site for a new primary school; up to 930sqm of retail space; up to 7,500sqm locally led employment (B1/B2/B8) including link and ride; site for a Football Association step 5 football facility with publicly accessible ancillary facilities; public open space; associated infrastructure, engineering and ancillary works, (all matters reserved except for means of access to the development); and Full planning application for the development of Phase 1 at the south western corner of the site for the erection of 29 residential dwellings (29 of the 1,500 described above) with associated open space, parking and landscaping; with vehicular access provided from Upper Campsfield Road (A4095), Shipton Road and Oxford Road (A44)



Figure 7.1: Planning Framework (Source: Aspect Landscape Planning)

## RELEVANT LEGISLATION

### ***Environmental Protection Act 1990***

7.1.9 An amendment contained within the Clean Neighbourhoods and Environment Act, 2005 to Section 79 of the Environmental Protection Act, 1990 states:

7.1.10 “Artificial light emitted from premises so as to be prejudicial to health and nuisance constitutes a ‘Statutory Nuisance’ and it shall be the duty of every local authority to cause its area to be inspected from time to time to detect any statutory nuisances which ought to be dealt with under Section 80 and, where a complaint of a statutory nuisance is made to it by a person living within its area, to take such steps as are reasonably practicable to investigate the complaint”.

## PLANNING POLICY CONTEXT

### ***National Policy***

National Planning Policy Framework 2012 (NPPF)

7.1.11 The NPPF was adopted on 27th March 2012. It states that:

*“...planning policies and decisions should always seek to secure a good standard of amenity for existing and future occupants of land and buildings.”*

7.1.12 In addition, the NPPF states:

7.1.13 “By encouraging good design, planning policies and decisions should limit the impact of light pollution from artificial light on local amenity...”

Planning Practice Guidance 2014

7.1.14 Planning Practice Guidance states that:

*“Artificial light provides valuable benefits to society, including through extending opportunities for sport and recreation, and can be essential to a new development. Equally, artificial light is not always necessary, has the potential to become what is termed ‘light pollution’ or ‘obtrusive light’ and not all modern lighting is suitable in all locations. It can be a source of annoyance to people, harmful to wildlife, undermine enjoyment of the countryside or detract from enjoyment of the night sky. For maximum benefit, the best use of artificial light is about getting the right light, in the right place and providing light at the right time.” (Paragraph: 001 Reference ID: 31-001-20140306).*

**West Oxfordshire**

West Oxfordshire Local Plan 2011

7.1.15 Paragraph 3.19 provides that “the visual impact and energy consumption of street lighting should be reduced by the careful selection of light fittings”.

7.1.16 Policy BE11 states that “Development will not be permitted that adversely affects the character, setting, amenity, historical context or views within, into or from a Park and Garden of Historic Interest”, such as Blenheim Palace.

7.1.17 Paragraph 3.95 states:

*“Pollution may be caused by the release of substances into the air, ground or water or by excessive noise, dust, vibration, light or heat. The role of the planning system in pollution control is relatively limited: much of the control is the statutory responsibility of other bodies. Pollution issues will be taken into account in two main ways in this Local Plan: the control of development that would give rise to pollution, or the risk of pollution; and the control of development that may be affected by existing pollution, or the risk of pollution, either on polluted or potentially polluted sites, or on sites in proximity to the potential source of pollution.”*

7.1.18 Policy BE18 (pollution) of the Local Plan states that:

*“Planning permission will not be permitted for development which could give rise to unacceptable levels of pollution, unless adequate mitigation measures are provided to ensure that any discharge or emissions will not cause harm to users of land, including the effects on health and the natural environment.”*

7.1.19 In regards to the airfield the local plan provides that “Development will not be permitted which would adversely affect safety near notifiable installations and safeguarded airfields” (Policy BE20). Paragraph 3.106 continues:

*“There are a number of existing aerodromes within and adjoining West Oxfordshire. The Council has been advised by the Civil Aviation Authority (for the civil airfield, Oxford Airport, Kidlington) and the Ministry of Defence (for military bases) of safeguarding areas around these locations, and of the types of development which might have an adverse effect upon aviation operations, such as wind turbines, high buildings, increased lighting and developments which have the potential to increase the bird hazard risk.”*

7.1.20 Policy BE21 of the Local plan relates specifically to light pollution. It states that “the installation of external lighting and proposals for remote rural buildings will only be permitted where all of the following criteria are satisfied:

a) *the means of lighting is appropriate, unobtrusively sited and would not result in excessive levels of light;*

- b) elevations of buildings, particularly roofs, are designed to limit light spill;
- c) the proposal would not have a detrimental effect on the amenity of surrounding occupiers;
- d) the proposal would not have a significant adverse impact on the character of a town or village and its setting or of the wider countryside;
- e) the proposal will not be detrimental to an area of nature conservation interest.”

*The local plan accepts that lighting is required for a number of purposes such as highway safety and security but that these should “be balanced against any adverse impact lights may have on the visual character of the area, the night sky or the reasonable living conditions of local residents”*

#### West Oxfordshire Design Guide

- 7.1.21 The West Oxfordshire Design Guide provides that standardised lighting should be avoided and that the design and light source chosen should be that which is most appropriate for the area.

#### West Oxfordshire Draft Local Plan 2014

- 7.1.22 This plan will eventually replace the Local Plan 2011, however, is currently at the consultations stage with a final draft to be published in November 2014.
- 7.1.23 Paragraph 7.8 of the draft plan provides that large parts of rural West Oxfordshire are noted for their peace and tranquillity. Pollution, especially from noise and light can undermine this character.
- 7.1.24 Paragraph 7.48 on artificial lighting provides:  
*“External lighting can perform a wide variety of functions ranging from floodlighting of sporting activities, to illuminating important buildings, to improving highway safety. These needs for lighting should be balanced, particularly in rural areas, against any adverse impact lights might have on the visual character of the area, the ‘night sky’ nature conservation or the reasonable living conditions of local residents.”*
- 7.1.25 Core Policy 22 relating to environmental protection provides that “the installation of external lighting and proposals for remote rural buildings will only be permitted where:  
*i) the means of lighting is appropriate, unobtrusively sited and would not result in excessive levels of light;*  
*ii) elevation of buildings, particularly roofs, are designed to limit light spill;*  
*ii) the proposal would not have a detrimental effect on local amenity, character of a settlement or wider countryside, intrinsically dark landscapes or nature conservation”*

### **Cherwell**

#### Cherwell Local Plan 2006

- 7.1.26 Policy ESD 16 (The character of the built environment) provides that “where a development is in the vicinity of any of the district’s distinctive natural or historic assets, delivering high quality design that complements the asset will be essential. New development proposals should....limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation”.

## METHODOLOGY

### **Desk Study**

- 7.1.27 At the outset of the project, briefing information was received from the client and design team which identified the extent of the site. Details of the proposed development were provided together with concept masterplan indicating the location of the various land uses.
- 7.1.28 Potential uses identified include a relocated football stadium, a supermarket and elderly care provision. A local centre is proposed with retail units, together with a number of commercial units and a “link and ride” transport interchange.
- 7.1.29 The proximity of the proposed development to the Blenheim Palace World Heritage site and a buried Roman villa which is a Scheduled Monument site is also identified on the plans.
- 7.1.30 Using the above information, the Lighting Impacts survey team developed a scoping methodology for the site survey taking into account national and local planning guidance and good practice guidelines for carrying out impact assessments. Relevant documents included the Department for Communities & Local Government’s published guidance on Environmental Impact Assessments (Source: <http://planningguidance.planningportal.gov.uk/blog/guidance/environmental-impact-assessment>) and Department for Communities & Local Government’s “Lighting in the Countryside: Towards Good Practice” published in 1997. In addition, the Institution of Lighting Professionals Guide “PLG 04 – Guidance on Undertaking Environmental Lighting Impact Assessments” 2013 informed the way in which both the baseline lighting conditions and the potential impacts were impacts were later recorded on site.
- 7.1.31 Specific guidance on the impact of electric light on bat populations and wildlife habitats was also studied. Details of relevant publications are included in Section 11 – References.
- 7.1.32 Further research was undertaken using maps and web-based resources to establish the baseline condition in advance of the site surveys. Existing land uses and potential receptors were identified. These were later verified during the site survey.

### **Results of Desk Study**

- 7.1.33 The first step in the baseline Lighting Impacts Assessment, was to identify any planning policy areas or other statutory requirements that needed to be taken into account during the impact assessment (See above)
- 7.1.34 Relevant lighting codes and standards & best practice lighting design guidelines were established (See References).
- 7.1.35 Locations of receptors and existing land uses were identified on plan. This was later confirmed by the field survey.

### **Field Survey**

- 7.1.36 The baseline lighting survey was undertaken on Tuesday 12th August 2014 to record existing artificial lighting installations in the area surrounding the development. The survey confirmed the locations of receptors and enabled the local topology, landscape features and built structures to be identified.
- 7.1.37 The study area was visited during daylight hours and again in the evening. Weather conditions were good, there was partial cloud cover and general visibility was good. The moon and stars were visible.
- 7.1.38 Taking the centre of the site as a starting point, potential receptors in close proximity were confirmed using information previously prepared during the desk-based study. The



survey team then prepared a photographic record of the baseline condition on the site and in the surrounding area. Existing lighting types were identified and illuminance (Lux) and luminance measurements (Candelas/m<sup>2</sup>) were taken of typical areas using calibrated light meters.

7.1.39 Existing electric light installations in the area surrounding The Site were assessed in the following ways:

- Measurement of typical illuminance values in Lux (Lumens per square metre)
- Measurement of luminance (surface brightness) values where relevant (Candelas per square metre)
- A subjective visual assessment of the lighting type and quality
- A visual assessment of the installed luminaires and lighting columns.

7.1.40 This information was recorded in the Baseline Survey report (see Appendix 1)

7.1.41 Appendix 1 identifies existing land uses, principal receptors, surrounding landscape elements and existing street lighting types in the area and should be read in conjunction with this chapter.

### **Results of Field Survey**

#### Land Uses

7.1.42 The Site comprises several large arable fields, enclosed by woodland and mature hedgerows. Surrounding land uses consist primarily of residential dwellings. There is a commercial development to the south on Oxford Road and many shops and small businesses located in Oxford Street and Woodstock High Street. London Oxford Airport is located to the east of the site and Marlborough Church of England School to the north. Blenheim Palace Country House and Estate a world heritage site is situated to the south west.

7.1.43 Existing land uses are identified on “Diagram 2 – Surrounding Uses” (Appendix 1)

#### Principal Receptors

7.1.44 The principal lighting receptors were identified as:

- Local Residents (as identified below)
- Pilots taking off and landing at London Oxford Airport
- Ecological Features (Existing Bat Population)
- Motorists, Cyclists and Pedestrians travelling on the A44, A4095 and Shipton Road
- Heritage (Blenheim Palace & Scheduled Monument)
- Dark Landscapes (Existing site and surrounding area)
- Astronomers (There are no observatories of which the authors are aware in the Oxfordshire area. However, there are amateur astronomy clubs in Chipping Norton and Abingdon for whom increased sky glow from the proposed development could be of concern).

7.1.45 Residential receptors for electric light from within the development were identified as the dwellings located in Hedge End, Fleming’s Road & Plane Tree Way to the North and Churchill Gate and The Covert to the west. Residential properties at the eastern end of Shipton Road such as Perdiswell Farm and properties on the eastern side of were also identified. The Pest House (north of site) lies within the ownership of the Estate and is currently included within the site boundary. “Littlecote” on Oxford Road (south of site) lies outside the ownership of the Estate and is excluded from the site boundary. Number 21

& Woodstock Boarding Cattery on Upper Campsfield Road (south east of site) lies outside the ownership of the Estate and is excluded from the site boundary.

- 7.1.46 To the south, potential receptors are the Cowyards Business Development on Oxford Road, Bladon Chains Caravan Club and additional dwellings such as “Littlecote” on Oxford Road and 21 Upper Campsfield Road.
- 7.1.47 Blenheim Palace and Park, a World Heritage Site is identified as a receptor. There are no direct views of the site from the house or the gates on Oxford Road. The south east side of the Blenheim Park faces the south western boundary of the site on the A44.
- 7.1.48 The locations of lighting receptors are shown on “Diagram 3 – Principal Receptors” (Appendix 1)
- 7.1.49 The project ecologist (BSG Ecology) has also identified existing bat foraging routes, for which mitigation will be required during the design stages of the project (See Chapter 13 of the Environmental Impact Assessment)

Existing Lighting Installations

- 7.1.50 The A44 Oxford Road and to the east A44 Woodstock Road are both currently illuminated by high pressure sodium luminaires with a clear glass convex safety lens mounted onto approximately 12 metre tall columns. An average illuminance of approximately 20 Lux was measured on the carriageway at night.



*Image 7.1: A44 Oxford Road looking towards Bladon Roundabout*

- 7.1.51 The roundabout at the junction of the A44 and A4095 is illuminated by high pressure sodium luminaires with a clear glass convex safety lens mounted onto approximately 10 metre tall columns located on the outer circumference of the roundabout. An average illuminance of approximately 30 Lux was measured on the roundabout at night.
- 7.1.52 To the north of the roundabout, the A4095 Upper Campsfield Road is not illuminated for its entire length (up to and including the junction with the A4260 Banbury Road).
- 7.1.53 Aviation warning lights and light spill from the interior of the administration buildings and aircraft hangers of London Oxford Airport are visible from Upper Campsfield Road at night. A maximum luminance value of 12 cd/m<sup>2</sup> was measured from this location during the night time survey.



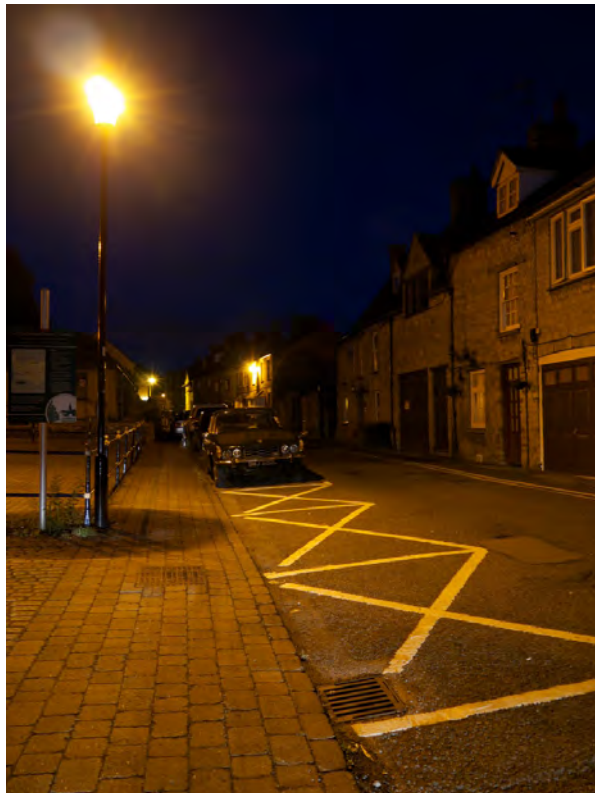
*Figure 7.2 View of Oxford Airport from Upper Campsfield Road*

- 7.1.54 To the south of the Campsfield Wood roundabout, the A4095 Bladon Road and Grove Road the street is illuminated at regular intervals by high pressure sodium luminaires which are mounted onto telegraph poles. Levels of illuminance are significantly less than on the A44 Oxford Road.
- 7.1.55 The eastern end of Shipton Road adjacent to Upper Campsfield Road is not lit. The section of Shipton Road from the Marlborough Church of England School to the roundabout at the junction of Banbury Road to the west is illuminated by high pressure sodium lanterns with a downward facing streetlighting optic mounted onto 5 metre tall columns. Illuminance levels of between 12 Lux and 45 Lux were measured during the night time survey.
- 7.1.56 The playing fields of Marlborough Church of England School are not illuminated.
- 7.1.57 In Woodstock itself, Oxford Street and the High Street are illuminated using wall mounted asymmetric high pressure sodium luminaires mounted at approximately 8 metres from street level. This wall mounted lighting provides good levels of vertical illuminance on both adjacent and opposite wall surfaces. Vertical illuminances of approximately 20 Lux were measured during the survey. Approximately 90 Lux was measured on the pavement beneath the wall mounted luminaires.



*Image 7.3 High Street, Woodstock*

- 7.1.58 To the north of Oxford Street, Union Street is lit by Victorian style lanterns on 5 metre tall columns which utilise high pressure sodium lamps. Illuminance levels of 25 Lux were measured directly beneath each lantern.



*Image 7.4: Union Street, Woodstock*

- 7.1.59 Adjacent residential streets such as Oxford Road, Cadogan Park, and Churchill Gate are illuminated with high pressure sodium lighting. Average illuminance levels of between 20 Lux and 30 Lux were measured at street level.



Image 7.5 Churchill Gate, Woodstock

- 7.1.60 Generally, whilst the streets to the South and West of the site are illuminated, areas to the North and East have no electric lighting. There was no visible glare or light spill onto the site itself from the surrounding area which might have an impact on the proposed development in future.
- 7.1.61 A summary of the results of the Lighting Impacts Baseline Survey are included in Appendix 1.

## EVALUATION, IMPACTS AND MITIGATION

- 7.1.62 Evaluation of the proposed development has been made with reference to the Woodstock East Illustrative Layout (Drawing ref: P800).
- 7.1.63 The existing site has been assessed as being in “Environmental Zone E2” as defined in the Institution of Lighting Professional’s *“Guidance Notes for the Reduction of Obtrusive Light”*. As such, the maximum permissible Upward Light Ratio (ULR) of the development should not exceed 2.5% of the total luminous flux of installed luminaires. Light intrusion into windows should not exceed 5 Lux “Pre-Curfew” and 1 Lux “Post Curfew”. Luminaire intensity should not exceed 7,500 cd/m<sup>2</sup> “Pre-Curfew” and 500 cd/m<sup>2</sup> “Post Curfew”. In addition, building luminances should not exceed 5cd/m<sup>2</sup> “Pre-Curfew”. See table below.

Obtrusive light limitations for exterior lighting installations – general observers – ILP UK Recommendations 2011						
Environmental zone	Sky glow ULR (Max) %	Light intrusion (into windows) Ev (lux)		Luminaire intensity I candelas (cd)		Building luminance L (cd/m <sup>2</sup> )
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	Pre-curfew
E0 IDA Dark Sky Parks, UNESCO Starlight Reserves	0	0	0	0	0	0
E1 Intrinsically dark landscapes National Parks, Areas of Outstanding Natural Beauty etc	0	2	0 (1*)	2,500	0	0
E2 Low district brightness Rural, small village, relatively dark urban location	2.5	5	1	7,500	500	5
E3 Medium district brightness Small town centres or urban location	5	10	2	10,000	1,000	10
E4 High district brightness areas Town/city centres with high night-time activity levels	15	25	5	25,000	2,500	25

ULR Upward light ratio of installation (maximum permitted percentage of luminaire flux that goes directly into the sky)  
 Ev Vertical illuminance in lux (Lumens/m<sup>2</sup>) – measured flat on glazing at centre of window  
 I Light source intensity in candelas (cd)  
 L Luminance in candelas per square metre (cd/m<sup>2</sup>)  
 Curfew Time after which stricter requirements for the control of obtrusive light will apply  
 \* Permitted only from public road lighting installation  
 See Institution of Lighting Professionals *Guidance Notes for the Reduction of Obtrusive Light 2011* – www.theilp.org.uk

Figure 7.2: “Obtrusive Light Limitations” Table (Source: Institution of Lighting Professionals)

- 7.1.64 The masterplan shown on the illustrative masterplan drawing illustrates the Hybrid Planning Application for a mixed-use development comprising: Outline Planning Application for up to 1,500 dwellings, including affordable housing and up to a 150 unit care village with associated publicly accessible ancillary facilities; site for a new primary school; up to 930sqm of retail space; up to 7,500sqm locally led employment (B1/B2/B8) including link and ride; site for a Football Association step 5 football facility with publicly accessible ancillary facilities; public open space; associated infrastructure, engineering and ancillary works, (all matters reserved except for means of access to the development); and Full planning application for the development of Phase 1 at the south western corner of the site for the erection of 29 residential dwellings (29 of the 1,500 described above) with associated open space, parking and landscaping; with vehicular access provided from Upper Campsfield Road (A4095), Shipton Road and Oxford Road (A44)
- 7.1.65 The design of lighting installations is normally undertaken during the detailed design phase of any project. Detailed information on the lighting design for the Woodstock East development was therefore unavailable at the time of this study. Consequently, assumptions have been made in order to undertake this Lighting Impact Assessment.
- 7.1.66 The Lighting Impact Assessment is made on the basis that all relevant statutory requirements will be adhered to. In addition, it has been expected that as a minimum requirement the detailed design will be undertaken in accordance with current best practice guidelines. These guidelines will include recommendations from the Institution of Lighting Engineers (ILE) regarding the reduction of light pollution and SLL CIBSE guidelines on lighting in the external environment. Specific mitigation measures recommended for each land use on The Site are described in the mitigation section of this chapter

- 7.1.67 It is assumed that by following best practice guidelines, the site should not be over lit and that when a specific task stops, then the lighting, if not required for safety and security will be switched off.
- 7.1.68 In addition, the Lighting Impact Assessment is made on the basis that energy efficient luminaires and lighting equipment with good optical control will be specified as part of the detailed lighting design for The Site. All luminaires should be aimed and focussed correctly to illuminate specific tasks, avoid glare and minimise any light trespass into residential windows or into the night sky. Recommended limitations on “obtrusive light” and a detailed list of all the relevant lighting design and environmental standards are listed in this chapter.

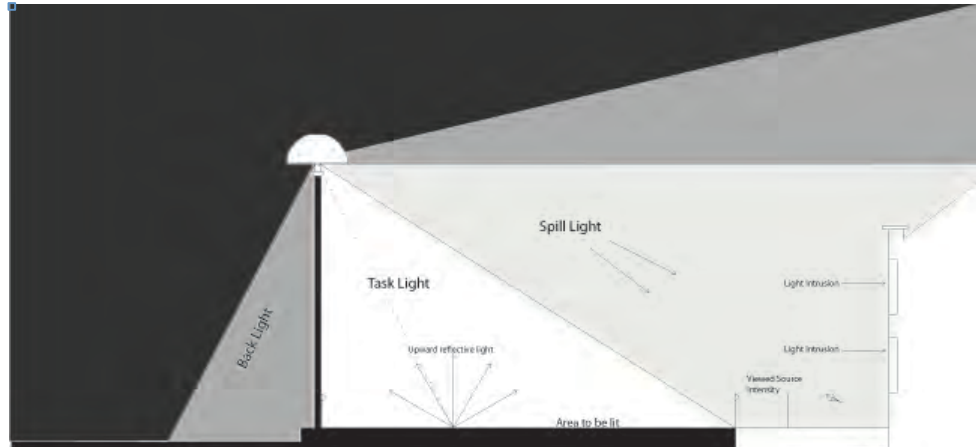


Figure 7.3: Diagram Showing Obtrusive Light (Source: GIA Equation)



Figure 7.4 Light Spill from High Mast Luminaires

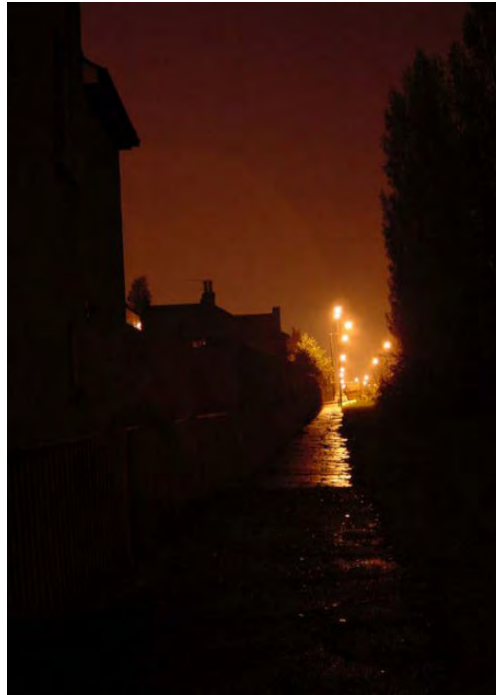


Figure 7.5: Illustration: Sky Glow from Lighting Installation

**Assessment criteria**

7.1.69 A number of criteria were used to determine whether the effects are ‘significant’. The assessments took account of the following:

- Likelihood of occurrence
- Geographical extent
- Adherence to legislation and policy
- Adherence to local, national and international standards
- Sensitivity of receiving environment or other receptors
- Value of resource which will be affected
- Temporary or permanence of effect
- Duration of temporary effects; short, medium or long-term
- Reversible or irreversible
- Inter-relationship between effects

7.1.70 The analysis considered the significance of the effects (both positive and negative), the sensitivity of the receptor and the nature and magnitude of the changes as shown in the Table 7.1 below.

		<i>Sensitivity of receptor/receiving environment</i>			
		<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Negligible</b>
<b>Magnitude of change</b>	<b>High</b>	Major	Major	Moderate	Negligible
	<b>Medium</b>	Major	Moderate	Minor to Moderate	Negligible
	<b>Low</b>	Moderate	Minor to Moderate	Minor	Negligible
	<b>Negligible</b>	Negligible	Negligible	Negligible	Negligible

Table 7.1: Assessment Criteria



<b>Receptor 1:</b> Dwellings in Hedge End, Fleming's Road & Plane Tree Way					
<b>Magnitude of Change</b>	High	<b>Sensitivity of Receptor</b>	High	<b>Impact</b>	Major
<b>Proposed Mitigation:</b> Specify luminaires with flat glass full cut-off light distribution for adjacent streets. Dim street lighting post-curfew Limit the use of electric light in gardens bordering the properties Design landscape elements to create physical barrier between existing dwellings and The Site					
<b>Receptor 2:</b> Dwellings in Churchill Gate & The Covert					
<b>Magnitude of Change</b>	High	<b>Sensitivity of Receptor</b>	High	<b>Impact</b>	Major
<b>Proposed Mitigation:</b> Specify luminaires with flat glass full cut-off light distribution for adjacent streets. Dim street lighting post-curfew Limit the use of electric light in gardens bordering the properties Design landscape elements to create physical barrier between existing dwellings and The Site					
<b>Receptor 3:</b> The Pest House					
<b>Magnitude of Change</b>	High	<b>Sensitivity of Receptor</b>	High	<b>Impact</b>	Major
<b>Proposed Mitigation:</b> Specify luminaires with flat glass full cut-off light distribution for adjacent streets. Dim street lighting post-curfew Limit the use of electric light in gardens bordering the property Design landscape elements to create physical barrier between existing dwellings and The Site					
<b>Receptor 4:</b> Dwellings in Shipton Road					
<b>Magnitude of Change</b>	Medium	<b>Sensitivity of Receptor</b>	High	<b>Impact</b>	Major
<b>Proposed Mitigation:</b> Specify luminaires with flat glass full cut-off light distribution for adjacent streets. Dim street lighting post-curfew Limit the use of electric light in gardens bordering the property Design landscape elements to create physical barrier between existing dwellings and The Site					
<b>Receptor 5:</b> Dwellings in Oxford Road					
<b>Magnitude of Change</b>	High	<b>Sensitivity of Receptor</b>	High	<b>Impact</b>	Major
<b>Proposed Mitigation:</b> Specify luminaires with flat glass full cut-off light distribution for adjacent streets. Dim street lighting post-curfew Limit the use of electric light in gardens bordering the property Design landscape elements to create physical barrier between existing dwellings and The Site					

<b>Receptor 6: Dwellings in Upper Campsfield Road</b>					
<b>Magnitude of Change</b>	Medium	<b>Sensitivity of Receptor</b>	Medium	<b>Impact</b>	Moderate
<p><b>Proposed Mitigation:</b>  Specify luminaires with flat glass full cut-off light distribution for adjacent streets.  Dim street lighting post-curfew  Limit the use of electric light in gardens bordering the property  Design landscape elements to create physical barrier between existing dwellings and The Site</p>					
<b>Receptor 7: London Oxford Airport</b>					
<b>Magnitude of Change</b>	High	<b>Sensitivity of Receptor</b>	High	<b>Impact</b>	Major
<p><b>Proposed Mitigation:</b>  Lights should not be displayed on the site, which could distract pilots or be mistaken for aeronautical ground lights.  The arrangement of street lighting columns on the site should be such that it cannot be mistaken for the airport approach or runway lighting systems.  The use of coloured marker lights should also be avoided on the site.  All street lighting specified should have flat glass, full cut off reflector systems, which emit no light above the horizontal plane.  The installation of high structures should also avoided on The Site.  Temporary outdoor light shows involving lasers, searchlights or fireworks must be prohibited on The Site.</p>					
<b>Receptor 8: Existing Bat Population</b>					
<b>Magnitude of Change</b>	High	<b>Sensitivity of Receptor</b>	High	<b>Impact</b>	Major
<p><b>Proposed Mitigation:</b>  Dark zones should be created on The Site in order to maintain existing bat foraging routes to be maintained. Strategies should include creating physical barriers as part of the landscape and architectural design and not lighting sections of road where is critical to maintain a dark zone for bat foraging.</p>					
<b>Receptor 9: Motorists, Cyclists and Pedestrians</b>					
<b>Magnitude of Change</b>	High	<b>Sensitivity of Receptor</b>	Low	<b>Impact</b>	Moderate
<p><b>Proposed Mitigation:</b>  The lighting scheme designer should avoid discomfort glare or disability glare to existing road users.  Specify luminaires with flat glass full cut-off light distribution for adjacent streets.  Dim street lighting post-curfew</p>					
<b>Receptor 10: Blenheim Palace</b>					
<b>Magnitude of Change</b>	Medium	<b>Sensitivity of Receptor</b>	Medium	<b>Impact</b>	Moderate
<p><b>Proposed Mitigation:</b>  The planting of trees at the perimeter of the site creates a physical barrier between The Site and Blenheim Palace. The assessment considers that electric light within the development should not create an adverse impact within the boundaries of Blenheim Park.</p>					

Receptor 11: Commercial Development Oxford Road					
Magnitude of Change	Medium	Sensitivity of Receptor	Low	Impact	Minor to Moderate
<b>Proposed Mitigation:</b> The planting of trees at the perimeter of the site creates a physical barrier between The Site and the Commercial Development. The assessment considers that electric light within the development should not create an adverse impact for the existing commercial development.					
Receptor 12: Dark Landscape (Existing site and surrounding area)					
Magnitude of Change	High	Sensitivity of Receptor	High	Impact	Major
<b>Proposed Mitigation:</b> Various strategies are suggested in the lighting impact assessment including: The use of flat glass full cut-off street lighting. Dimming street lights post-curfew. Avoiding light spill beyond the task area Ensuring that dark areas of the landscape are maintained if lighting is not needed for reasons of safety and security.					
Receptor 13: Astronomers					
Magnitude of Change	Medium	Sensitivity of Receptor	High	Impact	Major
<b>Proposed Mitigation:</b> Avoidance of sky-glow by ensuring that areas of the site are not over-lit and by dimming street lights post-curfew.					

Table 7.2: Evaluation of Impacts by Identified Receptor Prior to Mitigation

7.1.71 In addition to the impact on individual receptors, The Site as a whole has been assessed according to the methodology shown below.

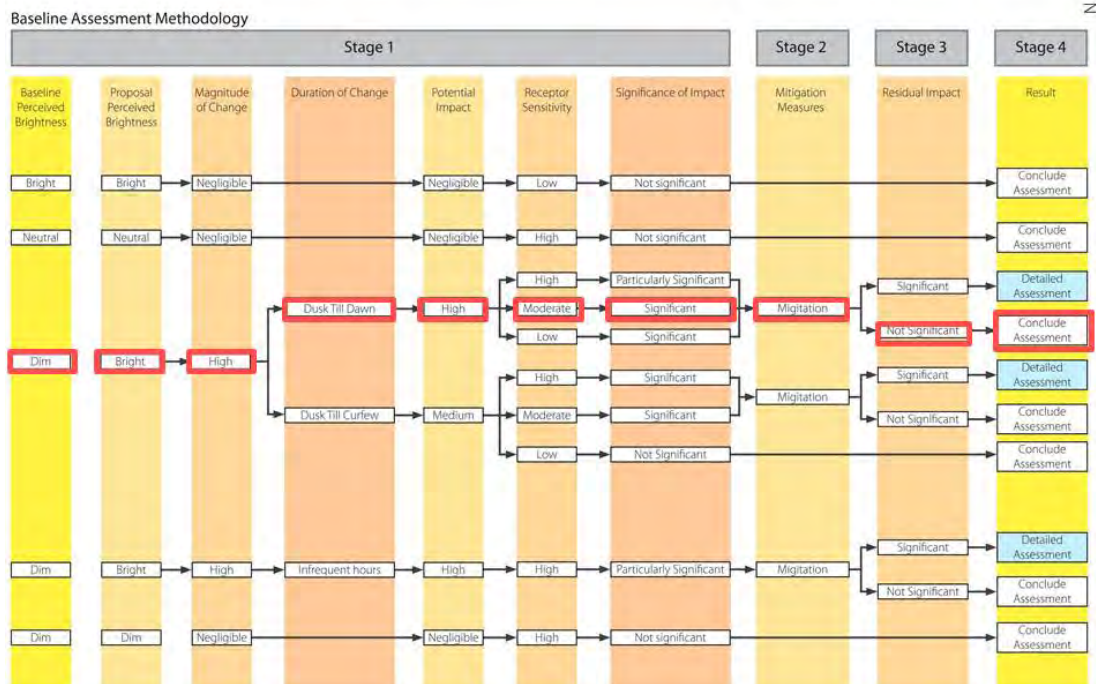


Figure 7.6: Assessment methodology

7.1.72 According to this method the baseline perceived brightness of the site is “Dim” the brightness of the proposed scheme is “Bright” therefore the magnitude of the change will be “High” and the lighting impacts “Significant”. The scheme will therefore require mitigation during the design stages of the project. If mitigation measures are followed the residual impact has been assessed as “Not Significant”.

### **Mitigation Measures**

7.1.73 Where a potential lighting impact on a receptor has been identified, the main mitigation measures are considered in three categories, Primary, Secondary and Construction. The aim of the mitigation is to modify either the magnitude of the lighting installation, in terms of quantity of light, scale, duration of operation etc. and/or the sensitivity of the receptors.

#### Primary

7.1.74 As noted above, primary mitigation measures include the implementation of good lighting design and best practice guidelines. Site-specific issues include the correct location of luminaires, appropriate light distribution and light intensity and the specification of appropriate light sources.

#### Secondary

7.1.75 Measures that address any remaining adverse impacts, include architectural design, landscape design and site planning, for example the use of screening and/or barrier planting.

#### Construction

7.1.76 In addition to the incorporation of the initial Design and Primary and Secondary Mitigation measures already noted, temporary site lighting should be addressed as a specific issue in the project Construction Code. This will provide guidance with regard to the careful installation, aiming and use of lighting for construction sites.

7.1.77 A number of different lighting typologies have been identified in order to assess the potential impact of electric light from the proposed development:

#### Roads & Footpaths

- The New Roundabout
- Primary Roads
- Secondary Roads
- Tertiary Roads
- Footpaths

#### Amenities & Facilities

- Commercial Area & “Link & Ride”
- Retail Hub
- Sports Ground
- Primary School
- Landscape & Open Spaces

### Other Considerations

- Bat Foraging Routes
- External Lighting within Dwellings
- Construction Phase Lighting Impacts

7.1.78 These typologies are identified on the plan below:



Figure 7.7: Identified Lighting Typologies

### Primary Mitigation Measures (Scheme Design Stage)

#### Optimise Illuminance Levels

*Can the design illuminances be reduced?*

7.1.79 Sky glow is the result of indirect light from lighting installations and light reflected upwards from illuminated surfaces. Care should be taken not to exceed recommended illuminance levels for each task, to minimise potential sky glow.

#### Lamps and Light Sources

*Are the lamps specified suitable for this application?*

7.1.80 Specifying inappropriate luminaires and lights will compromise performance and may have an adverse impact on receptors. In addition to the adverse visual impact, energy consumption (luminaire and lamp efficacy) materials (resources and recyclability) and manufacture (embodied energy) should be considered.

7.1.81 When specifying lamps and light sources, consideration should be given to:

Lumen Output

- 7.1.82 The lumen output of the light source when installed in a luminaire determines the perceived brightness of both the luminaire and the lighting installation. The light sources specified should have the appropriate lumen output required to achieve the required maintained illuminance levels.

Size and Form Factor

- 7.1.83 The size and form of a lamp contribute significantly to the optical efficiency of a luminaire. It is generally easier to control the light distribution of smaller light sources within highly efficient reflectors and optics. LED light sources can be extremely small, but can also be excessively bright. Care should be taken to specify the most efficient lamp and reflector combinations for each application.

Technical Characteristics

- 7.1.84 The electrical characteristics, chemical composition and technology employed determine how a source produces light and how it can be controlled. High-intensity discharge lamps (HID lamps) are gas-discharge lamps which produce light by means of an electric arc between tungsten electrodes housed inside a translucent or transparent fused quartz or fused alumina arc tube. There are two principal types commonly used in the United Kingdom; High Pressure Sodium (as used extensively in Woodstock and the surrounding area) and metal halide lamps (i.e. Ceramic Metal Halide or CDM). Discharge lamps such as this require a “warm-up” period before they reach full light intensity. These light sources are not usually dimmable.
- 7.1.85 Whilst still in use for street lighting in many parts of the United Kingdom, low pressure sodium (SOX) are no longer specified for new installations, being a virtually obsolete lamp type.
- 7.1.86 Fluorescent lamps are another type of energy efficient discharge lamp. A fluorescent lamp is a low pressure mercury-vapour gas-discharge lamp that uses fluorescence to produce visible light. An electric current in the gas excites mercury vapour which produces short-wave ultraviolet light that then causes the phosphor coating on the inside of the lamp to produce white light. Most fluorescent light sources can be dimmed.
- 7.1.87 LED light sources are now commonly used for exterior lighting in the United Kingdom. A light-emitting diode (LED) is a semi-conductor based light source which emits light when activated. Most commercially available LED light sources use either Blue or Ultra Violet diode coated with light-emitting yellow phosphor to produce white light or a similar “cold phosphor” technology which separates the LED and the light emitting phosphor to achieve a similar result. Most LED light sources are fully dimmable and can produce full light output instantly when switched on.

Colour Rendering and Colour Appearance

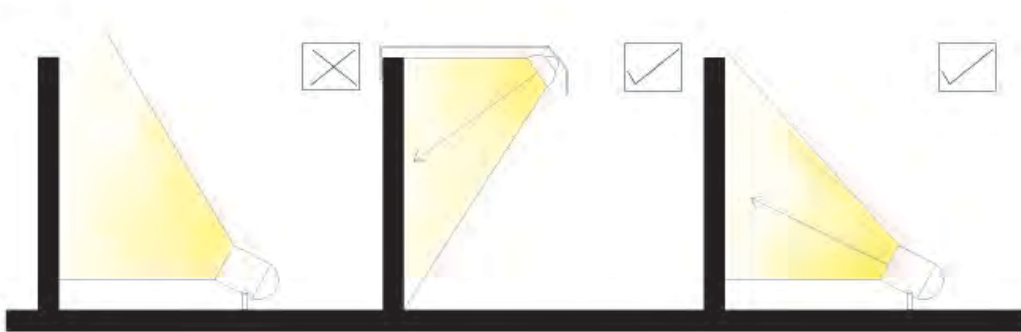
- 7.1.88 Where appropriate, light sources with “good” or “excellent” colour rendering properties should be specified (Ra 80 or higher). This is to ensure that the colour of materials and finishes in the external environment is accurately represented.
- 7.1.89 However, colour rendering and colour appearance should be considered in relation to the specific visual task or the materials and/or surfaces being illuminated. There may be situations where it is advantageous to use light sources with a spectral distribution that aesthetically enhances the colour appearance of building materials, rather than accurately recreating their appearance under natural lighting conditions.
- 7.1.90 Significant colour contrasts may be beneficial or detrimental to receptors. For example, the external environment in and around Woodstock is currently illuminated with warm white high-pressure sodium lamps. The use of cool colour temperature light sources

within the proposed development may create unacceptable visual contrast and should be avoided.

Luminaire Specification

*Is the proposed light distribution appropriate for the intended function?*

7.1.91 The installation of luminaires with inappropriate light distribution and which are sited and aimed incorrectly may result in light trespass, light spill into adjacent properties and glare. Upward light which emanates from luminaires and light spill beyond building facades contributes to light pollution and should be avoided. Specifying luminaires with an appropriately designed optical system which controls and directs the light to the task area minimises the risk of light spill to surrounding areas. For all types of area lighting within the proposed development, luminaires with a controlled downward light distribution should be specified. Should there be a requirement to illuminate a building façade for reasons of amenity; light spill beyond the boundary of the façade should be avoided.



*Figure 7.8: Luminaires aimed towards the task surface with minimal light spill*

7.1.92 Specification of luminaires with inefficient methods of optical control should be avoided and methods of achieved control of potential should be embedded in the lighting scheme design.

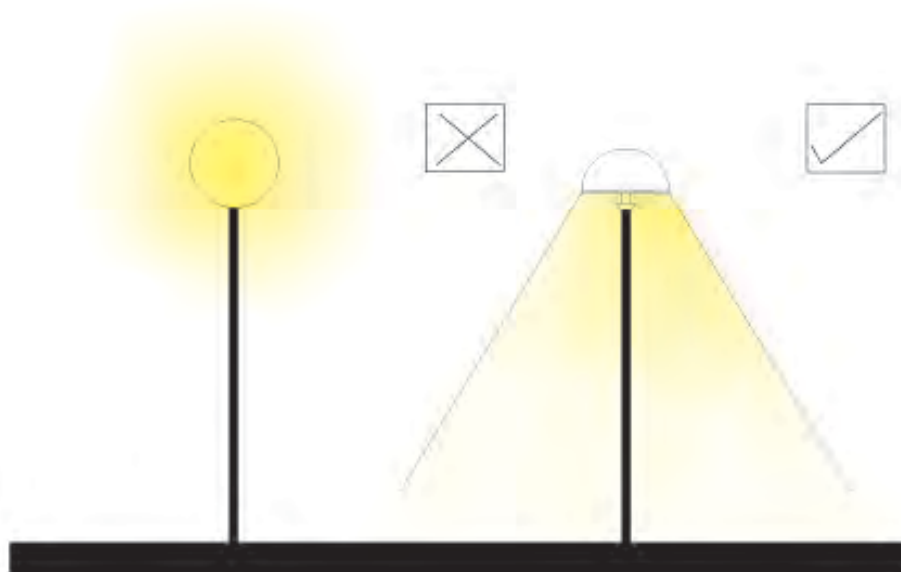


Figure 7.9: Luminaires with downward light distribution should be specified.

- 7.1.93 Efficiency of the luminaires specified should be optimised, whilst taking into account the required light distribution characteristics.

Location, Layout & Direction

*Are the luminaires in the correct position?*

- 7.1.94 Disability glare and discomfort glare are often caused by direct views of luminaires whilst illuminated. Careful adjusting of aiming angles and locating luminaires to the extent that direct views of the light source are completely avoided from most viewing angles will be beneficial to the lighting scheme overall. As a result, glare may be significantly reduced or eliminated altogether.

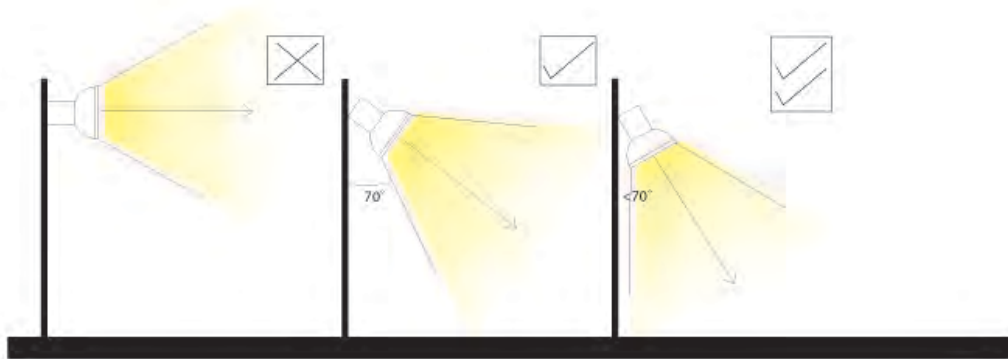


Figure 7.10: High aiming angles should be avoided to prevent glare

Implement Switching & Dimming Controls

*Can the operational hours of the installation be reduced?*

- 7.1.95 The sensitivity of receptors can be related to the duration of their exposure. In addition, the uses of a space may change during the hours of darkness, hence the illumination requirements may vary. For example, a receptor viewing a lighting installation from Dusk until Dawn may have a “High” sensitivity. Dimming or switching of the lighting at midnight may reduce the sensitivity to “Moderate”.
- 7.1.96 The use of natural light should be maximised, particularly with regard to the operational hours of construction sites. This is to minimise the impact of temporary site lighting.
- 7.1.97 The use of photocells, solar timer clocks and dimming systems (in conjunction with LED lighting systems) can minimise the potential nuisance caused by a lighting installation.
- 7.1.98 Optimising the operational hours of a lighting installation will benefit the environment by minimising energy consumption, extending lamp life and equipment longevity and reducing the embodied energy of the installation.

Physical Shielding and Control of Viewing Angles

*Can shielding devices be used?*

- 7.1.99 Devices such as louvres, anti- glare cowls etc. should be attached to luminaires in order to control light spill and inhibit direct views of the light source which might cause glare

Omit Lighting Altogether

*What is the purpose of the lighting installation?*

*Is it required for health and safety reasons?*



- 7.1.100 The necessity of providing electric light should be addressed at the design stage. Where lighting is necessary to ensure the health and safety of the user of a space, this may take priority over the impact on a receptor.
- 7.1.101 Where lighting is installed for reasons of visual amenity or for aesthetic reasons then the adverse effect on the receptor should be given greater priority. For example, illuminating buildings of historic or architectural merit and works of art.

### **Secondary Mitigation Measures (Scheme Design Stage)**

#### Screening

Can views of the lighting installation be obscured from the receptor viewpoint?

- 7.1.102 Architectural elements, hard and soft landscaping and planting may be used to limit the receptors view of a lighting installation. For example, louvred fencing installed adjacent to a traffic route can appear solid when viewed at specific angles. Evergreen trees, planting and architectural screens can be used to shield or limit a receptor's view of the lighting installation.

#### Reduction in Surface Reflectance

*Can the reflectance of the illuminated surfaces be reduced?*

- 7.1.103 The reflectance of illuminated surfaces can have a negative impact on the perceived brightness of an external environment. A reduction in material reflectances can reduce potentially adverse impacts such as light spill and sky glow.

### **Site Specific Mitigation Measures**

- 7.1.104 The Hybrid Planning Application includes a detailed Lighting Masterplan. The Lighting Masterplan identifies the proposed uses of the site as shown on the West Waddy ADP masterplan, and details the lighting strategy that should be adopted in each area of the development. The Lighting Masterplan considers the potential environmental impact of electric light on the site, describes how best practice guidelines should be adopted and illustrates ways in which lighting can enhance the amenity of the development with minimal impact on the surrounding area. Site specific mitigation measures are detailed below:

#### The Roundabout

- 7.1.105 High efficiency flat glass full cut-off lanterns with a shielded downward light distribution should be utilised. The use of good colour rendering dimmable LED light sources should be considered, to enable the street lighting to be automatically dimmed after an agreed curfew time in the late evening.
- 7.1.106 Consideration should be given to avoiding overlighting the junction and considering the transition to the unlit section of the A4095 to the north. The number of lighting columns specified should be minimised and the daytime appearance of the installation considered. The scheme designer should aim to minimise visual impact of lighting during the hours of darkness and minimise the visual impact of the lighting columns during the day.
- 7.1.107 The planting of trees and hedgerows will assist in containing light to the area of the roundabout with minimal spill to the surrounding area.
- 7.1.108 The colour of the lighting columns should be considered in relation to the landscape design. For example, darker colours are appropriate if the columns are viewed against dense vegetation and lighter colours such as silver are appropriate when the columns are visible against the sky during the day.

Roads

- 7.1.109 In considering the potential impact of the street lighting, a hierarchy of primary, secondary and tertiary routes has been identified.
- 7.1.110 High efficiency flat glass full cut-off lanterns with a shielded downward light distribution should be specified. The scale of the street lighting columns should be significantly smaller in scale than the existing street lighting columns used on the adjoining “A” roads and more in keeping with the rural character of the development.
- 7.1.111 It is suggested that the primary routes through the development should be illuminated to higher levels of illuminance, with the secondary roads within the residential area lit to reduced levels. Consideration should be given to lighting tertiary routes leading to individual dwellings with high efficiency bollard luminaires rather than typical street lighting columns. The lighting scheme design should endeavour to provide a minimum amount of electric light around the outer boundary of the site to minimise the impact on the surrounding area.
- 7.1.112 The principal objective of the lighting design for the roads within the development should be to assist the safe and efficient movement of vehicular and pedestrian traffic. Road lighting should be designed to create an even luminance on the road surface as seen by the drivers of vehicles. Reduced levels of uniformity will be acceptable in secondary and tertiary streets where the traffic will be moving more slowly.
- 7.1.113 Lighting for the development should complement the existing street lighting in Woodstock as a whole. The use of good colour rendering dimmable LED light sources should be considered, to enable the street lighting to be automatically dimmed after an agreed lighting curfew in the late evening.
- 7.1.114 Views into the site from the surrounding countryside should be considered when developing the design and the appearance of visible lines of street lighting columns avoided.

Footpaths

- 7.1.115 Given that the site is in a rural location, the scheme designer should first consider whether it is necessary to illuminate footpaths at all.
- 7.1.116 In general, the planning and design of the site should endeavour to minimise the use of electric lighting. Where pedestrians and vehicles occupy a shared space, the lighting should be designed such that drivers of vehicles can clearly see pedestrian users of the space whilst ensuring that light spill into surrounding areas is minimised.

Commercial Area & “Link & Ride”

- 7.1.117 High efficiency flat glass full cut-off lanterns with a shielded downward light distribution should be utilised. The use of good colour rendering dimmable LED light sources should be considered, to enable the street lighting to be automatically dimmed after an agreed curfew time in the late evening.
- 7.1.118 The locations of luminaires should be carefully considered at the design stage of the project, making use of the backdrop provided by any existing vegetation and introducing new planting within the car park to minimise the visual impact of the lighting equipment during the day and the visual impact of the lit scene at night.
- 7.1.119 Views from the surrounding countryside should be considered and attention given to the car park boundaries, using new hedgerow or tree planting to help minimise the visual impact of car park lighting on the surrounding area.

Local Centre

- 7.1.120 The mounting height and spacing of the street lighting should be coordinated with the architectural design of the retail units. The use of wall mounted luminaires will reduce the amount of street furniture and reduce clutter.
- 7.1.121 Car parking areas should be illuminated according to the principles adopted for the commercial area on the eastern side of the site.
- 7.1.122 Ensure that any illuminated signs are not visible from open countryside i.e. concentrate signage at public entrance to commercial units and ensure that it is not facing outwards towards the site boundary.
- 7.1.123 External lighting elements should have solar time clock controllers or PIR sensors to ensure that luminaires and signage remain off during daylight hours and are switched off or dimmed after normal working hours.
- 7.1.124 Lighting provision for parking areas should utilise high efficacy pole top luminaires with a shielded downward light distribution as suggested for other areas of the site.

Sports Ground

- 7.1.125 Pitch floodlighting will be required to enable sports activities to take place after dark. Good levels of lighting uniformity will be required on the playing surface itself, but care should be taken to avoid light spill into areas beyond the sports field. Note: Preliminary calculations undertaken using Woodstock Town's existing floodlighting equipment installed on 15 metre lighting columns indicate that it is possible to achieve Football Association recommended illuminance levels on the football pitch whilst ensuring that light spill into surrounding areas is minimised. (The calculations assume that all adjustable floodlights will be correctly aimed and adjusted).
- 7.1.126 The colour finish of the lighting columns will have a significant impact on the daytime appearance of the scheme. If the installation is to be generally seen against the sky, then lighter colours such as Silver RAL9006 should be specified. Darker coloured lighting columns should be specified when the luminaires and lighting columns may be viewed against surrounding vegetation, such as trees and hedgerows.
- 7.1.127 In terms of lighting control, the pitch floodlights should only be illuminated when the sports facility is in use and switched off at all other times.
- 7.1.128 The surrounding landscape should be designed in such a way as to effectively act as a physical barrier to minimise potential light spill into neighbouring properties, particularly on the eastern side of the sports ground.
- 7.1.129 The ecological survey has identified an existing bat foraging route on the western boundary of the sports field. It is therefore important that there should be no light trespass from sports pitch into this zone. The use of barrier planting may be required in order to maintain a dark zone for foraging bats.

Primary School

- 7.1.130 External lighting within the boundary of the Primary School should be designed in accordance with the best practice principles described above. High efficiency flat glass full cut-off lanterns with a shielded downward light distribution should be utilised. The use of good colour rendering dimmable LED light sources should be considered, to enable the lighting to be automatically dimmed after an agreed curfew time in the late evening.

London Oxford Airport

- 7.1.131 Care should be taken to avoid potential confusion to pilots taking off and landing at London Oxford Airport. Lights should not be displayed on the site, which could distract pilots or be mistaken for aeronautical ground lights.



*Illustration 7.1: Airport Approach & Runway Lights*

- 7.1.132 The arrangement of street lighting columns on the site should be such that it cannot be mistaken for the airport approach or runway lighting systems. It is recommended that staggered arrays of street lighting columns are used to avoid potential confusion with airport approach and runway lighting systems (as illustrated above). The lighting scheme designer should refer to relevant guidance documents.
- 7.1.133 The use of coloured marker lights should also be avoided on the site. All street lighting specified should have flat glass, full cut off reflector systems, which emit no light above the horizontal plane. The installation of high structures should also be avoided on The Site. Coloured lighting elements that could be confused with airport signals must not be specified.
- 7.1.134 Temporary outdoor light shows involving lasers, searchlights or fireworks must be prohibited on The Site.
- 7.1.135 Designers of all lighting installations on the site should fully comply with the requirements of CAA Air Navigation Order 2006, Article 135 “Dangerous Lights” which states that:
- 7.1.136 A person shall not exhibit in the United Kingdom any light which:
- By reason of its glare is liable to endanger aircraft taking off from or landing at an aerodrome; or
  - By reason of its liability to be mistaken for an aeronautical ground light is liable to endanger aircraft.

#### Care Village

- 7.1.137 It is envisaged that the care village will contain various amenities, such as restaurants, bars, hairdresser and health club facilities.
- 7.1.138 Care should be taken at the design stages of the project to ensure that best practice lighting design principles are adopted for the external areas of the Care Village. Lighting strategies should include specifying luminaires with a shielded downward light distribution that illuminates the visual task with minimal light spill into surrounding areas. Elderly people also have reduced levels of retinal illuminance and less transparent crystalline lenses, hence greater levels of illuminance may be required for a specific visual task. Elderly persons can also be more sensitive to flicker from electric light sources, hence high frequency luminaires should be specified.

- 7.1.139 Avoiding significant light spill from illuminated interior windows should be avoided, especially on the western side of the care village where it might have an adverse impact on an existing bat foraging route.

#### Landscape & Open Spaces

- 7.1.140 In keeping with the rural location of the site and to avoid the excessive exterior lighting, it is recommended that all landscaped areas of the development excluding principal roads and footpaths but including the land surrounding the existing Scheduled Monument should not be illuminated at night.

#### Bat Foraging Routes

- 7.1.141 Identified bat foraging routes should not be illuminated and the use of hedgerows, barrier planting, screening or berms should be considered to create dark corridors on the site. Where foraging and commuting routes cross roads and footpaths, then the street lighting should be omitted to ensure that a dark landscape is maintained. Low level lighting such as bollards with a shielded downward light distribution should be installed where there is a necessity to provide lighting for safety and security.

#### Other Considerations

- 7.1.142 External Lighting within Dwellings: The application of restrictive covenants should be considered, to prohibit the use of PIR activated external security lighting by individual property owners. If required, alternative security measures, such the use of interior ambient light automatically controlled by time clock should be adopted.
- 7.1.143 Construction Phase Lighting Impacts: During the construction of each phase of the development, it is expected that there will be temporary site lighting in operation.
- 7.1.144 The Construction (Design & Management) Regulations 1997 aim to protect the health and safety of personnel who carry out construction work and provide protection to others who may be affected by the work.
- 7.1.145 The HSE Guide to the Construction (Design & Management) Regulations 1997 states the following with regard to site lighting installations:
- “Where natural light is inadequate or not available, artificial lighting should be provided.”*
- And in addition:
- “Where work will continue outside daylight hours or the building or structure is enclosed, artificial lighting will be required. Make sure that any artificial lighting does not change the apparent colour or visibility of any safety signs or other safety-related items such as fire extinguishers.”*
- 7.1.146 All of the duties identified within the guide are qualified by the term “so far as reasonably practicable” with the exception of lighting installations.
- 7.1.147 In terms of mitigating the adverse effects of temporary site lighting installations, consideration to light trespass and glare to neighbouring properties should be considered and temporary lighting should be switched off when not needed to carry out a specific task.
- 7.1.148 Health & Safety: Mitigation measures should only be adopted if the health and safety of users or receptors is not compromised in any way.
- 7.1.149 Visual Amenity: Visual amenity should be addressed at the design stage of the project. The baseline lighting assessment methodology is based on the change in the perceived brightness of the night scene. However, this should not preclude both subjective and objective improvements to the lit environment in terms of visual amenity.

## CONCLUSION

- 7.1.150 The baseline condition of the site has been assessed as “*Dim*” and the brightness of the proposed scheme post-construction assessed as “*Bright*”. Therefore the magnitude of the change is considered to be “*High*” and the lighting impacts “*Significant*”.
- 7.1.151 Electric lighting installations throughout The Site will therefore require mitigation during the design stages of the project to avoid adverse impacts. As identified in the Lighting Impact Assessment, strategies for mitigation will include a variety of different measures, depending on their specific location on the site and the task that is to be illuminated.
- 7.1.152 The Lighting Impact Assessment has identified clear strategies for mitigating the impact of electric light for each of the identified receptors.
- 7.1.153 The use of flat glass, full cut-off dimmable LED street luminaires is proposed throughout The Site to ensure that there is no light spill above the horizontal plane and that an efficient light distribution on the carriageway is achieved with minimal light spill into surrounding areas.
- 7.1.154 The use of micro-processor based street lighting management systems and lighting controls and dimmable lighting sources is suggested to enable light intensities to be adjusted post-curfew to avoid potential nuisance to identified receptors.
- 7.1.155 The use of louvres to limit light spill and control the light distribution from luminaires has been identified.
- 7.1.156 It is recommended that significant parts of the site should remain dark at night if there is no detriment to health and safety or visual amenity.
- 7.1.157 The existing mature landscape around the perimeter of The Site provides some screening for electric lighting installations on the site.
- 7.1.158 Additional barrier planting is proposed for The Site to shield views of lighting installations in sensitive areas and to mitigate potential light spill into the existing bat foraging routes.
- 7.1.159 If appropriate mitigation measures are implemented by lighting scheme designers at the design stages of the project then the residual impacts have been evaluated as “*Not Significant*”.

## REFERENCES

### ***Relevant Standards***

British Standards Institution, BS 5489-1:2013

“Code of practice for the design of road lighting. Lighting of roads and public amenity areas.

### ***Relevant Best Practice Guidelines***

Society of Light & Lighting (formerly CIBSE) Lighting Guides:

- LG4 Sports, 2006;
- LG6 The Outdoor Environment, 1992
- LG9: Lighting for Communal Residential Buildings, 1997
- Guide to Limiting Obtrusive Light, 2012

Institution of Lighting Professionals

- “Guidance Notes for the Reduction of Obtrusive Light” GN01:2011

- “Guidance on Undertaking Environmental Lighting Impact Assessments” PLG04 2013

Department for Communities and Local Government

- “Code for Sustainable Homes: Technical Guidance” - November 2010

***Guidance for Lighting Effects on Bats***

The Bat Conservation Trust

- “Landscape & Urban Design for Bats & Biodiversity” August 2012.

Institution of Lighting Professionals/Bat Conservation Trust

- “Bats and Lighting in the UK” May 2009.

***Other Relevant Publications***

International Commission on Illumination (CIE):

- Guide to the Lighting of Exterior Working Areas (No 68) 1986;
- Guide for the Lighting of Sports Events for Colour TV and Film Systems (No 83) 1989;
- Glare Evaluation System for use within Outdoor Sports and Area Lighting (No 112) 1994;
- Recommendations for the Lighting of Roads for Motor and Pedestrian Traffic (No 115) 1995;
- Urban Sky Glow, A worry for Astronomy (x8 - Proceedings of a symposium of CIE TC 4.21) 1994
- CIE Technical Report, Guidelines for minimizing sky glow, 4th DRAFT (TC 4.21) September, 1995
- CIE Technical Report, Guide on the limitation of the effects of obtrusive light from outdoor lighting installations, 3rd DRAFT (TC 5.12) August, 1995

Sport England Publications

- Design Guidance Note: Artificial Sports Lighting, 2012
- Outdoor Sports Lighting Briefing Note, Sept 2010

Health & Safety Executive

- Construction (Design and Management) Regulations 2007
- Health & Safety in Construction - Third Edition 2006 (ISBN 978 0 7176 6182 2)

**APPENDICES**

- Appendix 1: Baseline Survey
- Appendix 2: Lighting Glossary

## 8 AIR QUALITY

### INTRODUCTION

- 8.1.1 This Chapter presents the findings of the assessment of the potential air quality impacts of the Proposed Development during both its construction and operational phases. For both phases, the type, source and significance of potential impacts are identified, and the measures that should be employed to minimise these described.
- 8.1.2 It is considered that the Proposed Development may have a temporary impact on local air quality during the construction phase due to the creation and dispersion of dust and fine particulate matter from on site activities. Changes in local traffic volume and characteristics resulting from the operation of the Proposed Development may also have an impact on local air quality.
- 8.1.3 A glossary of terms used in this report is provided in Appendix A.

### *Site context*

- 8.1.4 The Site lies within the administrative boundaries of West Oxfordshire District Council and Cherwell District Council, and is situated immediately to the east of Woodstock between Oxford Road, Upper Campsfield Road and Shipton Road. The proposals are for a mixed-use development including housing, a new primary school, public open space and relocated football club, some employment and retail, and provision for a link and ride facility.

### RELEVANT LEGISLATION AND GUIDANCE

- 8.1.5 A summary of the relevant air quality legislation is provided below.

### *UK Air Quality Strategy*

- 8.1.6 The Government's policy on air quality within the UK is set out in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland (AQS) published in July 2007. The AQS provides a framework for reducing air pollution in the UK with the aim of meeting the requirements of European Union legislation and international commitments.
- 8.1.7 The AQS also sets standards and objectives for nine key air pollutants to protect health, vegetation and ecosystems. These are benzene (C<sub>6</sub>H<sub>6</sub>), 1,3 butadiene (C<sub>4</sub>H<sub>6</sub>), carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO<sub>2</sub>), particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), sulphur dioxide (SO<sub>2</sub>), ozone (O<sub>3</sub>), and polycyclic aromatic hydrocarbons (PAHs).
- 8.1.8 There are also standards and objectives established for the protection of vegetation and ecosystems. Oxides of nitrogen (NO<sub>x</sub>) are of particular relevance to this assessment as road traffic is a major source of this pollutant.
- 8.1.9 The standards and objectives for the pollutants considered in this assessment are given in **Appendix B**.
- 8.1.10 The air quality standards are levels recommended by the Expert Panel on Air Quality Standards (EPAQS) and the World Health Organisation (WHO) with regards to current scientific knowledge about the effects of each pollutant on health and the environment.
- 8.1.11 The air quality objectives are medium-term policy based targets set by the Government which take into account economic efficiency, practicability, technical feasibility and timescale. Some objectives are equal to the EPAQS recommended standards or WHO guideline limits, whereas others involve a margin of tolerance, i.e. a limited number of permitted exceedences of the standard over a given period.
- 8.1.12 For some pollutants, (e.g. NO<sub>2</sub>), there is both a long-term (annual mean) standard and a short-term standard. In the case of NO<sub>2</sub>, the short-term standard is for a 1-hour



averaging period, whereas for PM<sub>10</sub> it is for a 24-hour averaging period. These periods reflect the varying impacts on health of differing exposures to pollutants, for example temporary exposure on the pavement adjacent to a busy road, compared with the exposure of residential properties adjacent to a road.

- 8.1.13 The AQS contains a framework for considering the effects of a finer group of particles known as 'PM<sub>2.5</sub>' as there is increasing evidence that this size of particles can be more closely associated with observed adverse health effects than PM<sub>10</sub>.

### ***Air Quality Regulations***

- 8.1.14 Many of the objectives in the AQS have been made statutory in England with the Air Quality (England) Regulations 2000 and the Air Quality (England) (Amendment) Regulations 2002 for the purpose of Local Air Quality Management (LAQM).
- 8.1.15 These Regulations require that likely exceedences of the AQS objectives are assessed in relation to:
- 8.1.16 "...the quality of air at locations which are situated outside of buildings or other natural or man-made structures, above or below ground, and where members of the public are regularly present..."
- 8.1.17 The Air Quality Standards Regulations 2010 transpose the European Union Ambient Air Quality Directive (2008/50/EC) into law in England. This Directive sets legally binding limit values for concentrations in outdoor air of major air pollutants that impact public health such as PM<sub>10</sub>, PM<sub>2.5</sub> and NO<sub>2</sub>. The limit values for NO<sub>2</sub> are the same concentration levels as the AQS objectives, but applied from 2010. The limit values for PM<sub>10</sub> and PM<sub>2.5</sub> are also the same concentration levels as the AQS objectives, but apply from 2005 for PM<sub>10</sub> and will apply from 2015 for PM<sub>2.5</sub>. It should be noted that currently there is no requirement for local authorities to assess PM<sub>2.5</sub> concentrations as part of their statutory obligations.
- 8.1.18 The 2010 Regulations also incorporate the European Union's 4th Air Quality Daughter Directive (2004/107/EC), which sets targets for levels in outdoor air of certain toxic heavy metals and PAHs.

### ***Nitrogen Deposition and Critical Loads***

- 8.1.19 In addition to the direct effect of gaseous emissions, vegetation and ecosystems can also be affected by nitrogen deposition. The impacts of increased nitrogen deposition can vary dependant on the existing habitat (for example whether it is nutrient rich or nutrient poor), however, they can include changes in species composition (especially in nutrient poor ecosystems with a shift towards species associated with higher nitrogen availability), reduction in species richness, increases in plant production, a decrease or loss of sensitive lichens and bryophytes and increases in nitrate leaching.
- 8.1.20 In the UK, critical loads are used to assess the potential impact of changes in nitrogen deposition at designated ecological sites as a result of new development. Critical loads have been established for a range of habitat types, reflecting the variation in ecosystem response, and have been based on empirical evidence, mainly observations from experiments and gradient studies.

### ***Environmental Protection Act 1990 - Control of dust and particulates associated with construction***

- 8.1.21 Section 79 of the Environmental Protection Act 1990 gives the following definitions of statutory nuisance relevant to dust and particles:
- 8.1.22 'Any dust, steam, smell or other effluvia arising from industrial, trade or business premises or smoke, fumes or gases emitted from premises so as to be prejudicial to health or a nuisance', and

- 8.1.23 'Any accumulation or deposit which is prejudicial to health or a nuisance'
- 8.1.24 Following this, Section 80 says that where a statutory nuisance is shown to exist, the local authority must serve an abatement notice. Failure to comply with an abatement notice is an offence and if necessary, the local authority may abate the nuisance and recover expenses.
- 8.1.25 There are no statutory limit values for dust deposition above which 'nuisance' is deemed to exist. Nuisance is a subjective concept and its perception is highly dependent upon the existing conditions and the change which has occurred.

### **Environment Act 1995**

- 8.1.26 Under Part IV of the Environment Act 1995, local authorities must review and document local air quality within their area by way of staged appraisals and respond accordingly, with the aim of meeting the air quality objectives defined in the Regulations. Where the objectives are not likely to be achieved, an authority is required to designate an Air Quality Management Area (AQMA). For each AQMA the local authority is required to draw up an Air Quality Action Plan (AQAP) to secure improvements in air quality and show how it intends to work towards achieving air quality standards in the future.

### **Guidance**

- 8.1.27 A summary of the publications referred to in the undertaking of this assessment is provided below.

#### Local Air Quality Management Review and Assessment Technical Guidance

- 8.1.28 The Department for Environment, Food and Rural Affairs (DEFRA) has published technical guidance for use by local authorities in their review and assessment work. This guidance, referred to in this document as LAQM.TG(09), has been used where appropriate in the assessment presented herein.

#### Development Control: Planning for Air Quality

- 8.1.29 This air quality guidance produced by Environmental Protection UK (EPUK) offers comprehensive advice on: when an air quality assessment may be required; what should be included in an assessment; how to determine the significance of any air quality impacts associated with a development; and, the possible mitigation measures which may be implemented to minimise these impacts.

#### Guidance on the Assessment of Dust from Demolition and Construction

- 8.1.30 This document published by the Institute of Air Quality Management (IAQM) was produced to provide guidance to developers, consultants and environmental health officers on how to assess the impacts arising from construction activities. The emphasis of the methodology is on classifying sites according to the risk of impacts (in terms of dust nuisance, PM<sub>10</sub> impacts on public exposure and impact upon sensitive ecological receptors) and to identify mitigation measures appropriate to the level of risk identified.

#### National Planning Practice Guidance – Air Quality

- 8.1.31 This guidance provides a number of guiding principles on how the planning process can take into account the impact of new development on air quality, and explains how much detail air quality assessments need to include for proposed developments, and how impacts on air quality can be mitigated. It also provides information on how air quality is taken into account by Local Authorities in both the wider planning context of Local Plans and neighbourhood planning, and in individual cases where air quality is a consideration in a planning decision.

Design Manual for Roads and Bridges (DMRB)

- 8.1.32 Annex F of the DMRB provides guidance methodology for assessing the impact of changes in nitrogen deposition on designated ecological sites. Data published on the Air Pollution Information Service (APIS) website has also been used within the assessment, both as a source of information regarding potential impacts and to obtain data which has been used as an input into the assessment.

Interim Advice Note 174/13

- 8.1.33 Interim Advice Note 174/13 provides updated advice for evaluating significant local air quality effects for users of DMRB Volume 11, Section 3, Part 1 'Air Quality (HA207/07).

**PLANNING POLICY CONTEXT**

- 8.1.34 A summary of the relevant national, regional and local planning policy relevant to the Proposed Development and air quality is provided below.

***National Policy***National Planning Policy Framework

- 8.1.35 The Government's overall planning policies for England are described in the National Planning Policy Framework (NPPF). This document also outlines the means by which Government intends to apply these policies at various levels to achieve its aim of contributing to sustainable development. The NPPF acknowledges the importance of appropriate and robust planning at a local level and thus promotes opportunities for communities to engage in plan making at a neighbourhood level. The core underpinning principle of the framework is the presumption in favour of sustainable development, defined as:

*'Development that meets the needs of the present without compromising the ability of future generations to meet their own needs'*

- 8.1.36 One of the 12 core planning principles in the NPPF is that planning should 'contribute to conserving and enhancing the natural environment and reducing pollution.'
- 8.1.37 In relation to air quality, the following paragraphs in the document are relevant:
- Paragraph 109, which states: *'The planning system should contribute to and enhance the natural and local environment by...preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water, or noise pollution...'*
  - Paragraph 110, which states: *'In preparing plans to meet development needs, the aim should be to minimise pollution and other adverse effects on the local and natural environment. Plans should allocate land with the least environmental or amenity values, where consistent with other policies in this Framework...'*
  - Paragraph 122, which states: *'...local planning authorities should focus on whether the development itself is an acceptable use of the land, and the impact of the use, rather than the control of processes or emissions themselves where these are subject to approval under pollution control regimes. Local planning authorities should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities'*
  - Paragraph 124, which states: *'Planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts'*

*on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan'; and*

- Paragraph 203, which states: *'Local Planning authorities should consider where otherwise unacceptable development could be made acceptable through the use of conditions or planning obligations. Planning Obligations should only be used where it is not possible to address unacceptable impacts through a planning condition.'*

## **Local Policy**

### West Oxfordshire Local Plan 2011 (Adopted, 2006)

- 1.1 In this document, Policy BE18 - Pollution states that 'Planning permission will not be permitted for development which could give rise to unacceptable levels of pollution, unless adequate mitigation measures are provided to ensure that any discharge or emissions will not cause harm to users of land, including the effects on health and the natural environment'. The above policy has been 'saved' beyond June 2009. This saved policy will provide the basis for local planning decisions until it is replaced by the new Local Plan and any other supporting Local Development Documents but its time has expired and so the weight afforded to it is reduced.

### West Oxfordshire Draft Local Plan (October, 2012)

- 8.1.38 In this document, Core Policy 22 - Environmental Protection states that 'Proposals which are likely to cause pollution or likely to result in exposure to sources of pollution or risk to safety, will only be permitted if measures can be implemented to minimise pollution and risk to a level that provides a high standard of protection for health, environmental quality and amenity'. The document states that several issues require particular attention. In relation to air quality, the policy states that 'the air quality within West Oxfordshire will be managed and improved in line with National Air Quality Standards, the principles of best practice and the Air Quality Management Area Action Plans for Witney and Chipping Norton'.

### The Cherwell Local Plan (1996)

- 8.1.39 In this document, Policy ENV1 relates specifically to pollution control and 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'. The Council will therefore seek to 'ensure that the amenities of the environment, and in particular the amenities of residential properties, are not unduly affected by development proposals which may cause environmental pollution, including that caused by traffic generation'.

### The emerging Cherwell Local Plan (2006-2031)

- 8.1.40 In this document, Policy ESD 10 - Protection and Enhancement of Biodiversity and the Natural Environment states that 'Air quality assessments will also be required for development proposals that would be likely to have a significantly adverse impact on biodiversity by generating an increase in air pollution'. As this plan document is yet to be examined, the weight afforded to these emerging policies is reduced.

## **SCOPE AND METHODOLOGY**

### **Scope**

- 8.1.41 The scope of the assessment has been determined through:

- consultation with the Environmental Health Officers (EHOs) of West Oxfordshire District Council (WODC) and Cherwell District Council (CDC) to discuss the availability and location of local monitoring data, to agree the scope of the assessment and the methodology to be applied;
  - a review of WODC's and CDC's latest review and assessment reports and air quality data for the area surrounding the site, including data from WODC, CDC, DEFRA and the Environment Agency (EA);
  - a desk study to confirm the locations of nearby existing receptors that may be sensitive to changes in local air quality and a review of the masterplan for the Proposed Development to establish the locations of new sensitive receptors; and
  - a review of the traffic data provided by David Tucker Associates, which have been used as an input to the air quality assessment.
- 8.1.42 The scope of the assessment includes consideration of the potential impacts on local air quality resulting from:
- dust and particulate matter generated by on-site activities during the construction phase;
  - increases in pollutant concentrations (namely NO<sub>2</sub> and PM<sub>10</sub>) as a result of exhaust emissions arising from construction traffic and plant;
  - increases in pollutant concentrations (namely NO<sub>2</sub> and PM<sub>10</sub>) as a result of exhaust emissions from road traffic generated by the operation of the Proposed Development on existing public exposure sensitive locations; and
  - increased nitrogen deposition on nearby sensitive ecological sites as a result of exhaust emissions from road traffic generated by the operation of the Proposed Development
- 8.1.43 The impact of emissions generated by activities undertaken at Oxford Airport on local air quality will not be considered in this assessment. LAQM.TG(09) states that assessments of emissions from individual airports on local air quality are only required for larger airports in the UK that have in excess of 10 million passengers travelling through them per year, and where the existing background NO<sub>x</sub> concentration is above 25µg/m<sup>3</sup>. As data from Airport Watch for 2013 shows that the number of terminal passengers for Oxford Airport in 2013 was 6,877, and the annual mean NO<sub>x</sub> background concentrations for the area in which the airport is located are well below 25µg/m<sup>3</sup>, an assessment of emissions to air Oxford Airport will not be required. However, the background concentrations used in the assessment will include a contribution from emissions generated by the Airport. Also the prevailing wind direction is across the airport to the northeast and therefore away from the development site.
- 8.1.44 Furthermore, the EHOs of both Councils have not raised airport emissions as a concern, nor did the Airport itself raise the impact of emissions generated by airport activities as part of their scoping response.
- 8.1.45 The air quality impacts of the 29 houses, for which detailed planning is sought, has not been considered in this assessment because given the scale of the development the air quality impacts will be negligible.

## **Methodology**

### Construction Phase

- 8.1.46 An assessment of the likely significant impacts on local air quality due to the generation and dispersion of dust and PM<sub>10</sub> during the construction phase has been undertaken using: the relevant assessment methodology published by the IAQM; the available information for this phase of the Proposed Development provided by the Client and Project Team; and, professional judgement.

- 8.1.47 The IAQM assessment is undertaken where there are: 'human receptors' within 350m of the site boundary, or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s); and/or 'ecological receptors' within 50m of the site boundary, or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s). It is within these distances that the impacts of dust soiling and increased PM<sub>10</sub> in the ambient air will have the greatest impact on local air quality at sensitive receptors.
- 8.1.48 The IAQM methodology assesses the risk of potential dust and PM<sub>10</sub> impacts from the following four sources: demolition; earthworks; general construction activities and track-out. It takes into account the nature and scale of the activities undertaken for each source and the sensitivity of the area to an increase in dust and PM<sub>10</sub> levels to assign a level of risk. Risks are described in terms of there being a low, medium or high risk of dust impacts. Once the level of risk has been ascertained, then site-specific mitigation proportionate to the level of risk is identified, and the significance of residual effects determined. A summary of the IAQM assessment methodology is provided in Appendix C.
- 8.1.49 In addition to impacts on local air quality due to on-site construction activities, exhaust emissions from construction vehicles and plant may have an impact on local air quality adjacent to the routes used by these vehicles to access the Application Site and in the vicinity of the Application Site itself. As information on the number of vehicles and plant associated with the each part of the construction phase is not available at the time of writing, a qualitative assessment of their impact on local air quality has been undertaken using professional judgement and by considering the following:
- the number and type of construction traffic and plant likely to be generated by this phase of the Proposed Development;
  - the number and proximity of sensitive receptors to the Application Site and along the likely routes to be used by construction vehicles; and
  - the likely duration of the construction phase and the nature of the construction activities undertaken.

#### Operational Phase

- 8.1.50 Of the pollutants included in the AQS, it is the concentrations of NO<sub>2</sub> and PM<sub>10</sub> that have been considered in this assessment, as concentrations of these pollutants tend to be the closest to their objectives out of all the AQS pollutants.
- 8.1.51 For the prediction of impacts due to emissions arising from road traffic during the operation of the Proposed Development, the advanced dispersion model ADMS Roads (version 3.2: Since the completion of the modelling an updated version of the model was released. However, the only difference to the updated model from the model used is that the former has DEFRA's new emission factors built in, whereas in the latter model they have to be entered in manually. Therefore, it is considered that remodelling using the new model is not necessary.) has been used. This model uses detailed information regarding traffic flows on the local road network, surface roughness, and local meteorological conditions to predict pollutant concentrations at locations specified by the user.
- 8.1.52 A summary of the traffic data and pollutant emission factors used in the assessment can be found in Appendix D. It includes details of Annual Average Daily Traffic flows (AADT), vehicle speeds (kph) and the percentage of Heavy Duty Vehicles (HDVs) for the local road network in all assessment years considered.
- 8.1.53 Meteorological data, such as wind speed and direction, is used by the model to determine pollutant transportation and levels of dilution by the wind. Meteorological data used in the model was obtained from the Met Office observing station at RAF Brize Norton. This station is considered to provide data representative of the meteorological conditions at the Proposed Development site. The meteorological data used for this assessment was from 2013.

- 8.1.54 For the assessment, four scenarios were modelled. These scenarios are as follows:
- 2013 “model verification”;
  - 2014 “baseline”;
  - 2033 “without development but including committed development” (do-nothing scenario); and
  - 2033 “with development and committed development” (do-something scenario).
- 8.1.55 2013 is the most recent year for which monitoring data and meteorological data are available to enable verification of the model results. 2014 is the current baseline year and 2033 is the year when the entire development is anticipated to be fully operational. The future year flows are based on Temprow growth factors, which take into account forecasted changes in traffic flows due to housing/employment growth in the area.
- 8.1.56 The traffic flows for the “without development” scenario include flows generated by the Northern Gateway development and future baseline traffic on the local road network but do not include any contribution to road traffic from the Proposed Development itself. The traffic flows for the “with development” scenario includes contributions to road traffic generated by the Proposed Development itself, future baseline traffic on the local road network and flows generated by the Northern Gateway development
- 8.1.57 Vehicle emission factors for use in the assessment have been obtained using the Emission Factor Toolkit (EFT) version 6.0.1 (Ref. 24) (published in July 2014) available on the DEFRA website. The EFT allows for the calculation of emission factors arising from road traffic for all years between 2008 and 2030. For the predictions of future year emissions, the toolkit takes into account factors such as anticipated advances in vehicle technology and changes in vehicle fleet composition, such that vehicle emissions are assumed to reduce over time. However, there is currently some uncertainty over how representative the future predictions are. To address this uncertainty, it has been assumed that there will be no improvement in emission factors from the model verification year of 2013 in future years. This represents a very worst-case approach to the assessment and was agreed with the EHOs at WODC and CDC prior to commencement of the assessment.

#### Selection of background concentrations

- 8.1.58 Background pollutant concentrations used in the assessment have been taken from the updated national maps provided by DEFRA (Ref. 25), where background concentrations of those pollutants included within the AQS have been mapped at a grid resolution of 1x1km for the whole of the UK. For NO<sub>2</sub>, oxides of nitrogen (NO<sub>x</sub>) (which is required in the calculation of NO<sub>2</sub> concentrations), and PM<sub>10</sub>, estimated concentrations are available for all years between 2011 and 2030. Inherent within the background maps is the assumption that background concentrations will improve (i.e. reduce) over time, in line with the predicted reduction in vehicle emissions as well as reductions in emissions from other sources. However, many local authorities are finding that the results of their local monitoring do not always support this assumption, with many areas showing that pollutant concentrations have remained fairly stable over recent years. For the purposes of this assessment, 2013 background concentrations have therefore been adopted for all assessment scenarios. This approach was agreed in consultation with the EHOs of WODC and CDC and is considered to be a very worst case scenario approach.
- 8.1.59 At the suggestion of the EHO at WODC, a comparison has been made between the measured 2013 annual mean NO<sub>2</sub> concentration at a diffusion tube monitoring site, which is classified as an urban background location, and the corresponding estimated value for 2013 from the appropriate DEFRA background map. This indicated that the DEFRA background map under-estimates background NO<sub>2</sub> concentrations in the area. An average ratio of measured to estimated background concentrations was thus calculated (Table 8.1) and applied to the DEFRA estimated background concentrations for the study area for this pollutant; these values were then used in the assessment.

Site	2013 Estimated / Mapped NO <sub>2</sub> Concentrations (µg/m <sup>3</sup> )	2013 Measured NO <sub>2</sub> Concentration (µg/m <sup>3</sup> )	Ratio Measured: Estimated
The Ley, Woodstock	11.4	12.5	1.098

Table 8.1: Comparison of measured and estimated Background Concentrations in 2013

8.1.60 It should be noted that for NO<sub>x</sub> and PM<sub>10</sub>, the background maps present both the 'total' estimated background concentrations and the individual contributions from a range of emission sources (for example, motorways, aircraft, domestic heating etc.). When detailed modelling of an individual sector is required as part of an air quality assessment, the respective contribution can be subtracted from the overall background estimate to avoid the potential for 'double-counting'. For this assessment, traffic data for all the main A Roads located within the relevant grid squares of background concentrations have been included in the modelling; therefore, contributions from this sector have been removed from the background concentrations used in the assessment.

8.1.61 Further details on the background concentrations are provided later in this report.

#### Model verification and processing of results

8.1.62 The ADMS Roads advanced dispersion model has been widely validated for this type of assessment and is considered to be fit for purpose.

8.1.63 Model validation undertaken by the software developer will not have included validation in the vicinity of the Proposed Development. To determine the performance of the model at a local level, a comparison of modelled results with local monitoring data at relevant locations was undertaken. This process of verification aims to minimise modelling uncertainty and systematic error by correcting modelled results by an adjustment factor to gain greater confidence in the final results.

8.1.64 Suitable local monitoring data for the purpose of model verification is available for concentrations of NO<sub>2</sub> at the locations shown in table 8.2.

Site ID	Location & Site Classification	O.S. Grid Reference	Distance to Site (km)	2013 Monitored NO <sub>2</sub> Concentrations (µg/m <sup>3</sup> )
25	Oxford Road, (E) Woodstock (Roadside)	444592,216763	1.3	33.9
26	Oxford Road, (W) Woodstock (Roadside)	444526,216851	1.4	33.6
29	Grove Road, (S) Bladon (Roadside)	444871,214983	1.5	21.3
30	Grove Road, (N) Bladon (Roadside)	445190,215353	1.1	25.8
39	Park Street, Bladon (Roadside)	444791,214681	1.8	31.1

Table 8.2: Local monitoring data sources suitable for model verification

8.1.65 Model verification has been undertaken following the methodology specified in Annex 3 of LAQM.TG(09). The NO<sub>x</sub>:NO<sub>2</sub> calculator (version 4.1, released in June 2014) available from the DEFRA website has then been used to calculate the roadside NO<sub>x</sub> component of the annual mean NO<sub>2</sub> concentrations measured at the monitoring sites listed in the table above. Details of the verification calculations are presented in Appendix E.

8.1.66 A factor of 2.46 was obtained during the verification process and this factor has been applied to the modelled NO<sub>x</sub> roads component. Following model verification and adjustment, the modelled road contribution to NO<sub>x</sub> concentrations were converted to annual mean NO<sub>2</sub> concentrations using the methodology given in LAQM.TG(09) and the NO<sub>x</sub>:NO<sub>2</sub> calculator.



- 8.1.67 Local monitoring data are not available for concentrations of PM<sub>10</sub>, and as such, final modelling results for this pollutant have been adjusted using the factor calculated for adjusting the modelled NO<sub>x</sub> roads concentrations. This approach is considered to be appropriate according to guidance given in LAQM.TG(09).
- 8.1.68 For PM<sub>10</sub>, the adjusted modelled road contribution to annual mean PM<sub>10</sub> concentrations were added to the relevant background concentrations, which were then used to calculate the number of exceedences of the 24-hour mean objective for direct comparison with the relevant AQS objective, following the methodology given in LAQM.TG(09).
- 8.1.69 LAQM.TG(09) advises that exceedences of the 1 hour mean NO<sub>2</sub> objective are unlikely to occur where annual mean concentrations are below 60µg/m<sup>3</sup>, and it provides guidance on the approach that should be taken if either measured or predicted annual mean NO<sub>2</sub> concentrations are 60µg/m<sup>3</sup> or above.
- 8.1.70 Predicted concentrations have been compared against the relevant current statutory standards and objectives set out in Appendix B.

#### Assessment of Impacts on Designated Sites

- 8.1.71 To assess the changes in nitrogen deposition on nearby sensitive ecological sites due to the Proposed Development, the methodology provided in Annex F of the DMRB has been followed.
- 8.1.72 The first step in this methodology is to identify sensitive designated ecological sites located within 200m of the roads that will experience a certain level of change in traffic flows and composition due to a proposed development.
- 8.1.73 For the Proposed Development considered here, there are two designated ecological sites, which could have the potential to be sensitive to a change in nitrogen deposition as a result of traffic generated by the proposals. These are the Blenheim Park Site of Special Scientific Interest (SSSI) and the Oxford Meadows Special Area of Conservation (SAC).
- 8.1.74 There are two other designated ecological sites in close proximity to the Proposed Development site. However, the main habitat at these sites (Shipton on Cherwell and Whitehill Farm Quarries SSSIs) is described as Earth Heritage, which is not considered to be sensitive to nitrogen deposition. Therefore, the assessment of changes in nitrogen deposition is only required for the Blenheim Park SSSI and the Oxford Meadows SAC.
- 8.1.75 Blenheim Park SSSI includes ancient oak-dominated pasture woodland, bracken heath and acid/calcareous grassland. However, the main habitat type for which the site has been designated is broadleaved, mixed and yew woodland.
- 8.1.76 Oxford Meadows SAC includes vegetation communities that are unique in reflecting the influence of long-term grazing and hay-cutting on lowland hay meadows. The site is designated as it hosts an Annex I habitat (lowland hay meadow). Natural England has indicated that currently the whole of the Oxford Meadows SAC is in a favourable condition.
- 8.1.77 Predicted nitrogen deposition rates at both sites were compared against the critical loads for nitrogen deposition as set by the United Nations Economic Commission for Europe (UNECE) for the two habitat types forming the focus of the designations; broadleaved, mixed and yew woodland and lowland hay meadows. The critical load for woodland is 10-20 kilograms of nitrogen / hectare / year (kg N ha<sup>-1</sup> y<sup>-1</sup>). For lowland hay meadows it is 20-30 kg N ha<sup>-1</sup> y<sup>-1</sup>.
- 8.1.78 Annual mean NO<sub>x</sub> concentrations were also predicted at both of these designated ecological sites for comparison with the relevant AQS objective for vegetation and ecosystems.

### Assessment Steps

- 8.1.79 The average nitrogen deposition rates for Blenheim Park SSSI and Oxford Meadows SAC have been obtained from the APIS website, and are 34.78 Kg N ha<sup>-1</sup> y<sup>-1</sup> and 17.55 Kg N ha<sup>-1</sup> y<sup>-1</sup> for a baseline year of 2010 respectively. This average rate has been applied to all years for the purpose of this assessment (2014 and 2033) to provide a worst case approach (the DMRB guidance assumes a 2% reduction per year) given that background pollution concentrations are not reducing as quickly as expected.
- 8.1.80 As previously, the 2013 background concentrations have been applied to all future assessment years to provide a worst case approach to the prediction of total NO<sub>2</sub> concentrations within the vicinity of the Development Site. Background NO<sub>2</sub> concentrations for the 25 grid squares located within closest proximity to each of the designated sites have been obtained and averaged. As traffic data was not available for all roads within the 25 grid squares, the background concentrations represent the total NO<sub>2</sub> background concentrations (i.e. they do not include sector removal), which is considered to be a worst case approach. The average background concentrations used for the purpose of this assessment are 14.7µg/m<sup>3</sup> and 10.7µg/m<sup>3</sup> for NO<sub>x</sub> and NO<sub>2</sub> at Blenheim Park and 23.9µg/m<sup>3</sup> and 16.4µg/m<sup>3</sup> for NO<sub>x</sub> and NO<sub>2</sub> at Oxford Meadows.
- 8.1.81 Annex F of the DMRB guidance suggests that annual NO<sub>2</sub> concentrations are predicted using DMRB screening methodology. However, in order to be consistent with the air quality modelling undertaken for the Proposed Development, the air quality dispersion model ADMS Roads was used.
- 8.1.82 The rate of nitrogen deposition due to dry deposition of NO<sub>2</sub> was calculated along the transect using the factor of 1 µg/m<sup>3</sup> of NO<sub>2</sub> = 0.1 Kg N ha<sup>-1</sup> y<sup>-1</sup> provided in the DMRB guidance.
- 8.1.83 The average background dry deposition rate was also calculated by obtaining the average background NO<sub>2</sub> concentration for the 25 grid squares (obtained from DEFRA's website) contained within the APIS area for the two ecological sites and applying the factor above.
- 8.1.84 The background dry deposition rates were then subtracted from the total dry deposition rates calculated along the transects to provide a rate of nitrogen deposition as a result of road transport emissions at varying distances from the road edge. These contributions were then added to the APIS average nitrogen deposition rate given above to give the total deposition rate at each receptor.

### SIGNIFICANCE CRITERIA

#### **Construction Phase**

- 8.1.85 The IAQM assessment methodology recommends that significance criteria is only assigned to the identified risk of dust impacts occurring from a construction activity with appropriate mitigation measures in place. For almost all construction activities, the application of effective mitigation should prevent any significant effects occurring to sensitive receptors and therefore the residual effect will normally be negligible. For the assessment of the impact of emissions from plant and construction vehicles accessing and leaving the Site on local air quality, the significance of residual effects have been determined using professional judgement and the significance criteria described below for operational phase impacts.

#### **Operational Phase**

- 8.1.86 The impacts of traffic associated with the Proposed Development on local air quality once operational have been evaluated against the significance criteria published by EPUK.
- 8.1.87 The approach outlined in the EPUK guidance considers the change in pollution concentrations and the overall pollutant concentrations in the area, as compared to the

relevant air quality standard. The magnitude of impact is determined quantitatively by establishing the change in pollutant concentrations at each of the selected receptors, as predicted by the dispersion modelling. Full details of the significance criteria, which are applicable to concentrations of NO<sub>2</sub> and PM<sub>10</sub>, are provided in Appendix F.

- 8.1.88 The EPUK guidance does not provide criteria/on for determining the significance of the impacts of hourly mean NO<sub>2</sub> concentrations as a result of the Proposed Development. The significance of the impact on concentrations of this pollutant has therefore been determined qualitatively using professional judgement and the principles of the EPUK significance criteria.
- 8.1.89 The EPUK guidance also does not provide criteria for determining the significance of the impact of increased pollutant concentrations on sensitive habitats and ecological receptors. The significance of the impacts on these habitats has therefore been determined using professional judgement and the significance criteria contained within the Interim Advice Note 174/13.
- 8.1.90 In addition to these quantitative criteria, the EPUK guidance outlines a method that uses textual descriptors to identify the differing levels of relative priority that should be afforded to the air quality considerations of a development proposal in the planning process. A summary of the method is given in table 8.3.

Impacts of Development	Outcome
Development would lead to a breach or significant (1) worsening of a breach of an EU limit value; cause a new breach to occur, or introduce of new exposure into an exceedence area.	Air Quality an overriding consideration.
Lead to a breach or significant (1) worsening of a breach of an AQ Objective, or cause a new AQMA to be declared, or introduce new exposure into an area of exceedence (2).	Air Quality a high priority consideration.
Development would interfere significantly with or prevent the implementation of actions within an AQ action plan	Air Quality a high priority consideration.
Development would interfere significantly with the implementation of a local AQ strategy.	Air Quality a medium priority consideration.
Development would lead to a significant increase in emissions, degradation in air quality or increase in exposure, below the level of a breach of an objective.	Air Quality a medium priority consideration.
None of the above.	Air Quality a low priority consideration.
Where the term significant is used, it will be based on the professional judgement of the Local Authority officer. This could include the expansion of an existing AQMA or introduction of new exposure to cause a new AQMA to be declared. Where new exposures is introduced this should be with reference to the exceedence area, and not the AQMA boundary.	

*Table 8.3: Summary of method for assessing the Significance of Air Quality in the Planning Process*

#### Selection of Sensitive Receptors

- 8.1.91 Sensitive locations are places where the public or sensitive ecological habitats may be exposed to pollutants resulting from activities associated with the Proposed Development. These will include locations sensitive to an increase in dust deposition and PM<sub>10</sub> exposure as a result of on-site construction activities, and locations sensitive to exposure to gaseous pollutants emitted from the exhausts of construction and operational traffic associated with the Proposed Development.
- 8.1.92 The IAQM assessment methodology is undertaken where there are: 'human receptors' within 350m of the site boundary; or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s); and/or 'ecological receptors' within 50m of the site boundary; or within 50m of the route(s) used by

construction vehicles on the public highway, up to 500m from the site entrance(s). It is within these distances that the impacts of dust soiling and increased PM<sub>10</sub> in the ambient air will have the most significant impact on sensitive receptors.

- 8.1.93 Human and ecological receptors have been identified within 350m of the site boundary and 500m of the site entrance respectively, which have therefore been considered in this assessment.
- 8.1.94 In terms of locations that are sensitive to gaseous pollutants emitted from engine exhausts (road vehicles and construction plant); these will include places where members of the public are likely to be regularly present over the period of time prescribed in the AQS.
- 8.1.95 For instance, on a footpath where exposure will be transient (for the duration of passage along that path), comparison with a short-term standard (i.e. 15 minute mean or 1 hour mean) may be relevant. In a school or adjacent to a private dwelling, where exposure may be for longer periods, comparison with a long-term standard (such as 24 hour mean or annual mean) may be more appropriate. Box 1.4 of LAQM.TG(09) provides examples of the locations where the air quality objectives should/should not apply, and is reproduced below as table 8.4.

Averaging Period	Objectives should apply at:	Objectives should generally not apply at:
Annual mean	All locations where members of the public might be regularly exposed. Building facades of residential properties, schools, hospitals, care homes etc.	Building facades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building façade), or any other locations where public exposure is expected to be short term.
24-hour mean	All locations where the annual mean objective would apply, together with hotels. Gardens of residential properties. <sup>1</sup>	Kerbside sites (as opposed to locations at the building façade), or any other locations where public exposure is expected to be short term.
1-hour mean	All locations where the annual mean and 24 -hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets) Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more. Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer.	Kerbside sites where the public would not be expected to have regular access.
15-min mean	All locations where members of the public might reasonably be exposed for a period of 15 minutes or longer.	

<sup>1</sup>Such locations should represent parts of the garden where relevant public exposure is likely, for example where there are seating or play areas. It is unlikely that relevant public exposure would occur at the extremities of the garden boundary, or in front gardens, although local judgement should always be applied.

*Table 8.4 Examples of where the air quality objectives should/should not apply*

- 8.1.96 To complete the assessment of operational phase impacts, a number of 'receptors' representative of locations of relevant public exposure were identified at which pollution

concentrations were predicted. Receptors have been located adjacent to the roads that are likely to experience the greatest change in traffic flows or composition, and therefore NO<sub>2</sub> and PM<sub>10</sub> concentrations, as a result of the Proposed Development. To complete the exposure assessment, pollution concentrations were also predicted at a number of locations across the Proposed Development site. In addition, a number of receptors were located at the two designated ecological sites considered in the assessment i.e. Blenheim Park SSSI and Oxford Meadows SAC.

- 8.1.97 The locations of the assessment receptors are shown on Figures A1 and A2, and are listed in table 8.5.

Receptor Number	Receptor Name	Grid Reference (m)	Height above ground level (m)	Relevant AQS objective/s
R1	Woodstock Road	446494,215163	1.5	Annual Mean
R2	Grove Road	445734,215593	1.5	Annual Mean
R3	Grove Road	445654,215590	1.5	Annual Mean
R4	Grove Road	445534,215572	1.5	Annual Mean
R5	Upper Campsfield Road	445938,215739	1.5	Annual Mean
R6	Upper Campsfield Road	446470,216411	1.5	Annual Mean
R7	Marlborough School	445411,216865	1.5	Annual Mean
R8	Shipton Road	445377,216855	1.5	Annual Mean
R9	Hensington Road	444938,216900	1.5	Annual Mean
R10	Hensington Road	444652,216712	1.5	Annual Mean
R11	Churchill Gate	445191,216277	1.5	Annual Mean
R12	Oxford Road	444518,216859	1.5	Annual Mean
R13	Oxford Road	444373,216873	1.5	Annual Mean
R14	Oxford Road	444314,216876	1.5	Annual Mean
R15	Manor Road	444209,216993	1.5	Annual Mean
DR1	Development Site	445285,216199	1.5	Annual Mean
DR2	Development Site	445315,216170	1.5	Annual Mean
DR3	Development Site	445369,216122	1.5	Annual Mean
DR4	Development Site	445640,215928	1.5	Annual Mean
DR5	Development Site	445812,215823	1.5	Annual Mean
DR6	Development Site	446127,216043	1.5	Annual Mean
DR7	Development Site	446256,216388	1.5	Annual Mean
DR8	Development Site	445940,216488	1.5	Annual Mean
Blenheim Park – Park Street	Designated Site	444616,214558	0	Annual Mean
Blenheim Park – Oxford Street	Designated Site	444226,216940	0	Annual Mean
Oxford Meadows – A34	Designated Site	448525,209971	0	Annual Mean
Oxford Meadows – A40	Designated Site	448182,210672	0	Annual Mean

Table 8.5: Receptor locations used in the assessment

8.1.98 For each designated site, annual mean NO<sub>x</sub> and NO<sub>2</sub> (required for the calculation of nitrogen deposition) concentrations were calculated at specific receptors along 200m transects (at 5m for the first 40m then every 20m) through the site from the nearest road edge.

**BASELINE CONDITIONS*****WODC's and CDC's Review and Assessment of Air Quality***

8.1.99 Both WODC and CDC have designated AQMAs due to risk of exceedence of the annual mean NO<sub>2</sub> objective within their Districts. However, the Proposed Development Site is not located within a designated AQMA, or near to one.

***Local Emission Sources***

8.1.100 The Proposed Development site is located in an area where air quality is mainly influenced by emissions from road transport using:

- A44 Oxford Road;
- A44 Woodstock Road;
- A4095 Upper Campsfield Road; and
- A4095 Grove Road.

8.1.101 There are no industrial pollution sources in the immediate vicinity of the site that will influence the local air quality.

***Background Air Quality Data***

8.1.102 Table 8.6 shows the background concentrations of NO<sub>2</sub> and PM<sub>10</sub> that were used in the assessment.

Pollutant	Receptor/DEFRA grid square	2013 Background Concentration
NO <sub>x</sub>	444500,214500	14.7
NO <sub>2</sub>		10.7
PM <sub>10</sub>		16.6
NO <sub>x</sub>	444500,216500	15.0
NO <sub>2</sub>		10.9
PM <sub>10</sub>		15.9
NO <sub>x</sub>	445500,215500	15.1
NO <sub>2</sub>		11.0
PM <sub>10</sub>		17.2
NO <sub>x</sub>	445500,216500	15.5
NO <sub>2</sub>		11.3
PM <sub>10</sub>		16.7
NO <sub>x</sub>	446500,215500	16.2
NO <sub>2</sub>		11.7
PM <sub>10</sub>		17.1
NO <sub>x</sub>	446500,216500	15.8,
NO <sub>2</sub>		11.4
PM <sub>10</sub>		17.4
NO <sub>x</sub>	448500,209500	23.4
NO <sub>2</sub>		16.1
PM <sub>10</sub>		Not used in assessment
NO <sub>x</sub>	448500,210500	25.0
NO <sub>2</sub>		17.2
PM <sub>10</sub>		Not used in assessment

Table 8.6: 2013 Background Concentrations used in the Assessment ( $\mu\text{g}/\text{m}^3$ )

8.1.103 The table above shows that for all assessment years estimated, background concentrations of NO<sub>2</sub> and PM<sub>10</sub> are well below the annual mean objective for these pollutants. In accordance with the approach agreed with the EHOs at WODC and CDC, background concentrations for 2013 were to be used for all assessment years.

#### Local Authority Air Quality Monitoring Data

8.1.104 Concentrations of NO<sub>2</sub> and PM<sub>10</sub> measured in the vicinity of the Proposed Development site by WODC are provided in table 8.7. The nearest tubes in CDC are in Kidlington, which is over 1km away from the site, with no tubes available in Woodstock.



Site ID	Site name	Grid Reference	Annual mean NO <sub>2</sub> concentration (µg/m <sup>3</sup> )				
			2009	2010	2011	2012	2013
25	Oxford Road, (E) Woodstock	444592,216763	31.4	9.0	33.9	32.5	33.9
26	Oxford Road, (W) Woodstock	444526,216851	39.3	38.6	35.4	33.9	33.6
29	Grove Road, (S) Bladon	444871,214983	23.5	23.5	21.1	20.8	21.3
30	Grove Road, (N) Bladon	445190,215353	31.1	31.3	27.8	26.1	25.8
39	Park Street, Bladon	444791,214681	35.5	36.9	34.3	33.5	31.1

Table 8.7: WODC Monitoring Data

- 8.1.105 Baseline monitoring data for annual mean NO<sub>2</sub> concentrations is collected by WODC for Woodstock and Bladon, with concentrations ranging from 21.3µg/m<sup>3</sup> to 33.9µg/m<sup>3</sup> at roadside sites for 2013, which are well below the air quality objective of 40µg/m<sup>3</sup>. Between 2009 and 2013, concentrations at the five roadside sites in Woodstock and Bladon show a general downward trend in pollutant concentrations, with slight increases at Oxford Street East between 2009 - 2010 and 2012 - 2013, Grove Road South between 2012 and 2013, and Park Street between 2009 and 2010.
- 8.1.106 Background annual mean NO<sub>2</sub> monitoring data is also available for Woodstock at two monitoring sites; 2013 concentrations for these sites are well below the 40µg/m<sup>3</sup> objective as they range from 12.5µg/m<sup>3</sup> to 12.6µg/m<sup>3</sup>. However, background concentrations did show a slight increase in 2013 compared to 2012 concentrations.

## ASSESSMENT OF IMPACTS

### Construction Phase

#### Dust and PM<sub>10</sub> arising from on-site activities

- 8.1.107 During the construction phase, there will be a number of activities which have the potential to generate and/or re-suspend dust and PM<sub>10</sub>.
- 8.1.108 Dust comprises particles typically in the size range 1-75 micrometres (µm) in aerodynamic diameter and is created through the action of crushing and abrasive forces on materials. The larger dust particles fall out of the atmosphere quickly after initial release and therefore tend to be deposited in close proximity to the source of emission. Dust therefore is unlikely to cause long-term or widespread changes to local air quality; however, its deposition on property and cars can cause 'soiling' and discolouration. This may result in complaints of nuisance through amenity loss or perceived damage caused, which is usually temporary.
- 8.1.109 The smaller particles of dust (typically less than 10µm in aerodynamic diameter) are known as particulate matter (PM<sub>10</sub>) and represent only a small proportion of total dust released. As these particles are at the smaller end of the size range of dust particles they remain suspended in the atmosphere for a longer period of time than the larger dust particles, and can therefore be transported by wind over a wider area. PM<sub>10</sub> is small enough to be drawn into the lungs during breathing, which for sensitive members of the public could have a potential impact on health. Therefore, standards and objectives for PM<sub>10</sub> are defined in the AQS and Regulations, and the impact of this phase on PM<sub>10</sub> concentrations is referred to below as the impact on 'human health'.
- 8.1.110 Significant increases in dust deposition levels and particulate matter concentrations can also affect sensitive vegetation by blocking stomata, reducing photosynthesis and plant

growth. Construction activities that have the potential to generate and/or re-suspend dust and PM<sub>10</sub> include:

- Site clearance and preparation;
- Preparation of temporary access/egress to the Application Site and haulage routes;
- Earthworks;
- Materials handling, storage, stockpiling, spillage and disposal;
- Movement of vehicles and construction traffic within the Application Site (including excavators and dumper trucks);
- Use of crushing and screening equipment/plant;
- Exhaust emissions from site plant, especially when used at the extremes of their capacity and during mechanical breakdown;
- Construction of buildings, roads and areas of hardstanding alongside fabrication processes;
- Internal and external finishing and refurbishment; and
- Site preparation and restoration after completion.

8.1.111 The majority of the releases are likely to occur during the 'working week'. However, for some potential release sources (e.g. exposed soil produced from significant earthwork activities) in the absence of dust control mitigation measures, dust generation has the potential to occur 24 hours per day over the period during which such activities are to take place.

8.1.112 The construction phase is anticipated to take up to 20 years, and therefore new receptors that are introduced during the earlier development phases will also be sensitive to dust and PM<sub>10</sub> generated and dispersed during construction activities undertaken on the latter phases of the Proposed Development. The Phasing Plan for the development indicates that the earliest phases will be built out to the south west and the east of the site along the proposed new site access roads. Therefore any new receptors that begin to occupy these areas of the development will become sensitive to the impacts from the on-going construction activities.

#### Assessment of Potential Dust Emission Magnitude

8.1.113 The IAQM assessment methodology has been used to determine the potential dust emission magnitude for the various sources. The findings of the assessment are presented below.

#### Demolition

8.1.114 No demolition activities will occur at the Application Site as part of the construction phase of the Proposed Development. Therefore, consideration of the impact of this source on dust soiling and ambient PM<sub>10</sub> is not required.

#### Earthworks

8.1.115 The total area of the Application Site is more than 10,000m<sup>2</sup> and the total material that will be moved is estimated to be between 20,000 and 100,000 tonnes. The soil type is assumed to be moderately dusty at the site with no bunds anticipated to be created. It is also estimated that more than 10 heavy earth moving vehicles will be active at any one time. Therefore, the potential dust emission magnitude is considered to be large for earthwork activities.

Construction

8.1.116 The total volume of buildings to be constructed on the Application Site will be more than 100,000m<sup>3</sup> with on site concrete batching activities potentially being undertaken. The construction materials being used on site may also have the potential to release dust. Therefore, the potential dust emission magnitude is considered to be large for construction activities.

Trackout

8.1.117 Based on the traffic information provided by David Tucker Associates, there will be between 10 and 50 HDV (>3.5t) outward movements in any one day travelling on moderately dusty surface materials. Due to the size of the site, it is also assumed that the length of unpaved roads within Application Site will be greater than 100m. Therefore, the potential dust emission magnitude is considered to be medium for trackout. Table 8.8 provides a summary of the potential dust emission magnitude determined for each construction activity considered.

Activity	Dust Emission Magnitude
Earthworks	Large
Construction Activities	Large
Trackout	Medium

Table 8.8: Potential Dust Emission Magnitude

Assessment of Sensitivity of the Study Area

8.1.118 A windrose generated using the meteorological data used for the dispersion modelling of operational phase impacts is provided in Appendix G. This shows that the prevailing wind direction is from the south west. Therefore, any receptors located to the north east of the Application Site would be more likely to be affected by dust and particulate matter emitted and re-suspended during the construction phase. However, there are few sensitive receptors located in this direction.

8.1.119 Depending on wind speed and turbulence, it is likely that the majority of dust would be deposited in the area immediately surrounding the source. The majority of receptors are located to the west of the site along Crecy Walk, Hedge End, Meadow Walk and Plane Tree Way, which are all residential properties located within less than 20m of the site boundary. There are also a number of residential receptors (and the Woodstock Church of England Primary School and the Marlborough Church of England School) to the north of the site along Shipton Road and also to the north east along the A4095 Upper Campsfield Road, which are all greater than 20m from the site boundary. The first phases of the development will also become sensitive to construction impacts as residential receptors begin to occupy these areas of the development.

8.1.120 Blenheim Park SSSI is also located within 500m of the site entrance to the south of the site and there is the potential that dust may be deposited on the sensitive site. This site has been identified as a medium sensitivity receptor due to its national designation and features that may be affected by dust deposition.

8.1.121 PM<sub>10</sub> background concentrations across the study area are low ranging from 15.9 to 17.4µg/m<sup>3</sup>.

8.1.122 Taking the above into account and following the IAQM assessment methodology, the sensitivity of the area to changes in dust and PM<sub>10</sub> has been derived for each of the construction activities considered. The results are shown in Table 8.9

Potential Impact	Sensitivity of the Surrounding Area		
	Earthworks	Construction	Trackout
Dust Soiling	High	High	Medium
Human Health	Low	Low	Low
Ecological	Low	Low	Low

Table 8.9: Sensitivity of the Study Area

### Risk of Impacts

8.1.123 The predicted dust emission magnitude has been combined with the defined sensitivity of the area to determine the risk of impacts during the construction phase, prior to mitigation. Table 8.10 below provides a summary of the risk of dust impacts for the Proposed Development. The risk category identified for each construction activity has been used to determine the level of mitigation required.

Potential Impact	Risk		
	Earthworks	Construction	Trackout
Dust Soiling	High Risk	High Risk	Low Risk
Human Health	Low Risk	Low Risk	Low Risk
Ecological	Low Risk	Low Risk	Low Risk

Table 8.10: Summary Dust Risk Table to Define Site-Specific Mitigation

### Construction Vehicles & Plant

8.1.124 The greatest impact on air quality due to emissions from vehicles and plant associated with the construction phase will be in the areas immediately adjacent to the site access and adjacent to any new sensitive receptors on the Proposed Development site. It is anticipated that construction traffic will access the site via the A4095 Upper Campsfield Road. Due to the size of the Site, it is considered likely that the construction traffic will be approximately 40 HGV and 40 Light Goods Vehicle movements per day during the peak construction period, which is low in comparison to the existing baseline traffic flows on these roads.

8.1.125 Final details of the exact plant and equipment likely to be used on Site will be determined by the appointed contractor, it is considered likely to comprise Dump Trucks, Tracked Excavators, Diesel Generators, Asphalt spreaders, Rollers, Compressors and Trucks. The number of plant and their location within the Site are likely to be variable over the construction period.

8.1.126 Based on the current local air quality in the area, the proximity of sensitive receptors to the roads likely to be used by construction vehicles, and the likely numbers of construction vehicles and plant that will be used, the impacts are therefore considered to be of slight adverse significance according to the EPUK significance criteria.

### **Operational Phase**

8.1.127 Full results of the dispersion modelling are presented in Appendix H and a summary is provided below.

Annual Mean NO<sub>2</sub> Concentrations

- 8.1.128 The objective for annual mean NO<sub>2</sub> concentrations is 40µg/m<sup>3</sup> to be achieved by the end of 2005 and thereafter. The results of the assessment show that in the 2014 baseline scenario, concentrations meet the objective at all of the existing receptor locations, with the highest predicted concentration of 36.8µg/m<sup>3</sup> occurring at receptor R13 located on Oxford Road. This concentration is approximately 3 µg/m<sup>3</sup> higher than the concentrations recorded at the Council's monitoring sites along Oxford Road. As a result, when comparing the modelled with monitored concentrations it can be concluded that the model is over predicting concentrations and predictions can therefore be considered worst case.
- 8.1.129 In the opening year of the development (2033) concentrations with and without the development are also below the annual mean objective at all receptors except at receptor R13 located on Oxford Road, which has concentrations of 42.7 µg/m<sup>3</sup> and 42.8 µg/m<sup>3</sup> both without and with the development respectively. The greatest increase in concentrations due to the development is 1.18µg/m<sup>3</sup> predicted at receptor R5 located on Upper Campsfield Road. In the 2033 "with development" scenario, concentrations only exceed 40µg/m<sup>3</sup> at receptor R13 located on Oxford Road as for the "without development" scenario, however the change in concentration at this receptor is considered to be imperceptible and therefore of negligible impact.
- 8.1.130 Traffic associated with the Proposed Development is predicted to result in either an imperceptible or small increase in annual mean NO<sub>2</sub> concentrations at all of the existing receptors considered. The majority of receptors show a negligible change in concentration with receptors R1 (Woodstock Road) and R5 (Upper Campsfield Road) showing a slight adverse change according to the EPUK significance criteria.
- 8.1.131 Pollutant concentrations at the assessment receptors on the Proposed Development Site are also well below the annual mean objective, therefore future residents will not be exposed to poor air quality.

Hourly Mean NO<sub>2</sub> Concentrations

- 8.1.132 The annual mean NO<sub>2</sub> concentrations predicted by the model were all well below 60µg/m<sup>3</sup>, and therefore exceedences of the hourly mean NO<sub>2</sub> concentration objective are unlikely to occur. The impact of the Proposed Development on hourly mean NO<sub>2</sub> concentrations at existing sensitive receptors is considered to be negligible.

Annual Mean PM<sub>10</sub> Concentrations

- 8.1.133 The objective for annual mean PM<sub>10</sub> concentrations is a concentration of 40µg/m<sup>3</sup> to be achieved by the end of 2004 and thereafter. The results of the assessment show that in the 2014 baseline scenario, concentrations are well below the annual mean objective at all of the existing receptor locations, with the highest predicted concentration of 19.9µg/m<sup>3</sup> occurring at receptor R1 located on Woodstock Road.
- 8.1.134 By 2033, the opening year of the Proposed Development, concentrations are again predicted to meet the objective at all of the existing receptor locations for both scenarios. The highest concentration is predicted at receptor R1 located on Woodstock Road, where the predicted concentration is 20.9µg/m<sup>3</sup> "without development" and 21.0µg/m<sup>3</sup> "with development". The greatest increase in concentrations due to the development is 0.12µg/m<sup>3</sup> predicted at receptors R5 and R10 located on Woodstock Road and Hensington Road respectively.
- 8.1.135 Traffic associated with the Proposed Development is predicted to result in an imperceptible change in annual mean PM<sub>10</sub> concentrations at all of the existing receptors considered. The increases in concentrations with the development operational are very small and the impact of the development is negligible according to the EPUK significance criteria.

8.1.136 Pollutant concentrations at the assessment receptors on the Proposed Development Site are also well below the annual mean objective.

#### Daily Mean PM<sub>10</sub> Concentrations

8.1.137 The objective for 24 hourly mean PM<sub>10</sub> concentrations is 50µg/m<sup>3</sup> to be exceeded no more than 35 times a year by the end of 2004 and thereafter. The results of the dispersion modelling indicate that the predicted number of days of exceedence is a maximum of five days at receptor R1 located on Woodstock Road both without and with the development.

8.1.138 The Proposed Development will only lead to an imperceptible increase in the number of days of exceedence and therefore, according to the EPUK significance criteria, the impact of the Proposed Development on daily mean PM<sub>10</sub> concentrations is negligible.

### **Designated Sites**

#### Annual Mean NO<sub>x</sub> Concentrations

##### *Blenheim Park*

8.1.139 The AQS objective for annual mean NO<sub>x</sub> concentrations for the protection of vegetation and ecosystems is 30µg/m<sup>3</sup>, to be achieved by the 19th July 2001 and thereafter. The results of the assessment indicate that for the Blenheim Park SSSI that there will be exceedences of the objective in the 2014 baseline scenario at distances of up to 30m and 15m from the centre of Park Street and Oxford Road respectively.

8.1.140 By the opening year (2033), exceedences are predicted at distances of up to 40m and 20m from the centre of Park Street and Oxford Road respectively for the without development scenario. Despite slight increases in concentrations predicted with the development operational, (ranging from 0.29 to 2.64µg/m<sup>3</sup> for Park Street and 0.05 to 0.20µg/m<sup>3</sup> for Oxford Road) the distances back from the road centre where exceedences are predicted do not change and remain at 40m and 20m respectively. The magnitude of change in concentration ranges from imperceptible to medium for Park Street and imperceptible for Oxford Road.

8.1.141 Therefore, the development is considered to have a negligible to slight adverse impact on annual mean NO<sub>x</sub> concentrations at the Blenheim Park SSSI.

##### *Oxford Meadows SAC*

8.1.142 The results of the assessment indicate that for the Oxford Meadows SAC there will be exceedences of the objective in the 2014 baseline scenario at distances of up to 200m from the centre of both the A34 and A40 respectively.

8.1.143 By the opening year (2033), exceedences are still apparent at 200m from the road centreline along both the A34 and A40 respectively for the without development scenario. Despite either no change or slight increases in concentrations predicted with the development operational (ranging from 0.01 to 0.47µg/m<sup>3</sup> for the A34 and no change for the A40), the distances back from the road where exceedences are predicted do not change and remain at 200m for both roads respectively. The magnitude of change in concentration ranges from imperceptible to small for the A34 and no change for the A40.

8.1.144 Therefore, the development is considered to have a negligible impact on annual mean NO<sub>x</sub> concentrations at the Oxford Meadows SAC.

Nitrogen Deposition*Blenheim Park*

- 8.1.145 The habitat type that has been identified for Blenheim Park is Broadleaved Mixed and Yew Woodland, which has a UNECE Critical Load of 10-20 Kg N ha<sup>-1</sup> y<sup>-1</sup>. The total average deposition rate for Blenheim Park is 34.78 Kg N ha<sup>-1</sup> y<sup>-1</sup> for a baseline year of 2010.
- 8.1.146 Annual mean NO<sub>2</sub> concentrations were calculated at specific receptors along a 200m transect (at 5m intervals for 40m, followed by every 20m up to a distance of 200m) from the edge of Park Street and Oxford Road towards the Blenheim Park SSSI. Concentrations were predicted for 2014 and 2033 (for both with and without the Proposed Development).
- 8.1.147 The average background NO<sub>2</sub> concentration and dry deposition rates for 2013 at the Blenheim Park SSSI are 10.7 µg/m<sup>3</sup> and 1.07 Kg N ha<sup>-1</sup> y<sup>-1</sup> respectively.
- 8.1.148 In 2014, the rate of nitrogen deposition is predicted to exceed the UNECE critical load value (10-20 Kg N ha<sup>-1</sup> y<sup>-1</sup>) at all of the receptor locations up to 200m away from the road centreline for the transects along Park Street and Oxford Road.
- 8.1.149 By 2033, the year in which the Proposed Development is anticipated to be fully operational, the rate of nitrogen deposition is increased from the baseline case for both the with and without development scenarios, and the rate of nitrogen deposition is still predicted to exceed the critical load value (10-20 Kg N ha<sup>-1</sup> y<sup>-1</sup>) for Broadleaved Mixed and Yew Woodland at all of the receptor locations. These exceedences occur both with and without the Proposed Development (i.e. are not caused by the Proposed Development itself). The change with development is considered to be relatively small along both transects, ranging from 0 to 0.07 Kg N ha<sup>-1</sup> y<sup>-1</sup> for Park Street and 0 to 0.01 Kg N ha<sup>-1</sup> y<sup>-1</sup> for Oxford Street.
- 8.1.150 There is the potential that currently, nitrogen deposition may be having an adverse impact on the integrity of the Blenheim Park SSSI, however the actual change as a result of the Proposed Development is relatively small at the majority of the receptors assessed (less than 5%). Therefore, it is unlikely that the operation of the Proposed Development will significantly exacerbate any impacts.
- 8.1.151 A review of aerial mapping indicates that, at its nearest point, Blenheim Park SSSI is approximately 5m from the road centreline of both Park Street and Oxford Road. The results indicate that the change in deposition at this distance from the centreline is 3.7% for Park Street and 0.3% for Oxford Road. Consequently, the impact of the Proposed Development on Blenheim Park SSSI is considered to be negligible.

*Oxford Meadows SAC*

- 8.1.152 The habitat type that has been identified for Oxford Meadows is Lowland Hay Meadows which has a UNECE Critical Load on 20-30 Kg N ha<sup>-1</sup> y<sup>-1</sup>. The total average deposition rate for Oxford Meadows is 17.55 Kg N ha<sup>-1</sup> y<sup>-1</sup> for a baseline year of 2010.
- 8.1.153 Annual mean NO<sub>2</sub> concentrations were calculated at specific receptors along a 200m transect (at 5m intervals for 40m followed by every 20m) from the edge of the A34 and the A40 towards the Oxford Meadows SAC, using the air quality dispersion model ADMS Roads. Concentrations were predicted for 2014 and 2033 (for both with and without the Proposed Development).
- 8.1.154 The average background NO<sub>2</sub> concentration and dry deposition rates for 2013 for the Oxford Meadows SAC are 16.4 µg/m<sup>3</sup> and 1.64 Kg N ha<sup>-1</sup> y<sup>-1</sup> respectively.
- 8.1.155 In 2014, the rate of nitrogen deposition is predicted to exceed the lower UNECE critical load value (20 Kg N ha<sup>-1</sup> y<sup>-1</sup>) for Lowland Hay Meadows at a number of receptors along the transects on the A34 and A40. Exceedences of this lower critical load value are

predicted up to distances of 35m on the A34 and 15m from the A40. However, in 2014 no exceedences of the upper critical load value ( $30 \text{ Kg N ha}^{-1} \text{ y}^{-1}$ ) for Lowland Hay Meadows are predicted at any of the receptors.

8.1.156 By 2033, the year in which the Proposed Development is anticipated to be fully operational, the rate of nitrogen deposition is increased from the baseline case for both the with and without development scenarios. The rate of nitrogen deposition is predicted to exceed the lower UNECE critical load value ( $20 \text{ Kg N ha}^{-1} \text{ y}^{-1}$ ) for Lowland Hay Meadows at a number of receptors along the transects on the A34 and the A40. Exceedences of this lower critical load value are predicted up to distances of 40m from the A34 and 25m from the A40. These exceedences occur both with and without the Proposed Development (i.e. are not caused by the Proposed Development itself). The rate of nitrogen deposition is also predicted to exceed the upper UNECE critical load value ( $30 \text{ Kg N ha}^{-1} \text{ y}^{-1}$ ) for Lowland Hay Meadows at a couple of receptors along the transect from the A34. Exceedences of this upper critical load value are predicted up to distances of 5m from the A34, which is within the road corridor itself. These deposition rates fall to within the lower critical load value by a distance of 10m from the road centreline. These exceedences on the A34 occur both with and without the Proposed Development (i.e. are not caused by the Proposed Development itself). In addition, the change with development is considered to be small along the A34 transect, ranging from 0 to  $0.01 \text{ Kg N ha}^{-1} \text{ y}^{-1}$ , whereas no change in nitrogen deposition is predicted with development along the A40 transect.

8.1.157 There is the potential that currently, nitrogen deposition may be having an adverse impact on the integrity of the Oxford Meadows SAC within approximately 15-35m of road sources adjacent to the SAC, however the actual change as a result of the Proposed Development is relatively small at all of the receptors assessed (less than 1% for the majority of receptors). Consequently, it is unlikely that the operation of the Proposed Development will significantly exacerbate any impacts.

8.1.158 A review of aerial mapping indicates that, at its nearest point, Oxford Meadows SAC is approximately 5m from the road centreline of both the A34 and the A40. The results indicate that the change in deposition at this distance from the centreline is 1% for the A34 and 0% for the A40. Consequently, the impact of the Proposed Development on Oxford Meadows SAC is considered to be negligible.

## MITIGATION AND RESIDUAL EFFECTS

### **Construction Phase**

- Based on the assessment results, the mitigation measures to be implemented to eliminate the identified risk of dust impacts associated with the various activities of the construction phase of the Proposed Development are listed below.

#### General Communication

- A stakeholder communications plan that includes community engagement before work commences on site should be developed and implemented.
- The name and contact details of person(s) accountable for air quality and dust issues needs to be displayed on the site boundary. This may be the environment manager/engineer or the site manager. The head or regional office contact information should also be displayed.

#### General Dust Management

- A Dust Management Plan (DMP), which may include measures to control other emissions, in addition to the dust and PM10 mitigation measures given in this report, should be developed and implemented, and approved by the Local Authority.



Site Management

- Record all dust and air quality complaints and identify the cause(s). Take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked.
- Any exceptional incidents that cause dust and/or air emissions, either on- or offsite need to be recorded, and the action taken to resolve the situation recorded in the log book.

Monitoring

- Regular site inspections to monitor compliance with the DMP must be carried out, inspection results recorded, and an inspection log made available to the local authority when asked.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

Preparing and maintaining the site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover appropriately.
- Cover, seed or fence stockpiles to prevent wind whipping.

Operating vehicle/machinery and sustainable travel

- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
- Implement a Travel Plan for construction workers that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.

- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

#### Waste management

- Avoid bonfires and burning of waste materials.

#### Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.
- Stockpile surface areas to be minimised (subject to health and safety and visual constraints regarding slope gradients and visual intrusion) to reduce area of surfaces exposed to wind pick-up.
- Where appropriate, windbreak netting/screening can be positioned around material stockpiles and vehicle loading/unloading areas, as well as exposed excavation and material handling operations, to provide a physical barrier between the Application Site and the surroundings.
- Where practicable, stockpiles of soils and materials should be located as far as possible from sensitive properties, taking account of the prevailing wind direction.
- During dry or windy weather, material stockpiles and exposed surfaces could be dampened down using a water spray to minimise the potential for wind pick-up.

#### Measures Specific to Construction

- Avoid scabbling (roughening of concrete surfaces) if possible.
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overflowing during delivery.
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.
- All construction plant and equipment should be maintained in good working order and not left running when not in use.

Measures Specific to Trackout

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site log book.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10m from receptors where possible.

Residual Effects

8.1.159 The residual effects of dust and PM<sub>10</sub> generated by construction activities following the application of the mitigation measures described above and good site practice is considered to be negligible.

8.1.160 The residual effects of emissions to air from construction vehicles and plant on local air quality is considered to be negligible.

**Operational Phase**Mitigation

8.1.161 The change in NO<sub>2</sub> and PM<sub>10</sub> concentrations attributable to traffic emissions associated with the operational phase of the Proposed Development (i.e. impacts on local air quality) are negligible (themselves not warranting the need for mitigation) for the majority of receptors, with receptors R1 Woodstock Road and R5 Upper Campsfield showing a slight adverse change. Transport related mitigation measures that are being provided as part of this development include a Travel Plan, public transport improvements, a Link and Ride service and a contribution to specific traffic management measures, which will all be of benefit to air quality, helping to reduce the number of private vehicle trips associated with the Proposed Development.

Residual Effects

8.1.162 The Proposed Development is predicted to cause either a small or an imperceptible increase in NO<sub>2</sub> concentrations and an imperceptible increase in PM<sub>10</sub> concentrations.

8.1.163 At the majority of locations, concentrations are predicted to meet the statutory objectives both with and without the Proposed Development, except at Receptor R13 Oxford Road where annual mean NO<sub>2</sub> concentrations are predicted to exceed the AQS objective both with and without development.

8.1.164 The residual effects of the Proposed Development on air quality are considered to be negligible to slight adverse for NO<sub>2</sub> and negligible for PM<sub>10</sub> according to the EPUK assessment criteria.

## CONCLUSIONS

- 8.1.165 A qualitative assessment of the potential impacts on local air quality from construction activities has been carried out for this phase of the Proposed Development using the IAQM methodology. This assessment identified that the Proposed Development is considered to be a High to Medium Risk Site for dust deposition and a Low Risk Site for PM<sub>10</sub> concentrations and ecological effects. However, through good site practice and the implementation of suitable mitigation measures, the effect of dust and PM<sub>10</sub> releases would be significantly reduced. The residual effects of dust and PM<sub>10</sub> generated by construction activities on air quality are therefore considered to be negligible. The residual effects of emissions to air from construction vehicles and plant on local air quality is considered to be negligible.
- 8.1.166 In addition, a quantitative assessment of the potential impacts during the operational phase was undertaken using ADMS Roads to predict the changes in NO<sub>x</sub>, NO<sub>2</sub> and PM<sub>10</sub> concentrations that would occur due to traffic generated by the Proposed Development.
- 8.1.167 The results show that the Proposed Development would cause imperceptible to small increases in NO<sub>2</sub> concentrations and an imperceptible increase in PM<sub>10</sub> concentrations, but would not cause any new exceedences of the statutory objectives.
- 8.1.168 According to the assessment significance criteria, the residual effects of the Proposed Development are considered to range from negligible to slight adverse for NO<sub>2</sub> and negligible for PM<sub>10</sub>.
- 8.1.169 The results for the two designated ecological sites considered in this assessment show that there is the potential for current levels of nitrogen deposition to be having an adverse impact on the integrity of the Blenheim Park SSSI and Oxford Meadows SAC, however the actual change in the rate of nitrogen deposition as a result of the Proposed Development is relatively small. Consequently, it is unlikely that the operation of the Proposed Development will significantly exacerbate any impacts and therefore the impact of the Proposed Development on Blenheim Park SSSI and Oxford Meadows SAC is considered to be negligible.
- 8.1.170 The assessment results also show that for the Blenheim Park SSSI and Oxford Meadows SAC there will be exceedences of the annual mean NO<sub>x</sub> objective in the 2014 baseline scenario, as well as the opening year (2033) scenarios both with and without development, with imperceptible to medium increases in concentrations being observed at Blenheim Park SSSI and imperceptible to small increases at Oxford Meadows SAC, with no change predicted at receptors located on the A40 transect within the Oxford Meadows SAC. Therefore, the development is considered to have a negligible to slight adverse impact on annual mean NO<sub>x</sub> concentrations at the Blenheim Park SSSI and a negligible impact at the Oxford Meadows SAC.
- 8.1.171 Overall, it is considered that the development proposals comply with national and local policy for air quality.

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## APPENDICES AND FIGURES

- Appendix A - Glossary
- Appendix B - Relevant UK Air Quality Strategy Objectives
- Appendix C - Summary of IAQM Construction Phase Impact Assessment Procedure
- Appendix D - Traffic Data
- Appendix E - Model Verification Calculations

- Appendix F - Summary of EPUK Significance Criteria
- Appendix G - Wind Rose for Brize Norton 2013
- Appendix H - Assessment Results
  
- Figure A1 - Existing Receptors
- Figure A2 - Development Receptors

## 9 NOISE AND VIBRATION

### INTRODUCTION

- 9.1.1 A detailed description of the site, its context and development proposals are set out in the Introduction to this Environmental Statement (ES).
- 9.1.2 This chapter has been prepared by Cole Jarman. The study examines the potential noise effects of the proposed development on existing noise sensitive locations from:
- Road Traffic Noise
  - Construction Noise
- 9.1.3 These have been identified as the key significant sources of noise which may impact existing residences as a result of the proposed development.
- 9.1.4 Details of any potential noise effects on existing noise sensitivities are addressed in the main text of this chapter, together with any noise mitigation that may prove necessary to minimise the residual noise effects upon them.
- 9.1.5 The study also sets out acoustic design criteria for the site, which aim to enable a noise control strategy to be developed to provide a suitable noise environment for future noise sensitivities. The key noise sources that have been considered in relation to noise control for proposed noise sensitivities are:
- Road Traffic Noise
  - Aviation Noise
- 9.1.6 This chapter should be read in conjunction with the Noise Assessment Report 14-0299 R01-0 which forms Technical Appendix 1. This report includes technical details of the noise survey, assessment methodology and assessment conclusions relating to the noise mitigation strategy to protect proposed noise sensitivities. An overview of this development design strategy is drawn out in this chapter for the lay reader but the underlying technical details of how the strategy has been developed requires reference to Technical Appendix 1.
- 9.1.7 The appendices and attachments set out the base data used and the graphical representations relevant to the noise assessments. The assessment has made use of statutory guidance, codes of practice and general sources of information, which are referenced within this chapter and its technical appendices. Reference is made to appropriate planning policy and guidance.
- 9.1.8 The scope of this Noise Chapter has been set out as part of the Scoping Report issued to Statutory Consultees. Consultation has taken place with the environmental health departments of Cherwell District Council and West Oxfordshire District Council to agree assessment methodologies and acoustic design criteria.

### PLANNING POLICY CONTEXT

#### ***Policy Framework***

- 9.1.9 The National Planning Policy Framework (NPPF) now represents the national context within which noise assessments should be conducted. Where local plans are out of date or silent on a particular topic, the NPPF takes precedence.
- 9.1.10 The NPPF also refers to the Noise Policy Statement for England (NPSE)<sup>2</sup>.
- 9.1.11 Taken together, the aims of the documents are broadly to ensure that sustainable development can take place in appropriate locations, while providing suitable conditions for existing and proposed residences, as well as maintaining and enhancing the environment where possible and appropriate.

- 9.1.12 The Planning Practice Guidance (PPG) was published on 06 March 2014. The PPG includes a section on noise which sets out considerations of the acoustic environment that should be taken into account by Local Planning Authorities when plan-making and decision taking.
- 9.1.13 The documents are discussed in more detail in Appendix 1 Planning Noise Assessment Report.

### **Regional Context**

- 9.1.14 There are no specific policies or guidance in the regional context, which have a direct bearing on this noise assessment.

### **Local Context**

#### West Oxfordshire District Council (WODC)

- 9.1.15 The WODC Adopted Local Plan (ALP) 2011 (Adopted 2006) contains specific policy BE19 which relates to noise. The policy is general and there do not appear to be any specific acoustic design criteria or detailed guidance set out for proposed residential development. It states the following:

*“Planning permission will not be granted for:*

- a) housing and other noise sensitive development if the occupants would experience significant noise disturbance from existing or proposed development;*
- b) development including the use of land, if because of the noise it will create, the occupants of housing and other noise sensitive development would be exposed to significant noise disturbance, unless there is an overriding need for the proposal which cannot be met elsewhere.”*

- 9.1.16 Policy BE20 also contains a section relating to the restriction of development in close proximity to London Oxford Airport however this does not include a specific mention of noise as being a potential issue.

- 9.1.17 It should be noted that this local authority’s Draft Local Plan (2011-2029) is intended to replace both of the above policies with “Core Policy 22” which states the following with regard to noise:

*“Noise*

*Housing and other noise sensitive development should not take place in areas where the occupants would experience significant noise disturbance from existing or proposed development. New development should not take place in areas where it would cause unacceptable nuisance to the occupants of nearby land and buildings from noise or disturbance.”*

- 9.1.18 This section of the policy broadly reflects existing policy BE19, however it should be noted that the local plan has not yet been formally examined or adopted by the Council.
- 9.1.19 The Environmental Health Officer (EHO) at WODC has advised that these are the only local planning policies that the local authority has specifically relating to noise.

#### Cherwell District Council (CDC)

- 9.1.20 The Cherwell District Local Plan (Adopted 1996) contains a number of specific policies which are relevant to the proposed development site. The wording of the policies is general and there appear not to be any specific acoustic design criteria or detailed guidance set out for proposed residential development. These are identified below:

*“ENV1 - 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.”*



*“ENV6 - Developments at Oxford Airport which, either directly or indirectly, would be likely to increase noise nuisance will be resisted.”*

- 9.1.21 It is understood that these policies are to be retained in the proposed Cherwell Local Plan (2011-2031) and that no other specific development management policies are to be introduced with regard to noise.

### **Consultation**

- 9.1.22 Contact has been made with Neil Shellard an Environmental Health Officer (EHO) at WODC and with Rob Lowther, an EHO at CDC.
- 9.1.23 Mr Shellard advised that other than usual national planning policy (and the single local policy detailed previously), WODC have no other specific guidance with regard to noise criteria. It was expressed however that any criteria used to assess the site should be consistent across both Councils for this site.
- 9.1.24 Mr Lowther has also made similar comments to Mr Shellard with regard to the lack of specific local policy with the exception of those detailed above. The various criteria for acceptable internal and external noise levels, suggested in the following section, have been agreed as appropriate in this case by both Mr Lowther and Mr Shellard.
- 9.1.25 Discussion was also had specifically regarding aviation noise in terms of assessment, with a particular emphasis given to rotary aircraft movements (partly due to their character, such as blade slap). With regards to both fixed wing aircraft and rotary movements, both EHOs agreed that they “...would be looking to see, where practicable, these two noise sources appraised separately and then collectively...”.
- 9.1.26 A scoping report was submitted to both local authorities for review and the responses have been taken into account within the environmental impact assessment.
- 9.1.27 Key considerations with regard to noise, specific to this site, provided by each Council are listed below:

#### West Oxfordshire District Council

- 9.1.28 “The Environmental Protection team at WODC advise that they would wish to see internal noise levels across the site in accordance with BS8233:1999 and that in particular air traffic movements should assess helicopter blade slap”

#### Cherwell District Council

- 9.1.29 London Oxford Airport have raised the following noise related considerations through CDC:
- “Impact of noise on dwellings within the proposed development”
  - “Airport Operations on both runway 01/19 and 11/29”
  - “Helicopter Circuits”

### **ASSESSMENT METHODOLOGY (EXISTING SENSITIVITIES)**

- 9.1.30 The assessment methodology described in the following section has been agreed by EHOs from both WODC and CDC.

### **Road Traffic Noise**

- 9.1.31 When assessing potential noise effects due to changes in road traffic flows as a result of a development, it is appropriate to refer to the Design Manual for Roads and Bridges (DMRB)<sup>3</sup>. The Manual sets out noise assessment procedures to be followed when undertaking highway works such as building new roads.

- 9.1.32 DMRB sets out thresholds at which potential impacts may start to become apparent, based on changes in 18-hour daytime noise levels (0600-2400h) within the short and long terms. The short term is considered as the year of opening and the future year can normally be considered to be the year during which the greatest traffic flows will occur within 15 years of opening. In general, calculations are carried out of Basic Noise Levels for the various scenarios, using the methodology set out in the Department for Transport document Calculation of Road Traffic Noise (CRTN<sup>4</sup>).
- 9.1.33 The changes in noise level are calculated in the short term by comparing the noise generated by road traffic with and without development for the year of opening and in the long term by comparing the Do-Minimum future flows to the Do-Something flows during the year of opening.
- 9.1.34 The calculations are based on traffic flow data supplied by the transport consultant David Tucker Associates (DTA) and take account of the percentage made up of Heavy Goods Vehicles and the stated speed limit for the road, or where available the actual speeds provided by the transport consultant. The resultant noise level figure is the  $L_{A10,18h}$  (dB).
- 9.1.35 The opening year of the development has been proposed as 2033 which sets the future case assessment year as 2048. However, it has been advised by DTA that at present there is no formal procedure for calculating traffic flows that far into the future. As an alternative to the formal prediction method, DTA have provided the following statement describing how future traffic flows have been derived:
- “TEMPro<sup>8</sup> has been used to provide the relevant growth factor for the 2033 opening year. TEMPPro is a modelling tool designed to allow users to look at the growth in trip ends, using actual and forecast data supplied by the DfT. This current version of TEMPPro also includes the NTM Traffic Growth Calculation functionality. The NTM Traffic Growth Calculation is based on the DfT Transport Forecasts 2009. The DfT Road Transport Forecasts 2009 are the most recent forecasts published based on a base year 2003 model to cover the period up to 2035. As it is difficult to forecast growth beyond 2035, it has therefore been assumed that current growth will continue at the same rate up until 2048.”
- 9.1.36 In summary the scenarios which have been assessed are detailed below:
- Scenario 1 (DM33): Do Minimum 2033  
Without Any Development (Opening Year)
  - Scenario 2 (DM33+): Do Minimum Plus 2033  
With Committed Development Only (Opening Year)
  - Scenario 3 (DS33): Do Something 2033  
With Development (Opening Year)
  - Scenario 4 (DS33+): Do Something Plus 2033  
With Development + Committed Development (Opening Year)
  - Scenario 5 (DM48): Do Minimum 2048  
Without Any Development (Design Year)
  - Scenario 6 (DM48+): Do Minimum Plus 2048  
With Committed Development Only (Design Year)
  - Scenario 7 (DS48): Do Something 2048  
With Development (Design Year)
  - Scenario 8 (DS48+): Do Something Plus 2048  
With Development + Committed Development (Design Year)

- 9.1.37 The assessment is undertaken in terms of changes in the Basic Noise Level defined at 10m from the edge of the carriageway in CRTN. This does not relate directly to the noise exposure at individual residences. Rather it is a reference noise level, comparison of which in various scenarios provides a good indication of the noise level changes that are expected to occur along an existing road link, where the road itself is the dominant road traffic noise source. The resultant noise level figure is the  $L_{A10,18h}$  in dB.
- 9.1.38 The cumulative effects of traffic associated with other developments in the area including employment, housing and the expansion of the nearby Peartree Park and Ride have been included in the assessment.
- 9.1.39 The following comparisons of the calculated basic noise levels have been conducted to assess the impact of the scheme in isolation both in the short term and in the long term:
- Scenario 1 (DM33) vs Scenario 3 (DS33) Short Term Effect
  - Scenario 1 (DM33) vs Scenario 7 (DS48) Long Term Effect
  - Scenario 5 (DM48) vs Scenario 7 (DS48) Long Term Effect
  - Scenario 1 (DM33) vs Scenario 5 (DM48) Long Term Effect
- 9.1.40 The following comparisons of the calculated basic noise levels have been conducted to assess the impact of the scheme inclusive of the effects associated with other local committed developments both in the short term and in the long term:
- Scenario 2 (DM33+) vs Scenario 4 (DS33+) Short Term Effect
  - Scenario 2 (DM33+) vs Scenario 8 (DS48+) Long Term Effect
  - Scenario 6 (DM48+) vs Scenario 8 (DS48+) Long Term Effect
- 9.1.41 The proposed road network noise assessment criteria are summarised in the following table:

Change in Noise Level	Magnitude of Adverse and Beneficial noise Impacts in the short term	Magnitude of Adverse and Beneficial noise Impacts in the long term
0.0	No Change	No Change
0.1 to 0.9	Negligible	Negligible
1 to 2.9	Minor	Negligible
3 to 4.9	Moderate	Minor
5 to 9.9	Major	Moderate
10+	Major	Major

Table 9.1: Proposed criteria for road traffic noise

- 9.1.42 The thresholds and descriptors shown above are based upon guidance provided within DMRB.
- 9.1.43 The presentation of changes in sound level in the table above to one decimal place is not a reflection of accuracy of the assessment but rather serves to provide a clear threshold between adjacent impact descriptions.
- 9.1.44 It is important to note that where noise impacts are concerned, any identified to be of major significance may not necessarily have effects beyond a local scale i.e. in close proximity to the source of noise.

### **Construction Noise**

- 9.1.45 A detailed outline of the recommended standards and criteria against which noise and vibration should be assessed has been developed, as set out in Appendix 2 Construction Noise Criteria. These include thresholds for noise and vibration levels, at which impacts

are expected to arise and at which impacts may become severe if they occur over a long duration or extended period.

- 9.1.46 In addition, a code of construction practice, representative of what might be applied to the site, has been set out in Appendix 2 Example Code of Construction Practice.
- 9.1.47 The noise limits set within Appendix 2 aim to limit any ambient noise level increases to within the “Threshold of significant effect for construction ambient noise” as set out in BS5228-1:2009.
- 9.1.48 It is intended that if the noise levels at the nearest residential windows exceed stated thresholds for extended periods then some form of mitigation is considered. The aim is to avoid 'major' noise impacts occurring.
- 9.1.49 It is recommended that prior to commencement of works, the Contractor seeks consent from the Local Authority for a framework for the proposed methods of work and the steps to be taken to minimise noise and vibration. This could be in the form of a Section 61 agreement. It is expected that the construction working hours would typically be restricted to 08:00 – 18:00 hours Monday to Friday and 08:00 – 13:00 hours on Saturdays.

### ***Fixed Plant Assessment for Existing Sensitivities***

- 9.1.50 For fixed plant items it is appropriate to set limits at the nearest noise sensitive receivers based on representative existing background noise levels on the site or otherwise to an absolute noise level where background noise levels are low. An assessment of noise from specific plant will be conducted at a later stage, in accordance with guidance given in BS4142, once details of any potential mechanical services are known.
- 9.1.51 The methodology of setting plant noise limits at this stage ensures that by undertaking the detailed design to meet the limits, any potential mechanical services will not give rise to any unacceptable effects.

### **ASSESSMENT METHODOLOGY (PROPOSED SENSITIVITIES)**

- 9.1.52 The methodology for the assessment of noise affecting proposed sensitivities is set out in Appendix 1 Planning Noise Assessment Report, which refers to the National Planning Policy Framework (NPPF), the Noise Policy Statement for England (NPSE) and BS 8233:2014.
- 9.1.53 The principle adopted is to deliver suitable internal noise levels for proposed dwellings through the provision of façade materials that afford the necessary level of sound insulation.
- 9.1.54 Noise monitoring was undertaken at three locations across the site, from 11:00h on the 14th August 2014 to 07:30h on 20th August 2014 in order to quantify the existing noise climate.
- 9.1.55 This assessment established noise levels both incident upon the proposed dwellings and in external areas within the development. Based on these noise levels, façade glazing and ventilation strategies were developed in order to achieve the internal noise levels.
- 9.1.56 In addition to this, the masterplan layout and orientation of dwellings has been developed to maximise the number of external areas achieving 55 dB  $L_{Aeq,16h}$  or less, ensuring that it is possible to provide an area of external amenity for each dwelling which achieves this target from road traffic and current airport operations.
- 9.1.57 The Planning Noise Assessment Report (Appendix 1) sets out the assessment methodology in detail.

### **Road Traffic Noise**

- 9.1.58 The main noise source that will affect the proposed dwellings is road traffic on the A44 and A4095.
- 9.1.59 To ensure appropriate internal noise levels are achieved, noise break in calculations have been undertaken, based upon worst case day and night time noise levels, measured over the duration of the noise survey. The composite performance of the façade and glazing have been assessed in addition to ventilation strategy.
- 9.1.60 External noise levels have been assessed from the noise survey data against the relevant design standards to ensure acceptable noise levels in external amenity areas can be provided.
- 9.1.61 Section 7.1 of the Noise Assessment Report that forms Appendix 1 contains full details of the assessment methodology used to determine the potential noise effects of road traffic noise upon proposed noise sensitivities.

### **Aviation Noise**

#### Background

- 9.1.62 London Oxford (Kidlington) Airport (OXF/EGTK) is classified as a regional and business aviation airport. It is located to the south east of the site, beyond A4095 Upper Campsfield Road.
- 9.1.63 The site was first used as an aerodrome in the late 1930s, and from the mid-1960s it has been home to the Oxford Air Training School. Historically Oxford Airport has been one of the UKs most active general aviation (GA) airports, although these movements have reduced significantly over the years.
- 9.1.64 The airport occupies 375 acres of freehold land, with over 335,000 ft<sup>2</sup> of buildings of which 170,000 ft<sup>2</sup> is made up of hangars.
- 9.1.65 Annual movements in 2013 amounted to 37,553, with helicopters stated to be approximately 12% of movements. It is not clear if these helicopter movements are included within the 37,553 figure or are in addition, Therefore, to be robust, we have considered total annual movements to be 42,674, with training flights making up 53%, business and commercial 19%, recreational and general aviation 16% and helicopters 12% (5,121).
- 9.1.66 The noise generated by activities at Oxford Airport is a feature of the local environment, and therefore is taken into account in assessing potential development at the site.

#### Airborne Aircraft Noise

- 9.1.67 The Noise Assessment Report that forms Appendix 1 contains a technical review of the noise matters associated with operations at London Oxford Airport and the implications for the site. It deals with noise from airborne aircraft operations (fixed wing and rotary) and ground based engine running.
- 9.1.68 We have undertaken noise modelling at Oxford Airport using the US Federal Aviation Authority Integrated Noise Model (INM) Version 7.0d. The model inputs, in terms of numbers and types of aircraft as well as runway modal split, have been derived from information provided directly by Oxford Airport as well as CAA statistics which are publicly available. Some assumptions have been made where required. The inputs are summarised in Section 8.2 of Report 14/0299/R01.
- 9.1.69 The model has been run separately and cumulatively for fixed wing and rotary aircraft for present day (2013) operations. In addition, as a sensitivity test, further noise contours have been prepared which represent the currently assumed operations scaled up to

reflect the Airport operating at its maximum annual capacity of 160,000 movements per year, as set out in the Section 106 agreement with Cherwell District Council.

- 9.1.70 We have compared the model output for present day (2013) operations to the results of on-site measurements.

#### Noise from Aircraft on the Ground

- 9.1.71 Ground running of jet engines currently takes place at the western end of the cross runway (the threshold of runway 11). The activity is currently restricted to daytime hours only, 07:00 to 19:00h, and according to recent records amount to not more than 8 hours of running during a 4 month period. This is equivalent to an average of 4 minutes per 12 hour day.
- 9.1.72 We have modelled this by assuming that all such running is on jet engines attached to the noisiest of the jet aircraft, the Lear 35. Furthermore, we have assumed that a total of 10 hours of running time in any four month period is for one engine on full power. We have then undertaken the ground running noise contour computation for an average day which equates to 5 minutes of engine running at full power.
- 9.1.73 We understand that the duration of individual ground runs or compass swing activities is longer than that modelled for a given day; however from our experience it is never the case that the entire duration of the test will be with the engine at full power (for which we have modelled).

#### **Acoustic Design Criteria**

- 9.1.74 As the proposed development is introducing residents into the area, it is not appropriate to assess the impact based on noise level changes. Instead the impact of existing noise sources on the development will be assessed using standard acceptable levels of noise both externally and internally based on guidance provided in BS8233:2014 and WHO guidance, and agreed with Neil Shellard of West Oxfordshire District Council and Rob Lowther of Cherwell District Council.

#### **Internal Noise**

- 9.1.75 The following Table T3 summarises the design criteria for this development, based upon BS 8233:2014 is a Code of Practice for sound insulation and noise reduction for buildings:

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB $L_{Aeq,16h}$	-
Dining	Dining room/area	40 dB $L_{Aeq,16h}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16h}$	30 dB $L_{Aeq,8h}$
Note 7 Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.			

*Table 9.2: Summary of internal and external noise criteria from BS 8233:2014*

- 9.1.76 The Noise Assessment (Appendix 1) has been undertaken on the basis of achieving these noise levels.

#### **External Noise**

- 9.1.77 As set out in section 4.2 of The Noise Assessment (Appendix 1), external noise criteria should be viewed as aspirational targets at which point mitigation should be introduced where reasonably possible.
- 9.1.78 These trigger levels in accordance with WHO guidelines are 50dB  $L_{Aeq,16h}$  and 55dB  $L_{Aeq,16h}$ . The 50dB figure can be identified as a preferred goal for external noise levels,

but cannot be viewed as a threshold not to be exceeded in all circumstances; especially with regards to airborne aircraft noise where it is not possible to provide mitigation.

### Summary

9.1.79 Based on the above, the following noise level criteria are proposed:

- Daytime internal  $L_{Aeq,16h}$  to all habitable rooms no greater than 35dB
- Night time internal  $L_{Aeq,8h}$  to all bedrooms no greater than 30dB
- Daytime  $L_{Aeq,16h}$  in outdoor amenity areas ideally no greater than the aspirational 55dB although below 50dB is desirable
- For airborne aviation noise specifically, the internal criteria are as noted above, while for external noise an aspirational daytime  $L_{Aeq,16h}$  in outdoor amenity is adjusted to 54dB.
- For ground borne aviation noise specifically, the same internal criteria apply, while for external noise an aspirational daytime  $L_{Aeq,16h}$  in outdoor amenity is adjusted to 55dB.
- Plant noise limits will be set based upon the times of operation of the plant to ensure that background noise levels are not elevated by more than 1dBA; however, for periods when background noise levels are low a limit of 30dBA will be applied.

## BASELINE CONDITIONS

### Baseline Noise Survey

- 9.1.80 A noise survey has been undertaken to quantify baseline exposure levels around the development site.
- 9.1.81 The methodology and results of the survey are set out in detail in the Noise Assessment Report (Appendix 1).
- 9.1.82 Survey positions were chosen to quantify existing noise levels on the nearby local roads, specifically the A44 and A4095. Generally speaking, the A44 produced the highest daytime noise levels followed by the A4095. It was observed that during night time periods, noise levels on the site were low, indicating possible low traffic flows during these times.
- 9.1.83 An additional measurement position was selected to determine noise levels at existing residences away from nearby road noise sources to provide a reasonable indication of likely noise levels in the interior of the development site once complete.
- 9.1.84 In addition, one of the survey positions was chosen to provide a worst case representation of noise levels from potential aircraft taking off and landing on runway 11/29 (this runway is infrequently used). It was also the closest position to the main runway (01/19) however this runs parallel to the site and aircraft using it do not pass directly over the proposed development area. It is understood that London Oxford Airport was operating as normal during the monitoring period and runway 11/29 was not being used. Therefore the survey inherently takes noise levels from normal activity at London Oxford Airport into account.
- 9.1.85 As set out in Appendix 1, the monitoring for the recent study was undertaken over approximately six days in August 2014. London Oxford Airport activities and other aircraft flyovers regularly took place, comprising a broad representation of aircraft movements.

### Baseline Traffic Data

- 9.1.86 Traffic flow information for various scenarios, derived from 2014 traffic data, has been supplied and obtained by *David Tucker Associates* and can be found in Appendix 2.

## EVALUATION, EFFECTS AND MITIGATION FOR EXISTING SENSITIVITIES

### **Potential Effects**

9.1.87 The proposed development has the potential to give rise to the following effects:

- Road Traffic Noise
- Construction Noise
- Noise from Fixed Plant

9.1.88 The following sections set out the potential effects in more detail.

#### Road Traffic Noise

9.1.89 The development has the potential to affect traffic flows on the existing local road network and therefore the noise impact of any changes to existing traffic flows have been assessed. 18 hour (06:00 – 00:00h) traffic flow data have been supplied by David Tucker Associates for an estimated year of opening (2033) and the projected worst case year within 15 years, the design year (2048).

9.1.90 The road links on which the assessment has been carried out are shown in the attached Road Link Diagram, Appendix 2.

9.1.91 The traffic flows upon which the assessment is based reflect a 'worst case' scenario of 1500 dwellings (including up to a 150 unit care village; 930sqm retail area; 7,500sqm employment area; 2,217sqm school and a football pitch.

9.1.92 The local road link diagram, traffic data and calculated changes in noise level based on the assessment methodology described in this chapter are set out in Appendix RT. It can be seen from the schedule that the predicted noise level changes on the local road network due to the cumulative effect of all proposed development are Negligible in the worst case.

#### Construction Noise

9.1.93 Guidance on best practicable means of noise control during construction activities, and an example Code of Construction Practice are set out in Appendix 2 and Appendix 2 respectively, based on guidance set out in BS5228-1. This guidance could be used to form the basis of a Section 61 agreement to control construction noise. The Appendices also set out suggested noise and vibration limits to be used as a benchmark for construction noise control. It is recommended construction hours be restricted to 08:00 – 18:00 hours Monday to Friday and 08:00 – 13:00 hours on Saturdays.

9.1.94 Care will need to be taken to ensure that construction vehicle movements to and from the site are constrained to haul routes avoiding as far as practicable noise sensitive routes. This can generally be achieved by routing vehicles as directly as possible onto the main road network.

9.1.95 Using best practical means of construction is expected to control the noise effects to be at worst Moderate and short term. In most cases the effects would be considered Minor and short term.

9.1.96 The temporary nature of construction work also needs to be considered in the evaluation of construction noise effects. On this basis, the significance of construction noise impacts to existing sensitivities is assessed as being low.

#### Noise from Fixed Plant

9.1.97 Noise from all potential plant equipment will be suitably mitigated at detailed design stage to ensure that resulting noise levels from said plant, at nearby noise sensitive receptors, meets the noise limits set.



9.1.98 Based on the requirements described above, the impact on existing sensitivities is assessed as Negligible.

### **Mitigation**

#### Road Traffic Noise

9.1.99 As stated in section 7.6, the expected effect upon existing sensitivities of noise due to road traffic changes arising from the proposed development is no greater than Negligible. Therefore no mitigation measures are necessary and none are proposed.

#### Construction Noise

9.1.100 Appendix 2 sets out best practicable means for construction, which are aimed to minimise any noise impacts during the construction phase. In addition it is recommended construction hours be restricted to 08:00 – 18:00 hours Monday to Friday and 08:00 – 13:00 hours on Saturdays.

9.1.101 It is expected that this will limit any noise impacts to be Moderate Adverse at worst, and temporary.

#### Noise from Fixed Plant Items

9.1.102 Plant noise limits have been established to control the noise emission of any prospective plant which may be installed. A scheme of suitable mitigation measures such as in-duct attenuators (which are commonly part of the standard design of ducted building services) will be incorporated into the design of any future mechanical service systems to ensure plant noise limits are met.

### **Residual Effects**

#### Road Traffic Noise

9.1.103 Whether considering the proposed development in isolation or together with other committed developments in the area, no noise effect has been assessed to be any higher than Negligible in the worst case.

#### Construction Noise

9.1.104 Construction noise is inherently temporary in nature so no residual effects will occur.

9.1.105 Any temporary effects will be controlled *through* best practice principles in the employment of construction methodologies, to ensure that noise emissions are minimised. It is expected that any temporary effects will be limited to Moderate/Adverse at worst.

#### Fixed Plant Items

9.1.106 Wherever mechanical services form part of the proposed development, they will be designed to incorporate any attenuation that may be necessary to ensure that appropriate plant noise limits are met. This can be secured with planning conditions as necessary.

9.1.107 The residual impact from fixed plant items is therefore assessed as Negligible.

### **Statement of Significance (With Development)**

9.1.108 A summary of the potential effects on existing noise sensitive premises is set out in the following table.

Noise Source	Residual Effect	Effect Significance	Duration
Road Traffic	None to Negligible	Low	Short Term
Road Traffic	Negligible	Low	Long Term
Construction	Minor to Moderate	Low	Short Term
Fixed Plant Items	Negligible	Low	Short and Long Term

Table 9.3: Summary of Effects without Committed Development

### Statement of Significance (With Committed Development)

9.1.109 A summary of the potential effects on existing noise sensitive premises is set out in the table below.

Noise Source	Residual Effect	Effect Significance	Duration
Road Traffic	None to Negligible	Low	Short Term
Road Traffic	Negligible	Low	Long Term

Table 9.4: Summary of Effects with Committed Development

## EVALUATION, EFFECTS AND MITIGATION FOR PROPOSED SENSITIVITIES

### Road Traffic

9.1.110 The proposed residential areas of the site have been set back from the road traffic noise sources in order to ensure a suitable internal and external noise environment will be provided.

9.1.111 Allowing for this, the noise levels at proposed residential locations are low enough that standard thermal double glazing and un-attenuated trickle vents are sufficient to achieve the internal noise criteria in all locations.

9.1.112 To help ensure future residents have the best possible quality of amenity in outdoor areas such as gardens it is advised that consideration be given to the orientation of buildings and the provision of fences to provide screening to the most exposed external areas. This should only be necessary where garden areas have a direct line of sight to nearby roads around the perimeter of the site. It should be noted however that the external amenity noise targets set out in BS8233:2014 are aspirational in nature.

### Aviation Noise

#### Airborne Aircraft

9.1.113 For both present day operations and the maximum capacity sensitivity operations no part of the site is located in an area that is exposed to a Significant Observable Adverse Effect Level (66dB  $L_{Aeq,16h}$ ) and there is therefore no necessity to avoid noise sensitive development because of airborne aircraft noise.

9.1.114 For the current level of activity it is clear that the entire site is exposed to noise levels that fall below the Lowest Observable Adverse Effect Level (LOAEL). While that does not mean that aircraft noise will be inaudible, it does effectively mean that it has no material effect on the site.

9.1.115 For the sensitivity contours prepared on the basis that the assumed current level of activity is scaled up to maximum capacity, a proportion, approximately 25% of the total area of the development site to the north east quadrant would be expected to be exposed to noise representing the Lowest Observable Adverse Effect Level range that requires mitigation (>54dB  $L_{Aeq,16h}$ ).

- 9.1.116 There is a small and narrow wedge shaped section of the site towards the north east sector immediately opposite the western end of the cross runway, that also lies in the Lowest Observable Adverse Effect Level, but above 57dB  $L_{Aeq,16h}$ , the threshold of significant community disturbance. All of this part of the site is designated for employment and parking use only.
- 9.1.117 With regards to rotary aircraft movements, even on the sensitivity contours, with only limited numbers of helicopters undertaking circuits which overfly the site (with the vast majority of flights being general arrivals and departures, which do not overfly the site), no part of the site is exposed to noise level from these aircraft above 51dB  $L_{Aeq,16h}$ , the lowest contour suggested to be plotted by the London Heliport study.
- 9.1.118 If one takes the very worst case of the full capacity airborne aircraft sensitivity noise contours, a section of the site in the north east corner is identified as being above the LOAEL of 54dB  $L_{Aeq,16h}$ . Dwellings in this area may therefore need to be constructed so as to incorporate inherent noise mitigation measures as described below.

#### Ground Running

- 9.1.119 The majority of the site is expected to be exposed to engine ground running noise levels below the NOEL value of 50dB  $L_{Aeq,16h}$ .
- 9.1.120 A north eastern segment of the site is exposed to noise levels between 50  $L_{Aeq,16h}$  and 55dB  $L_{Aeq,16h}$ , indicating that the noise levels are above the LOAEL threshold and should be identified but not necessarily mitigated.
- 9.1.121 There is a small part of the site in the north east corner that is expected to be exposed to engine ground noise levels above 55dB  $L_{Aeq,16h}$ , meaning that properties in this area are expected to be exposed to engine ground noise levels that should be mitigated; however the buildings in this area are all designated for employment use only.
- 9.1.122 This is the same area that has been identified above as being exposed to the highest levels of airborne aircraft noise; and the internal environments will again be protected in the case of ground running noise.

### ***Acoustic Design Strategy for Proposed Sensitivities***

#### Road Traffic Noise

- 9.1.123 Noise has been taken into account in developing the layout and design of the proposed residential scheme as necessary. Standard thermal double glazing and standard trickle ventilation will be sufficient to achieve the required internal noise level criteria in all areas. Further details can be found within the Noise Assessment Report (Appendix 1).

#### Aviation Noise

- 9.1.124 Aviation noise has also been taken into account in developing the layout and design of the proposed scheme. The employment and parking zone has been sited in the area most affected by aircraft noise, leaving only a small amount of residential accommodation exposed to noise levels that require consideration; and this is only based upon the worst case scenario of full permitted use of the airport.
- 9.1.125 We emphasise the worst case nature of this assumption in that it reflects activity at the airport being almost four times what it is currently, with the same mix of aircraft in use. With this in mind, and considering that external airborne aircraft noise cannot be mitigated, we would not expect any mitigation to be required to the external areas; however the internal noise levels within the dwellings will be limited by appropriate design of the building envelope and ventilation.
- 9.1.126 The buildings which make up the employment zone act as a barrier to reduce ground running noise to some of the residential parts of the site; and local fencing to gardens will be introduced as necessary to protect other gardens from potential ground running noise.

- 9.1.127 The internal environment of residential dwellings will be suitably protected by use of good quality standard thermal double glazed windows throughout the site (the same as for road traffic noise); however for some areas, background ventilation into properties will be provided by means other than opening windows.
- 9.1.128 Suitable ventilation systems will be utilised where necessary to meet the internal noise criteria across the site and are relatively common in residential development affected by modest levels of environmental noise.

## CONCLUSIONS

- 9.1.129 Assessments have been carried out to consider the potential noise impacts identified.
- 9.1.130 The noise effects at existing residences due to changes in traffic flows on the local road network associated with the development have been assessed. In the short term and long term, a Negligible impact is assessed at worst to nearby dwellings.
- 9.1.131 Noise impacts during the construction phase have been considered. Example Construction Noise criteria have been set out, and best practicable means have been suggested to minimise the noise impacts as far as is possible and practical. It is recommended that construction hours are restricted to 08:00 – 18:00 Monday to Friday and 08:00 – 13:00 on Saturdays. Allowing for this the impact is assessed as being Moderate at worst, and short term. The significance of the effect is considered to be Low.
- 9.1.132 Potential effects upon proposed residences within the development have been considered in terms of road traffic and aviation noise.
- 9.1.133 The noise generated by aircraft activities at London Oxford Airport have been measured and modelled, and in the present circumstances found not to have any material impact on the proposed site in terms of noise levels and no specific mitigation would be required.
- 9.1.134 Only if one was to consider significantly higher numbers of aircraft movements (approximately 4 times the current operations) in line with the maximum the airport is allowed to operate, would aircraft noise have a material effect on the site. Even in this scenario, only a quarter of the development site would fall within an area where mitigation, in the form of inherent measures such as suitable glazing and ventilation, should be considered and currently part of this area is designated for non-residential use. Therefore any potential adverse impacts can be suitably mitigated for.
- 9.1.135 Both road traffic and aviation noise are mitigated as an inherent part of the layout and design of the proposed development to ensure a suitable noise environment is provided for future occupiers.

## REFERENCES

1. National Planning Policy Framework (NPPF), Department for Communities & Local Government, (2012)
2. Noise Policy Statement for England (NPSE), Department for Environment, Food & Rural Affairs, (2010)
3. Design Manual for Road and Bridges (DMRB) Volume 11 Section 3 Part 7 (HA 213/08) - Traffic Noise and Vibration, Highways Agency, (2011)
4. Calculation of Road Traffic Noise (CRTN), Department for Transport, (1988)
5. Night Noise Guidelines for Europe, WHO
6. Guidelines for Community Noise, World Health Organisation, (1999)
7. BS 5228-1:2009 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise
8. TEMPro (Trip End Model Presentation Program) used for transport planning forecasts.

## APPENDICES

- Appendix 1: Noise Assessment Report (Cole Jarman ref: 14/0299/R01)
- Appendix 2: Construction Noise Criteria; Example Code of Construction Practice and Schedule of Road Traffic Noise Effects

## 10 LANDSCAPE AND VISUAL IMPACTS

### INTRODUCTION

- 10.1.1 Aspect Landscape Planning Ltd is instructed by Pye Homes Ltd and The Vanbrugh Unit Trust to assess the landscape and visual issues arising from the proposed mixed-use development at Land East of Woodstock, Oxfordshire.
- 10.1.2 The proposals comprise the following elements: Erection of up to 1,500 dwellings including affordable housing and a 150 unit care village with associated publicly accessible ancillary facilities; site for new primary school; up to 3,000 sqm of retail space including 2,325sqm supermarket; up to 7,500 sqm of locally led employment (B1, B2, B8) space; site for a Football Association step 5 football facility with publicly accessible ancillary facilities; public open space; provision of site for new link and ride facility; and associated infrastructure, engineering and ancillary works, with vehicular access provided from Upper Campsfield Road (A4095), Shipton Road and Oxford Road (A44).
- 10.1.3 The purpose of this assessment is to analyse the character and visual amenities of the local area, present the proposals and assess the anticipated effect of the proposals which are proposed on the land which lies adjacent to the eastern edge of Woodstock. A number of plans and photographs have been prepared to illustrate the character and visual environment of the site and its landscape context and these are appended to this chapter.
- 10.1.4 This chapter will therefore take the following format:
- Review of landscape related policy;
  - Description of the baseline situation including assessment of landscape character and visual environment;
  - Nature of the change as a result of the proposals upon landscape character and visual amenities, including identification of any cumulative impacts and any mitigation measures being introduced;
  - Conclusions will be drawn.
- 10.1.5 This assessment should be considered alongside the other supporting chapters which form part of this Environmental Statement and information submitted in support of the planning application.

### PLANNING POLICY CONTEXT

- 10.1.6 In terms of landscape related policy, the site is covered by both the West Oxfordshire Local Plan and the Cherwell District Local Plan.
- 10.1.7 The site itself is not subject to any landscape related designations, however, the landscape to the west of the A44, associated with Blenheim Palace is designated as a World Heritage Site. There are also two Conservation Areas within the wider setting. There is also a protected view from the Victory Monument, within Blenheim Palace parkland which looks east, across Woodstock. The various policy designations are illustrated on Plan ASP2. There are a number of listed buildings associated with Blenheim Palace and Woodstock. These heritage assets are identified and the potential effects arising from the proposals assessed within the detailed heritage and archaeology chapter that accompanies this ES.
- 10.1.8 The land to the south east of the A4095 is designated within the Cherwell Local Plan as Green Belt. The Cotswolds AONB lies to the west of the Blenheim Palace estate, and approximately 2km to the west of the site. The Wychwood Forest Area extends beyond the AONB and encompasses the Blenheim Palace estate, but does not extend beyond the A44.

**National Planning Policy Framework (NPPF) 2012**

- 10.1.9 The NPPF sets out a number of core land-use planning principles in paragraph 17, which underpin both plan-making and decision-taking. The core principles embrace good design and protect character, stating that planning should: "...always seek to secure high quality design and good standard of amenity for all existing and future occupants of land and buildings;" and "take account of the different roles and character of different areas, promoting the vitality of our main urban areas, protecting the Green Belts around them, recognising the intrinsic character and beauty of the countryside and supporting thriving rural communities within it".
- 10.1.10 The requirement for good design is further emphasised in paragraph 64 stating that: "...permission should be refused for development of poor design that fails to take the opportunities available for improving the character and quality of an area and the way it functions."
- 10.1.11 In terms of conserving and enhancing the natural environment, paragraph 113 states: "Local planning authorities should set criteria based policies against which proposals for any development on or affecting protected wildlife or geodiversity sites or landscape areas will be judged. Distinctions should be made between the hierarchy of international, national and locally designated sites, so that protection is commensurate with their status and gives appropriate weight to their importance and the contribution that they make to wider ecological networks".
- 10.1.12 At the heart of the framework, paragraph 14 states that there: *"is a presumption in favour of sustainable development, which should be seen as a golden thread running through both plan-making and decision-taking."*
- For decision-taking this means:*
- *approving development proposals that accord with the development plan without delay; and*
  - *where the development plan is absent, silent or relevant policies are out-of-date, granting permission unless:*
  - *any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole; or*
  - *specific policies in this Framework indicate development should be restricted."*
- 10.1.13 The NPPF has been of material consideration as part of the assessment of the Site and its setting, and the proposals shall take on board the overall NPPF guidance and principles.

**Planning Practice Guidance (PPG) (March 2014)**

- 10.1.14 The Planning Practice Guidance is a web-based resource that supports the NPPF and replaces a number of earlier planning practice guidance documents and government circulars. The following sections and paragraphs of PPG are of relevance to the landscape and visual assessment.
- 10.1.15 Reference ID: 26-007-20140306, paragraph 007 states that "Planning should promote local character (including landscape setting)". In achieving this, PPG states here that: *"When thinking about new development the site's land form should be taken into account. Natural features and local heritage resources can help give shape to a development and integrate it into the wider area, reinforce and sustain local distinctiveness, reduce its impact on nature and contribute to a sense of place. Views into and out of larger sites should also be carefully considered from the start of the design process";* and "The opportunity for high quality hard and soft landscape design that helps to successfully integrate development into the wider environment should be carefully considered from the outset, to ensure it complements the architecture of the

proposals and improves the overall quality of townscape or landscape. Good landscape design can help the natural surveillance of an area, creatively help differentiate public and private space and, where appropriate, enhance security.”

- 10.1.16 Reference ID: 26-009-20140306, paragraph 009 states that “Planning should promote a network of green spaces (including parks) and public spaces”. In this regard it states that: “Development should promote public spaces and routes that are attractive, accessible, safe, uncluttered and work effectively for all users – including families, disabled people and elderly people. A system of open and green spaces that respect natural features and are easily accessible can be a valuable local resource and helps create successful places. A high quality landscape, including trees and semi-natural habitats where appropriate, makes an important contribution to the quality of an area.” and “The benefit of green spaces will be enhanced if they are integrated into a wider green network of walkway, cycleway, open spaces and natural and river corridors”.
- 10.1.17 Reference ID: 26-012-20140306 states that “Planning should promote access and inclusion”, also stating that: “Inclusive design should not only be specific to the building, but also include the setting of the building in the wider built environment, for example, the location of the building on the plot; the gradient of the plot; the relationship of adjoining buildings; and the transport infrastructure”.
- 10.1.18 Reference ID 26-020-20140306 reiterates that “A well designed space has a distinctive character”, stating that “Distinctiveness is not solely about the built environment – it also reflects an area’s function, history, culture and its potential need for change”.

### **Local Planning Policy**

- 10.1.19 As noted above, the site is covered by the West Oxfordshire Local Plan and the Cherwell District Local Plan.

#### Cherwell Local Plan (Adopted November 1996)

- 10.1.20 Although somewhat dated, the following ‘saved’ policies are considered to be of some relevance to the site and its setting, in terms of the landscape and visual context, and the nature of proposed development: H18 New dwellings in the countryside; C4 Creation of new habitats; C5 Protection of ecological value and rural character of specified features of value in the district; C7 Landscape Conservation; C9 Scale of development compatible with rural location; C10 Historic landscape, parks and gardens and historic battlefields; C23 Development affecting the site or setting of a scheduled ancient monument; C28 Layout, design and external appearance of new development; C31 Compatibility of proposals in residential areas.
- 10.1.21 The existing Local Plan is currently supported by the ‘Non Statutory Cherwell Local Plan 2011’ which has been approved as interim planning policy until such time that the ‘Cherwell Local Plan Development Framework,’ (see below) is formally adopted.

#### Cherwell Local Plan Development Framework 2006 – 2031

- 10.1.22 Cherwell District Council is currently preparing a new Local Plan which will set out strategic policies and site allocations as well as more detailed policies for deciding planning applications. The Local Plan was submitted to the Secretary of State for Communities and Local Government for formal Examination on 31st January 2014. The public Examination hearings into the Submission Local Plan were suspended on 4 June 2014 for six months. This was to enable the Council to put forward proposed modifications to the Plan involving increased new housing delivery over the plan period to meet the full, up to date, objectively assessed needs of the district, as required by the National Planning Policy Framework (NPPF) and based on the Oxfordshire Strategic Housing Market Assessment (2014) (SHMA). Relevant policies



include ESD13: Local Landscape Protection and Enhancement; ESD15 Green Boundaries to Growth; and ESD18 Green Infrastructure.

West Oxfordshire District Council Local Plan 2011 (Adopted June 2006)

- 10.1.23 The following policies are 'saved' beyond June 2009 and are considered to be of some relevance to the site and its setting, in terms of the landscape and visual context, and the nature of proposed development. These saved policies will provide the basis for local planning decisions until they are replaced by the new Local Plan and any other supporting Local Development Documents: BE2 General Development Standards; BE4 Open Space Within and Adjoining Settlements; BE11 Historic Parks and Gardens; BE12 Archaeological Monuments; NE1 Safeguarding the Countryside; NE3 Local Landscape Character; NE6 Retention of Trees, Woodlands and Hedgerows; NE13 Biodiversity Conservation; H2 General Residential Development Standards; and H4 Construction of New Dwellings in the Open Countryside and Small Villages.

West Oxfordshire District Council Draft Local Plan 2012

- 10.1.24 West Oxfordshire District Council is currently preparing a new Local Plan which will set out strategic policies and site allocations as well as more detailed policies for deciding planning applications. Policies of relevance include: Core Policy 4 – High Quality Design; Core Policy 17 – Landscape Character; Core Policy 19 – Public Realm and Green Infrastructure; and Core Policy 23 – Historic Environment.

West Oxfordshire Design Guide

- 10.1.25 Has been produced to describe the qualities and characteristics that make West Oxfordshire unique in relation to its landscapes, settlements and buildings. The guide describes ways in which good design can protect and enrich the character of the District. This document has informed the design development of the proposals.

West Oxfordshire Strategic Housing Land Availability Assessment Final Report (SHLAA) Interim Report January 2011

- 10.1.26 Land to the south east of Woodstock is identified for more significant expansion, although it does raise a cautionary note that this would introduce large scale development on the fringes of a historic town and a World Heritage Site.

## LANDSCAPE ASSESSMENT METHODOLOGY

- 10.1.27 The Landscape Institute and the Institute of Environmental Management and Assessment have jointly published Guidelines for Landscape and Visual Impact Assessment Third Edition (2013) that gives guidance on carrying out a Landscape and Visual Impact Assessment (LVIA), either as a standalone appraisal or part of an Environmental Impact Assessment (EIA). This methodology takes on board the above guidance.
- 10.1.28 When assessing character within an urban context, this methodology can be applied to Townscape Assessments and how the development will affect the elements that make up the townscape and its distinctive character.
- 10.1.29 The main stages of the LVIA process are outlined below. This process will identify and assess the potential effects of a development on the landscape resource and the visual environment.

**Baseline study**Landscape

- Define the scope of the assessment.
- Outline the planning policy context, including any landscape designations. This review included a review of the NPPF, policy prepared by West Oxfordshire District Council and Cherwell District Council.
- Establish the landscape baseline through a site visit and an assessment of published Landscape Character Assessments to identify the value and susceptibility of the landscape resource (receptor), at community, local, national or international levels where appropriate. The desk study included a review of National Character Areas prepared by Natural England and published character assessments prepared by West Oxfordshire District Council, Cherwell District Council and the Oxfordshire Wildlife and Landscape Study.
- A detailed field assessment has been undertaken to identify broadly homogenous landscapes which characterise the site and its setting. These landscapes are then assessed in terms of their structure, value and susceptibility to accommodate change as a result of development similar to the proposals. Discussions with the landscape officers from West Oxfordshire and Cherwell have also informed the identification of viewpoints.

Visual

- Define the scope of the assessment.
- Identify the extent of visual receptors within the study area, with the use of Zones of Theoretical Visibility (ZTV) where appropriate, and establish the number and sensitivity of the representative viewpoint and/or groups of people (receptors) within the study area whose views may be altered as a result of the proposals.
- A detailed field study was undertaken which reviewed the key viewpoints identified by the desk study and sought to refine the viewpoints to ensure that the visual assessment was representative of the visual environment in which the site is set. A number of photographs have been taken and presented, based on the Landscape Institute guidelines, to illustrate the identified viewpoints.

**Project description**

- 10.1.30 The baseline study highlights clear opportunities and constraints for the integration of the proposals into the receiving environment. The aspects of the scheme at each phase that will potentially give rise to effects on the landscape and visual amenity will need identifying. At this time, the proposals can be modified to ensure that further mitigation measures are incorporated into the design as a response to the local landscape and visual environment.

**Description of Effects**

- 10.1.31 The level of effect on both landscape and visual receptors should be identified in respect of the different components of the proposed development. In order to assess the significance of the effect on the receiving environment, it is necessary to consider the magnitude, i.e. the degree of change, together with the sensitivity of the receptor.
- 10.1.32 This will identify whether the effects are:

- *Adverse or Beneficial* - beneficial effects would typically occur where a development could positively contribute to the landscape character or view. Neutral effects would include changes that neither add nor detract from the quality and character of an area or view. Adverse effects would typically occur where there is loss of landscape elements, or the proposal detracts from the landscape quality and character of an area or view.
- *Direct or Indirect* – A direct effect will be one where a development will affect a view or the character of an area, either beneficially or adversely. An indirect effect will occur as a result of associated development i.e. a development may result in an increase of traffic on a particular route.
- *Temporary or Permanent*– this relates to the expected duration and magnitude of a development. Within this assessment the potential effects are assessed during the Construction Phase, then at Years 1 and 10, following completion of the development.

#### Mitigation

- 10.1.33 The significance of effect – no mitigation relates to the maximum development parameters. The assessment of residual effect is following applied mitigation measures. Mitigation may include layouts informed by constraints, retention and reinforcement of existing vegetation.

#### Residual effects

- 10.1.34 The effect of the development proposals upon a landscape or visual receptor taking into account mitigation measures.

#### Significance of Effects (EIA only)

- 10.1.35 A final judgment on whether the effect is likely to be significant, as required by the Regulations. The summary should draw out the key issues and outline the scope for reducing any negative/ adverse effects. Mitigation measures need to be identified that may reduce the final judgement on the significance of any residual negative effects in the long term.

### **Assessing effects**

#### Landscape Sensitivity

- 10.1.36 The sensitivity of a particular landscape in relation to new development is categorised as very high, high, medium, low or negligible. This takes into account the susceptibility of the receptor to the type of development proposed and the value attached to different landscapes by society. The following table explains each threshold and the factors that make up the degree of sensitivity.

<b>Sensitivity</b>	<b>Definition</b>
Very High	Landscape resource where there is a very high susceptibility to change. Landscapes would be considered of very high value, have a high degree of intimacy, strong landscape structure, a high sense of intactness and contain features worthy of protection. Townscapes may include a high proportion of historic assets. Typical examples may be Nationally designated e.g. World Heritage Sites, National Parks, Heritage Coasts, AONB's etc.
High	Landscape resource where there is a high susceptibility to change. Landscapes would be considered of high value, have a high degree of intimacy, strong landscape structure, relatively intact and contain features worthy of protection. Townscapes may include a high proportion of historic assets. Typical examples may be of Regional or County importance e.g. within the setting of National Parks, AONB's, Conservation Areas etc.
Medium	Landscape resource where there is a medium susceptibility to change. Landscapes would be considered of medium value, good landscape structure, with some detracting features or evidence of recent change. Townscapes may include a proportion of historic assets or of cultural value locally. Typical examples may be designated for their value at District level.
Low	Landscape resource where there is a low susceptibility to change. Landscapes would be considered of low value, and contain evidence of previous landscape change.
Negligible	Landscape resource where there is little or no susceptibility to change. Typical landscapes are likely to be degraded, of weak landscape structure, intensive land uses, and require landscape restoration.

*Table 10.1: Landscape Sensitivity Thresholds*

### Visual Sensitivity

- 10.1.37 The sensitivity of the visual receptor will be assessed against the magnitude of visual change, and is categorised as very high, high, medium, low or negligible. Each receptor should be assessed in terms of both their susceptibility to change in views and visual amenity and also the value attached to particular views.

Sensitivity	Definition
Very High	Viewers on public rights of way whose prime focus is on the high quality of the landscape around, and are often very aware of its value. Examples include viewers within nationally designated landscapes such as National Parks or AONB's.
High	Viewers on public rights of way whose prime focus is on the landscape around, or occupiers of residential properties with primary views affected by the development. Examples include viewers within regional/local landscape designations, users of National Trails, Long Distance Routes or Sustrans cycle routes, or the setting of a listed building.
Medium	Viewers engaged in outdoor recreation with some appreciation of the landscape, occupiers of residential properties with oblique views affected by the development, and users of rural lanes and roads. Examples include viewers within moderate quality landscapes, local recreation grounds, and outdoor pursuits.
Low	Viewers engaged in outdoor sport or recreation whose prime focus is on their activity, or those passing through the area on main transport routes whose attention is focused away from an appreciation of the landscape.
Negligible	Viewers whose attention is focused on their work or activity, and not susceptible to changes in the surrounding landscape.

Table 10.2: Visual Sensitivity Thresholds

### Effect Magnitude

- 10.1.38 The magnitude of change relates to the degree in which proposed development alters the fabric of the landscape character or view. This change is categorised as very high, high, medium, low, or negligible.

Magnitude	Effect Definition
Very High	Change resulting in a significant degree of deterioration or improvement, or introduction of dominant new elements that are considered to make a major alteration to a landscape or view.
High	Change resulting in a high degree of deterioration or improvement, or introduction of recognisable new components that may be prominent within a landscape or view.
Medium	Change resulting in a moderate degree of deterioration or improvement, or constitutes a noticeable change within a landscape or view.
Low	Change resulting in a low degree of deterioration or improvement to a landscape or view, or constitutes only a minor component within a landscape or view.
Negligible	Change resulting in a barely perceptible degree of deterioration or improvement to a landscape or view.
No Change	It is also possible for a landscape or view to experience no change due to being totally compatible with the local character or not visible due to intervening structures or vegetation.

Table 10.3: Magnitude of Change

Significance Threshold

10.1.39 The magnitude of change is then considered against the sensitivity of the landscape resource as a receptor or the existing character of the panorama / view. In formulating the significance of effect, reasoned professional judgement is required which is explained within the assessment. This is carried out both in terms of the predicted effects on landscape character or on visual amenities. The significance thresholds are predicted as Substantial, Major, Moderate, Minor, Negligible and None, and can be either beneficial or adverse. Unless otherwise stated, all effects are predicted in the winter months. The extent of mitigation measures should be clearly stated, and in the case of planting proposals, the contribution to reducing adverse effects should be demonstrated at different stages (construction stage, operational stage year 0, and year 10).

Significance	Threshold Definition
Substantial	A very high magnitude of change that materially affects a landscape or view of national / international importance that has little or no ability to accommodate change.
Major	A high magnitude of change that materially affects a landscape or view that has limited ability to accommodate change. Positive effects will typically occur in a damaged landscape or view.
Moderate	A medium magnitude of change that materially affects a landscape or view that may have the ability to accommodate change. Positive effects will typically occur in a lower quality landscape or view.
Minor	A low magnitude of change that materially affects a landscape or view that has the ability to accommodate change. Positive effects will typically occur in a lower quality landscape or view.
Negligible	A negligible magnitude of change that has little effect on a landscape or view that has the ability to accommodate change.
None	It is also possible for a magnitude of change to occur that results in a neutral effect significance due to the change being compatible with local character or not visible.

Table 10.4: Significance of Effect

10.1.40 The significance of the effect is measured on the ability of a landscape or view to accommodate the change. In assessing the significance of effects, the following matrix will be used to determine the significance thresholds, through determining the sensitivity of the receptor and the magnitude of change.

	Sensitivity of Receptors					
		Very High	High	Medium	Low	Negligible
Very High		Substantial	Major	Major/ Moderate	Moderate	Moderate/ Minor
High		Major	Major/ Moderate	Moderate	Moderate/ Minor	Minor
Medium		Major/ Moderate	Moderate	Moderate/ Minor	Minor	Minor/ Negligible
Low		Moderate	Moderate/ Minor	Minor	Minor/ Negligible	Negligible

	Negligible	Moderate/ Minor	Minor	Minor/ Negligible	Negligible	Negligible
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Table 10.5: Measuring Significance of Effect

- 10.1.41 It should be noted that where there is no perceptible change in terms of the effect magnitude regardless of the sensitivity of the receptor, the significance of the effect on a landscape or view will be none.
- 10.1.42 Landscape and visual effects that are Substantial, Major or Major/Moderate are considered to be significant.
- 10.1.43 A final written statement summarising the significant effects is provided, supported by the tables and matrices. This conclusion relies on professional judgement that is reasonable, based on clear and transparent methods, suitable training and experience, and a detached and dispassionate view of the development in the final assessment.

Assessing cumulative effects

- 10.1.44 Cumulative effects are additional effects caused by a proposed development in conjunction with other similar developments. This can be cumulative landscape effects on the physical fabric or character of the landscape, or cumulative visual effects caused by two or more developments being visible from one viewpoint and/or sequence of views. The scope of cumulative effects should be agreed at the outset to establish what schemes are relevant to the assessment, and what planning stage is appropriate. It is generally considered that existing and consented developments and those for which planning applications have been submitted but not yet determined should be included.
- 10.1.45 In terms of this assessment, the LVIA also considers the potential cumulative effects arising from the recently consented residential development for 64 dwellings at land to the north of Marlborough School.

**BASELINE ASSESSMENT**

- 10.1.46 The site currently comprises several large arable fields, located on the south eastern edge of Woodstock (Refer Plan ASP1 within Appendix 10.1). Internally, the field boundaries vary from managed hedgerows to tall, established hedges with hedgerow trees. The site reflects the general topography of the wider vale landscape, with little variation in the landform. The remains of a Roman Villa lie buried centrally within the southern part of the site and is designated as a Scheduled Monument (SM). On the ground there is little evidence to identify this heritage asset, however, the archaeological chapter provides a more detailed assessment of this feature.
- 10.1.47 The northern, south eastern and south western boundaries comprise established hedgerows, with the northern and eastern boundaries including broad, mature tree belts. The tree belts create a significant degree of visual containment, forming a robust green edge to the site and separating it from the wider landscape to the north and east. The hedgerow along the south western boundary creates a degree of separation between the site and the A44 road corridor immediately to the south west, although there are opportunities to reinforce and enhance this boundary to create a more robust edge to the site and an enhanced approach to Woodstock along the A44 from the south east. The western boundary is defined by a hedgerow which separates the site from the residential properties which lie immediately to the west, associated with Churchill Gate. The hedge varies in height, with some tree planting present, although views of the existing built form are available across the site, with the urban edge forming a characteristic component of the sites immediate setting.
- 10.1.48 Shipton Road defines much of the northern boundary, running broadly east-west from Woodstock to the A4095. Where Shipton Road diverts north, just before entering

Woodstock, playing fields associated with the Marlborough Secondary School lie to the north of the site, beyond an established hedgerow. Beyond the road corridor an agricultural landscape extends to the north. This area is characterised by predominantly arable agriculture within a medium – large field network. As with the site, this landscape reflects the wider vale setting, with a very gently undulating landform.

- 10.1.49 The A4095 Upper Campsfield Road lies immediately to the south east of the site, running broadly north east – south west between the A4260 and the A44. Beyond the road corridor, which is separated from the site by an established tree belt, lies Oxford Airport. This development results in a characteristically open landscape with the hangars and other associated development located on the eastern side of the airfield. The settlement of Kidlington lies to the south east of the airport.
- 10.1.50 The A44 Oxford Road lies to the south of the site, running broadly south east – north west between Oxford and Woodstock. The road forms the main approach to Woodstock from the south east and forms an important approach to the settlement, with the edge of the Blenheim Palace estate characterising the south western side of the road corridor within the localised context of the site. Local stone walls and an avenue of trees define the southern edge of the road corridor as it approaches Woodstock. To the south west of the road corridor, a mature tree belt creates a significant degree of separation between the parkland of the Blenheim Palace estate and the landscape to the north east in which the site is set. Blenheim Palace is located approximately 1km to the west of the site and is designated as a World Heritage Site. The estate is also identified as a historic park and garden and comprises a number of listed buildings (Refer Plan ASP2 within Appendix 10.1).
- 10.1.51 The existing urban edge of Woodstock lies immediately to the north west of the site, with residential properties associated with Churchill Gate, Hedge End, Flemings Road and Plane Tree Way lying adjacent to the boundary of the site. Beyond these properties, the settlement extends to the north west, and comprises a mix of built form ranging from established detached houses and cottages, to more recent residential estates of varying architectural merit. There are a number of listed buildings within Woodstock and these are generally focussed within the more established part of the village, on the western side of the settlement, which is also designated as a Conservation Area. The site is approximately 460m to the east of the Conservation Area.

### **Landform**

- 10.1.52 The site is generally level reflecting the localised topography. To the north the landscape adopts a gently undulating character away from Woodstock. To the south, the Blenheim estate is located on gently rising land, which extends to the west. The generally level topography, together with the established vegetation structure that characterises the immediate setting of the site, creates a degree of visual containment, limiting opportunities for middle and longer distance views.

### **Access**

- 10.1.53 There are a number of public rights of way within the immediate and wider setting of the site. A footpath runs along a section of the western boundary between Hedge End and the A44, before extending across the Blenheim Palace estate to the south of the road. Several footpaths and bridleways exist to the north of the site, within the wider landscape setting. It is considered that the existing vegetation structure and the limited variation within the topography will create a degree of visual containment and separation between these routes and the site. The airport to the east of the site restricts public access to a degree although a footpath runs east from Upper Campsfield Road, to the north of the runways, towards the A4260. To the south a number of public rights of way cross the Blenheim Palace estate parkland and wider landscape setting. Whilst glimpsed views may exist from certain locations, the



established vegetation structure that characterises this landscape affords a degree of separation and visual containment.

### **Landscape Character**

#### Published Landscape Character Assessments

- 10.1.54 A landscape assessment of the local area has been carried out which seeks to identify broadly homogenous zones that can be categorised in terms of quality and character. This is necessary in order to assess the potential impact that change will have on a particular landscape.
- 10.1.55 In terms of the wider landscape character, within the Natural England National Character Assessment, the site appears to be split across the Thames Clay Vales (NCA 108) and Cotswolds (NCA 107) character areas (Refer to extracts within Appendix 10.2).
- 10.1.56 It is considered that the national study provides a useful introduction to the overall character of the wider landscape setting, providing a broad-brush overview of the landscape context in which the site is set. However, these landscape character areas are too broad to apply the characteristics at a more site specific level.
- 10.1.57 At a more local level, both West Oxfordshire and Cherwell have undertaken landscape character assessments of their respective districts. A more recent, county-wide assessment has also been undertaken and is included within the Oxfordshire Wildlife and Landscape Study (OWLS).
- 10.1.58 Within the West Oxfordshire Landscape Character Assessment (1998), the site lies within the Eastern Parks and Valleys (Refer extract within Appendix 10.3). This area is described as:
- “This is an area of rolling limestone landscape which is heavily dissected by the valleys of the Glyme, Dorn and Cherwell and distinguished by a particular concentration of formal parks, designed landscapes and estate farmland (Blenheim, Ditchley, Glympton, Kiddington, Rousham, etc). The parks have extensive areas of woodland and the landscape generally has a well-managed character typical of large estates”.*
- 10.1.59 The assessment identifies that the site lies within the sub-character area of the Semi Enclosed Limestone Wolds. The key characteristics of this landscape include:
- *“large-scale, smoothly rolling farmland occupying the limestone plateau and dipslope;*
  - *land use dominated by intensive arable cultivation with only occasional pasture;*
  - *generally large-scale fields with rectilinear boundaries formed by dry-stone walls and low hawthorn hedges with occasional trees, typical of later enclosures;*
  - *some visual containment provided by large blocks and belts of woodland creating a semi-enclosed character;*
  - *thin, well-drained calcareous soils and sparse natural vegetation cover and a somewhat impoverished ‘upland’ character; ash, hazel, field maple etc. conspicuous in hedgerows;*
  - *distinctive elevated and expansive character in higher areas, with dominant sky;*
  - *moderate intervisibility”.*
- 10.1.60 The settlement assessment of Woodstock, that accompanies this appraisal, identifies that the western part of the site is open but with a good hedgerow structure. It notes the existing hard urban edge and also the opportunities for views across this landscape towards the settlement edge. The assessment notes that any development within this area should avoid the urbanisation of the A44 and that the landscape edge

of the settlement should be strengthened. The assessment identifies that the strong hedgerow structure and presence of established blocks of vegetation are positive features and should be retained and enhanced.

- 10.1.61 The West Oxfordshire assessment does not attribute a sensitivity to this landscape character area. The assessment identifies that parts of this character area lie within Areas of High Landscape Value and identifies the presence of a number of heritage assets. The value of the wider landscape character area is therefore considered to be high. The Semi-Enclosed Limestone Wolds, in which the site is set, is not formally designated and as such the value is considered to be Medium. The assessment identifies that this landscape has a good structure and identifies that while these areas are visually sensitive, development should be sensitively designed, acknowledging that the landscape has some capacity to accommodate change. It is therefore considered that this landscape has a medium susceptibility to change. The sensitivity of this landscape is therefore considered to be Medium.
- 10.1.62 Within the Cherwell Landscape Character Assessment (1995), the site lies within the Lower Cherwell Floodplain (Refer extract within Appendix 10.4). The assessment identifies that the key characteristics of this landscape include:
- “At its southern end, the Cherwell Valley opens out and the river meanders across a broad floodplain before finally joining the River Thames in the centre of Oxford. This area is characterised by fringe landscape associated with Kidlington, a garden city development, and with the many major road corridors that converge at Peartree Hill, between Oxford and Kidlington.*
- ..the influence of the nearby Oxford urban area is substantial and much of the landscape is dominated by features associated with the urban fringe”.*
- 10.1.63 The Cherwell assessment does not attribute a sensitivity to this landscape character area. This landscape area is not formally designated and as such is considered to be of Low value. However, the generally rural character of this landscape means that it has a Medium susceptibility to change. It is therefore considered that this landscape is of Medium sensitivity.
- 10.1.64 Within the more recent OWLS assessment (2004), the site lies within the Estate Farmlands – Woodstock character area (Refer extract within Appendix 10.5). The assessment identifies that the key characteristics of this landscape include:
- “Medium to large, regularly-shaped hedged fields.*
- Small, geometric plantations and belts of trees.*
- Large country houses set in ornamental parklands.*
- Small estate villages and dispersed farmsteads.*
- 10.1.65 *This area has a prominent rolling landform. There are small, rectilinear mixed and deciduous plantations scattered throughout and they are a characteristic landscape feature of this area. They are found largely along roads, field boundaries and around farm houses. Large, geometric arable fields are dominant, but semi-improved grassland is found within the extensive grounds of Blenheim Park, at Tackley Park, and on parts of the steeper slopes throughout the area. Hedges are dominated by hawthorn and blackthorn, and are generally low and gappy. Hedgerow trees of ash, field maple, sycamore and dead elm are largely confined to hedges bordering roads and tracks”.*
- 10.1.66 As with the earlier local assessments, the OWLS appraisal does not apply a sensitivity to this landscape character type. This landscape area is not formally designated and as such is considered to be of Low value. However, the generally rural character of this landscape means that it has a Medium susceptibility to change. It is therefore considered that this landscape is of Medium sensitivity.

Aspect Landscape Character Assessment

- 10.1.67 It is considered that the published assessments provide a useful overview of the character of the landscape in which the site is set. Aspect has undertaken its own assessment of the site and its setting and identified a number of localised landscape character areas. These areas include: Woodstock Urban Fringe; Woodstock Urban Area; Blenheim Estate Parkland; Oxford Airport; and Woodstock – Enslow Farmlands. These areas are illustrated on Plan ASP3 within Appendix 10.3.
- 10.1.68 *Woodstock Urban Fringe* - The application site lies within this character area. This area forms the southern extent of the Woodstock – Enslow Farmlands and is characterised by large scale open fields which are overlooked by the existing urban edge of Woodstock. The A44 road corridor forms part of this localised character area and separates the urban fringe from the Blenheim Estate Parklands to the south west, while Upper Campsfield Road separates it from the Oxford Airport landscape to the south east. Established belts of vegetation associated with the northern and south eastern edges of this landscape assist in creating a robust and defensible transition between the urban fringe landscape and those areas beyond.
- 10.1.69 Aspect has concluded that the value of this landscape is medium / low due to the lack of any landscape designations, although it is recognised that this landscape may have some local value. In terms of susceptibility, the general urban / rural fringe character would suggest a medium / high susceptibility to change as a result of development similar to the proposals. As such, it is considered that, for the purposes of this assessment, the sensitivity of this landscape is Medium.
- 10.1.70 *Woodstock Urban Area* – This area covers the settlement of Woodstock and extends to the west of the application site. The town is characterised by a variety of building ages, types and styles. The historic core of the town is located to the west of the application site. More contemporary residential areas have developed out from the established town centre and these create a degree of separation between the urban fringe landscape and the historic heart of Woodstock. The areas on the eastern/south eastern edge of the settlement comprise a mix of residential estates ranging from lower density, detached properties to more densely settled, semi-detached and terraced houses. This mix creates a degree of variation within the immediate townscape setting.
- 10.1.71 Aspect has concluded that the value of this townscapes medium / high due to the presence of the Conservation Area within the heart of the settlement, although it is recognised that this value will decrease as a result of more recent built form of lower townscape merit. In terms of susceptibility, the general urban character would suggest a low susceptibility to change as a result of proposed residential development. As such, it is considered that, for the purposes of this assessment, the sensitivity of this landscape is Medium.
- 10.1.72 *Blenheim Estate Parkland* – This area lies to the west of the A44 road corridor and is characterised by the established parkland landscape associated with Blenheim Palace. This landscape comprises large expanses of grassland, which is broken up by established avenues of trees, along key routes and vistas, and stands of woodland. Built form within this area is limited, with the palace and associated residences and out-buildings forming the key built components. This is a high quality, designed landscape and this is reflected by its World Heritage Site status.
- 10.1.73 Aspect has concluded that the value of this landscape is very high due to its designation as a World Heritage Site. In terms of susceptibility, the historic, designed landscape would suggest a high susceptibility to change as a result of development similar to the proposals. As such, it is considered that, for the purposes of this assessment, the sensitivity of this landscape is Very High.
- 10.1.74 *Oxford Airport* – This landscape lies to the east of Upper Campsfield Road and comprises the airfield and hangars associated with the London - Oxford City Airport and also the industrial and business park immediately to the east. The airfield, by its

very nature, is open, comprising an expansive area of grass with two tarmac runways. The built form associated with the airport is largely located within the eastern part of the development and comprises a mix of medium / large scale industrial units, large hangars and contemporary office buildings.

- 10.1.75 Aspect has concluded that the value of this landscape is low due to the lack of any landscape designations, although it is recognised that this landscape may have some local value. In terms of susceptibility, the general open character of the airfield would suggest a high susceptibility to change as a result of development similar to the proposals. However, urban components do exist within the context of this landscape and as such the overall susceptibility is considered to be medium. As such, it is considered that, for the purposes of this assessment, the sensitivity of this landscape is Medium / Low.
- 10.1.76 *Woodstock – Enslow Farmlands* – This area extends north east from the Urban Fringe landscape and comprises a gently rolling agricultural landscape. Fields are generally medium to large in scale and irregular in shape, defined by well managed hedgerows. A number of main roads cross this landscape, with the road corridors defined by established hedgerows with trees or shelter belts. This area is not particularly settled with built form limited to sporadic farms.
- 10.1.77 Aspect has concluded that the value of this landscape is medium due to the lack of any landscape designations, although it is recognised that this landscape will have some local value. In terms of susceptibility, the general rural character would suggest a high susceptibility to change as a result of development similar to the proposals. As such, it is considered that, for the purposes of this assessment, the sensitivity of this landscape is High / Medium.
- 10.1.78 As an overview, it is considered that the site lies within a localised sub-character area, referred to as the Woodstock Urban Fringe. The character of this area is informed by the road corridors which lie on three sides and the existing hard urban edge which exists to the west. It is considered that this landscape character is of medium sensitivity. Other sub-character areas exist within the wider setting of the site. Established vegetation associated with the site's boundaries and immediate setting creates a degree of separation between the site and these neighbouring character areas. The application site abuts the urban area of Woodstock, however, the built form associated with the south eastern edge of the settlement, formed by contemporary housing, creates a degree of separation between the urban fringe landscape and the more historic core of the settlement to the north west.

### **Visual Environment**

- 10.1.79 A ZTV model has been prepared to illustrate the intervisibility of the proposals and the wider setting. The model has been created using digital terrain data to illustrate the visibility of the proposals in relation to the topography of the study area. To enable a more realistic representation of the receiving environment key blocks of vegetation and built form have also been incorporated into the model. These features have been identified through assessments of digital and mapping data and basic parameters applied. Whilst this information assists in creating a closer representation of the baseline conditions, elements such as hedgerows or smaller groups of trees within the wider setting are not included. These features can further reduce the theoretical visibility of the proposals but are more difficult to model accurately to ensure a representative outcome. The ZTV also does not take into account distance and the extent to which visibility diminishes as distance increases. In terms of the proposals, to ensure that the maximum parameters of the proposed development are tested, the model incorporates the maximum building heights proposed, based on the West Waddy ADP Building Scale Parameters Plan.
- 10.1.80 The model therefore represents a 'worst case scenario' with regard the visibility of the proposed development. It must be remembered that the model is a tool which enables the extent of the study area to be appraised and inform the visual analysis. The

visibility of the site is therefore more accurately addressed through surveys in the field and the visual analysis.

- 10.1.81 The plan illustrates the theoretical extent of the visibility of the proposed development, with the areas highlighted purple indicating where the theoretical visibility of the proposals. Where the map is not highlighted, these are the areas where intervening topography, built form and vegetation would contain views of the proposed development. As is demonstrated by the ZTV the proposals are theoretically visible within the wider setting to the north and south, where breaks in the boundary vegetation afford views of the site. The established vegetation structure associated with the south eastern boundary of the site and the north eastern boundary of the Blenheim estate ensure that views into the site from the south east and south west are highly contained. The vegetation associated with Blenheim also contains views of the site from Bladon and its Conservation Area. The existing built edge of Woodstock also creates a degree of containment ensuring views of the proposals are not available from the wider urban area, and the Conservation Area to the west. The ZTV identifies that there may be some longer distance views towards the site from the wider setting where the landform rises, however, as noted above the model does not take into account distance or vegetation within the wider setting and as such detailed field assessments are required to assess the perceived extent of the proposals.
- 10.1.82 A number of viewpoints have been identified in order to demonstrate the visibility of the site within the localised and wider setting. The views have been informed by the ZTV model and a thorough desk study and a number of field assessments. The views are taken from publicly accessible viewpoints and although are not exhaustive, are considered to provide a fair representation of the visual environment within which the site is set. The visual analysis seeks to identify the views that will, potentially, experience the greatest degree of change as a result of the proposals. The viewpoints are illustrated on the Viewpoint Location Plan within Appendix 10.6. The views have been agreed with the LPA Landscape Officers with a further 5 views requested being views 22-25.
- 10.1.83 The photographs, illustrating the existing visual environment are included within Appendix 10.6 and were taken in July 2014 by chartered landscape architects using a 35mm equivalent digital camera at a 50mm focal length. The weather was bright with good visibility.
- 10.1.84 As an overview, Table 10.6 provides an overview of the viewpoints included within the visual assessment. These views are assessed in detail, in relation to the potential effects arising from the proposals within this chapter.

Viewpoint No.	Viewpoint Location	Designations	Key Receptors and sensitivity
1	Shipton Road, adjacent to the northern boundary of the site, looking south	None	Drivers of Shipton Road Medium sensitivity
2	Plane Tree Way to the north west of the site, looking east	None	Local residents; drivers on Plane Tree Way High sensitivity
3	Flemings Road to the west of the site, looking east	None	Local residents; drivers on Flemings Road High Sensitivity
4	Footpath within the application site, to the south of Hedge End, looking east	None	Walkers on the footpath; local residents High sensitivity
5	Footpath within the application site, to the north of the A44, looking east	None	Walkers on the footpath High sensitivity
6	A44 to the west of the site, looking south east along the road corridor along the south western boundary of the site	None	Drivers on the A44 and walkers on the pavement on the southern side of the road High sensitivity
7	A44 to the south west of the site, looking north towards the south western corner of the site	None	Drivers on the A44 and walkers on the pavement on the southern side of the road High sensitivity
8	A44 to the south west of the site, looking south east along the south western boundary	None	Drivers on the A44 and walkers on the pavement on the southern side of the road High sensitivity
9	A44 to the south of the application site, looking north west along the south western boundary	None	Drivers on the A44 and walkers on the pavement. High sensitivity
10	Junction of Bladon Road and the A44 to the south of the application site, looking north	None	Drivers on the A44 and Bladon Road; walkers on the pavement. High sensitivity
11	Upper Campsfield Road, to the north of the A44 roundabout and east of the application site, looking south west along the south eastern boundary	None	Drivers on the Upper Campsfield Road Medium sensitivity
12	Upper Campsfield Road, at the junction with Shipton Road, looking south west along the south eastern boundary of the application	None	Drivers on the Upper Campsfield Road and local residents High sensitivity

Viewpoint No.	Viewpoint Location	Designations	Key Receptors and sensitivity
	site		
13	Footpath to the east of Shipton Road and Randolph Avenue, looking south	None	Walkers on the footpath High sensitivity
14	South eastern frontage of Blenheim Palace, looking east	World Heritage Site	Visitors to Blenheim Palace and the parkland Very High sensitivity
15	Footpath just to the north of Bladon within the Blenheim Palace estate, looking north east	World Heritage Site	Visitors to Blenheim Palace and the parkland Very High sensitivity
16	Footpath adjacent to the A44, looking north west	None	Walkers on the footpath and drivers on the A44 High sensitivity
17	Footpath on the northern edge of London – Oxford City Airport airfield, looking west	None	Walkers on the footpath, drivers on the side road and users of the airfield High sensitivity
18	Footpath between Woodstock and Shipton Slade Farm looking south	None	Walkers on the footpath, local residents High sensitivity
19	Victory Monument within the Blenheim Palace estate, looking east	World Heritage Site; Protected View	Visitors to Blenheim Palace and the parkland Very High sensitivity
20	Bridleway between Begbroke and Bladon, looking north	None	Walkers, cyclists and horseriders on the bridleway High sensitivity
21	Langford Lane, immediately to the south of the London – Oxford City Airport airfield, looking north west	None	Drivers on Langford Lane, employees and visitors at the airport Medium sensitivity
22	Shipton Road, looking south over the existing school playing fields.	None	Users of Shipton Road and playing fields. Medium sensitivity
23	Local footway and residential off Plane Tree Way looking east	None	Local residents High sensitivity
24	A44 to the south west of the application site looking north west along the south western boundary	None	Drivers on the A44 and walkers On the pavement on the southern side of the road. High sensitivity
25	A44 to the south west of the application site looking north west along the south western boundary	None	Drivers on the A44 and walkers On the pavement on the southern side of the road. High sensitivity

Viewpoint No.	Viewpoint Location	Designations	Key Receptors and sensitivity
26	A44 roundabout looking north west over the application site.	None	Drivers on the Upper Campsfield Road and walkers on the minor footway to the north and west of the road. Medium / High sensitivity

Table 10.6: Viewpoint Assessment

### Arboricultural Assessment

- 10.1.85 A detailed Arboricultural Assessment has been prepared by Aspect Arboriculture as part of the planning application. This assessment formed one of the early stages of work on the site to ensure an informed and coordinated approach to the assessment of opportunities and constraints and the design development. The Arboricultural Implications Assessment is a standalone document that accompanies the planning application. As an overview, the Application Site's existing trees were surveyed by Aspect Arboriculture during August and September 2014. The survey methodology was informed by the recommendations of BS 5837:2012 'Trees In Relation To Construction', and included all trees occurring on and within the Application Site boundary. This totalled 391 individual trees, 23 groups and 16 hedgerows.
- 10.1.86 The detailed Arboricultural Assessment has formed a key component in the design development of the proposals with the identification of the key trees and groups, together with their associated Root Protection Areas (RPAs), informing the proposed development.

### EVALUATION, IMPACTS AND MITIGATION

- 10.1.87 As part of the assessment of effects of a proposed development, it is appropriate to appraise the proposals against the existing landscape character and visual environment as identified within the baseline assessment and outlined earlier in this assessment.

#### Construction Phase Effects: Without mitigation

##### Landscape Character

- 10.1.88 The baseline assessment within this chapter identifies a number of landscape character areas from a regional to a local level in which the site is set or which lie adjacent to the application site. The anticipated effects of the construction phase of the proposals upon these character areas are set out within Table 10.7 in Appendix 9.
- 10.1.89 As an overview, it is considered that the construction without mitigation of the Proposed Development will not result in a significant effect upon the landscape character areas within which the Application Site is set or which form the wider setting of the site. It is considered that this phase of the development will have a limited effect upon the national and district character areas as a result of the extensive nature of these landscapes. It is acknowledged that some change will be experienced as a result of the construction of the proposals, but that in the wider context of the published character assessments this effect will be temporary and **Minor / Negligible Adverse**, which is not considered significant.
- 10.1.90 Within the more localised character areas, the degree of change experienced during this phase of the development will be marginally greater due to the smaller scale of the various character areas. It is acknowledged that the construction of the proposals will affect the perceived character of the landscape in which the Application Site is set,



however, the well-contained nature of the application site, reduces the sensitivity of the setting in which the proposals will be developed. The retention of key vegetation associated with the site's boundaries and internal field boundaries will ensure that the prevailing character is not significantly harmed. This phase is also temporary and as such will not result in any long lasting effects. It is considered that this phase of the proposals will result in an effect of **Moderate Adverse** significance upon the Woodstock Urban Fringe character area. The wider landscape character areas will experience some degree of change during this phase, resulting in an effect of **Minor / Negligible Neutral** significance. These effects are not considered significant and the temporary nature of this phase means that this change is considered acceptable.

- 10.1.91 In terms of the anticipated effects upon the Cotswolds AONB and Wychwood Forest Project Area, the proposals are located outside of these designations and will not give rise to any long term, direct adverse effects. The intervening distance of the proposals from the AONB will ensure that views are contained resulting in the effect of neutral significance.

#### Visual Environment

- 10.1.92 The baseline assessment, through the use of ZTV models, a detailed desk study and field assessments identified a number of key views which illustrates the site and its setting. These viewpoints are identified within Table 10.6 with the views illustrated within Appendix 10.7.
- 10.1.93 The anticipated effects of the construction phase of the proposals upon the receiving visual environment are set out within Table 10.8 in Appendix 10.10.
- 10.1.94 As an overview, it is considered that this phase of the development will give rise to significant adverse effects to those viewpoints within the immediate setting i.e. the adjoining streetscenes and the footpath to the west (Refer Viewpoints 3 – 5, 7 – 10 and 13, 24 and 26). Within these views the introduction of heavy plant, site offices and compounds and the commencement of construction will be a noticeable change to the existing site. It is considered that this phase will give rise to a high magnitude of change upon these high sensitivity receptors. It is acknowledged that most of the receptors viewing the site from the road corridors will be drivers and as such are less sensitive to change, however, the presence of pavements and footpaths within the localised setting means that pedestrians and walkers are likely to experience views from these areas and as such the assessment has considered the sensitivity of these viewpoints as high. The key receptors are considered to be residents on the eastern edge of Woodstock, walkers on the path between Hedge End and the A44, through the site, walkers and drivers moving along the A44 road corridor and walkers on the footpath network to the north of the site. As a result, it is considered that this phase of the proposals will give rise to an effect of **Major / Moderate Adverse** significance. It must be noted however, that this phase is temporary and the perceived effects are not permanent.
- 10.1.95 Within the wider setting of the site, intervening vegetation and topography create a degree of visual separation and will assist in containing some of the effects of this phase. Within certain viewpoints, some construction elements may be seen above intervening features, giving rise to an effect of **Moderate to Minor / Negligible Adverse** significance. Elsewhere the various construction elements will be glimpsed, however, it is considered that they will not be significant, giving rise to a neutral effect and as such are acceptable given the temporary nature of this phase.
- 10.1.96 In terms of the potential effects of this phase upon residential amenity, it is considered that it will be those properties directly adjacent to the site which are most affected. It is considered that the properties which lie on the south eastern edge of Woodstock, along Plane Tree Way, Flemings Road and Hedge End will experience a high magnitude of change during this phase of the proposals without appropriate mitigation. Given the high sensitivity of these receptors, it is considered that the significance of the effect will be **Major / Moderate Adverse – Moderate / Minor Neutral**

- 10.1.97 There are several properties adjacent to the site, associated with Churchill Gate, refer Viewpoint 5. These properties are afforded a degree of separation from the site by the established vegetation associated with the gardens of the properties, however, it is acknowledged that these properties will experience a degree of change during this phase of the proposals it is considered that the construction phase will give rise to an effect of **Major / Moderate Adverse** significance.
- 10.1.98 Away from the main area of Woodstock, properties are more scattered with Perdiswell Farm located off Shipton Road to the north of the site; several properties on the eastern side of Upper Campsfield Road, to the east of the northern part of the site; and Honeystone Cottage which lies adjacent to the south eastern part of the site. With regard to these properties, it is considered that without appropriate mitigation these properties will experience a high magnitude of change as a result of this phase of the development, giving rise to an effect of Moderate Adverse significance.

### ***Landscape Setting of Heritage Assets: Without Mitigation***

- 10.1.99 The anticipated effects of the construction phase of the proposals upon the landscape settings of the various heritage assets is set out within Table 10.9 in Appendix 10.11.
- 10.1.100 As an overview, with regard to the anticipated effect arising from the construction of the proposals upon the landscape setting of the Blenheim Palace World Heritage Site, it is considered that the proposals will not directly affect the designation. It is acknowledged that the A44 forms a key approach to the Palace from the east and as such the construction phase of the proposals will be perceived by visitors passing the site on their way to the World Heritage Site. It is considered that the presence of heavy plant and the various construction elements associated with this phase would give rise to a negligible adverse degree of change, however, given the international status of the heritage asset and its very high sensitivity, this gives rise to an effect of **Minor Adverse** significance.
- 10.1.101 With regard to the effect upon the landscape setting of the SM, it is considered that the proximity of the proposals to this feature would give rise to a high magnitude of change and as such the perceived effect, without mitigation would be **Moderate to Major / Moderate Adverse**.
- 10.1.102 With regard to the effect of this phase of the proposals upon the Woodstock and Bladon Conservation areas, as with the World Heritage Site, it is considered that the proposals will not directly affect the designations, but may be perceived on approaches from the east. It is considered that the heavy plant and construction elements of this phase will be perceived by visitors to these designations, but such views will be glimpsed. As such it is considered that the proposals would give rise to a negligible adverse magnitude of change. Given the high sensitivity of these designations, it is considered that the proposals would result in an effect of **Minor Adverse** significance upon the landscape setting of these Conservation Areas.

### ***Operation Phase Effects without Mitigation***

#### Landscape Character

- 10.1.103 The anticipated effects of the operation phase of the proposals upon the receiving landscape character is set out within Table 10.10 in Appendix 10.12.
- 10.1.104 As an overview, it is considered that once complete, the proposed development will not result in a significant effect upon the landscape character areas within which the Application Site is set or which form the wider setting of the site.
- 10.1.105 It is considered that the proposed development will have a limited effect upon the broader regional and district character areas as a result of the more extensive nature of these landscapes. It is acknowledged that some change will be experienced as a result of the introduction of the built form associated with the proposals, but that in the

wider context of the published character assessments the magnitude of change will be negligible and as such this effect would be **Minor/Negligible Neutral**, which is not considered significant.

- 10.1.106 Within the more localised character areas, the degree of change experienced once the development is completed will be marginally greater due to the smaller scale of the various character areas. It is acknowledged that the proposals will affect the perceived character of the landscape in which the Application Site is set, however, the well-contained nature of the application site, reduces the sensitivity of the setting in which the proposals will be developed. It is considered that once complete, without appropriate mitigation, the proposals would result in an effect of **Moderate Adverse** significance upon the Woodstock Urban Fringe character area. The wider landscape character areas would experience some degree of change during this phase, resulting in an effect of **Minor to Negligible Neutral** significance. These effects are not considered significant.
- 10.1.107 In terms of the anticipated effects upon the Cotswolds AONB and Wychwood Forest Project Area, the proposals are located outside of these designations and would not give rise to any long term, direct adverse effects.

### **Operation Phase Effects without Mitigation**

#### Visual Environment

- 10.1.108 The anticipated effects of the operation phase of the proposals upon the receiving visual environment are set out within Table 10.11 in Appendix 10.13.
- 10.1.109 As an overview, it is considered that as identified within the assessment of construction effects, the views most susceptible to change are those within, and immediately adjacent to, the site. Within the context of Viewpoints 3-5, 7-10, 24 and 26, without appropriate mitigation, the proposals would give rise to a high magnitude of change as a result of the introduction of built form into the views. Due to the high sensitivity of the receptors associated with these viewpoints, it is therefore considered that the proposals would give rise to an effect of **Major/Moderate Adverse** significance. This is considered significant.
- 10.1.110 With regard to other localised or middle distance views, the presence of intervening vegetation and built form within the wider setting of the site reduces the magnitude of the perceived change. However, it is considered that Views 1, 6, 11, 12, 13, 17 and 18 would still experience an adverse effect as a result of the proposals without appropriate mitigation.
- 10.1.111 It is considered that viewpoints from the wider setting would experience a degree of change as a result of the proposals, however, due to the presence of intervening vegetation and distance, it is considered that this change would be neutral. These views include viewpoints within the Blenheim Palace World Heritage Site. It is considered that the intervening vegetation structure associated with the parkland will contain views although some glimpses may be available during the winter and as such a negligible magnitude of change is identified. Due to the very high sensitivity of the receptors associated with this designation, this gives rise to an effect of **Moderate/Minor to Minor** significance, however, the proposals would be seen within the context of existing development associated with Woodstock and as such the change is considered to be compatible and therefore neutral.
- 10.1.112 In terms of the potential effects of this phase upon residential amenity, it is considered that it will be those properties directly adjacent to the site which are most affected. It is considered that the properties which lie on the eastern edge of Woodstock, to the east of Plane Tree Way, Flemings Road and Hedge End would experience a high magnitude of change during this phase of the proposals without appropriate mitigation. Given the high sensitivity of these receptors, it is considered that the significance of the effect will be **Major/Moderate Adverse**.

- 10.1.113 There are several properties adjacent to the site, associated with Churchill Gate. These properties are afforded a degree of separation from the site by the established vegetation associated with the gardens of the properties, however, it is acknowledged that these properties will experience a degree of change once the proposals are completed. It is considered that without appropriate mitigation the completed development would give rise to an effect of **Major/Moderate Adverse** significance.
- 10.1.114 Away from the main area of Woodstock, properties are more scattered with Perdiswell Farm located off Shipton Road to the north of the site; several properties on the eastern side of Upper Campsfield Road, to the east of the northern part of the site; and Honeystone Cottage which lies adjacent to the south eastern part of the site. With regard to these properties, it is considered that without appropriate mitigation these properties would experience a high magnitude of change as a result of the completed development, giving rise to an effect of **Moderate / Minor Adverse** significance.

### **Operation Phase Effects without Mitigation**

#### Landscape Setting of Heritage Assets

- 10.1.115 The anticipated effects of the operation phase of the proposals upon the landscape settings of the various heritage assets is set out within Table 10.12 in Appendix 10.14.
- 10.1.116 As an overview, it is considered that the completed proposals would not directly affect the World Heritage Site designation. It is acknowledged that the A44 forms a key approach to the Palace from the east and as such the proposals would be perceived by visitors passing the site on their way to the World Heritage Site. It is considered that the completed development would be perceived on approaches to the estate and without appropriate mitigation would give rise to a negligible adverse degree of change, however, given the international status of the heritage asset and its very high sensitivity, this gives rise to an effect of **Minor Neutral** significance.
- 10.1.117 With regard to the effect upon the landscape setting of the SM, it is considered that the proximity of the proposals to this feature would give rise to a high magnitude of change and as such the perceived effect, without mitigation, would be **Moderate Neutral**.
- 10.1.118 With regard to the effect of this phase of the proposals upon the Woodstock and Bladon Conservation areas, as with the World Heritage Site, it is considered that the proposals would not directly affect the designations, but may be perceived on approaches from the east. It is considered that, without the incorporation of appropriate mitigation, the completed development would be perceived by visitors to these designations, but such views will be glimpsed. As such it is considered that the proposals will give rise to a negligible adverse magnitude of change. Given the high sensitivity of these designations, it is considered that the proposals will result in an effect of **Minor Neutral** significance upon the landscape setting of these Conservation Areas.

### **Mitigation**

#### Construction Phase

- 10.1.119 From a landscape character and visual perspective, there are very few mitigation measures that can be employed to reduce the overall effect of this phase of the development. However, considerate construction techniques will minimise the perceived effect of this phase upon the immediate setting of the Application Site. The key mitigation feature for this phase of the proposed development is the retention and protection of key vegetation associated with the site's boundaries and the internal field boundaries. The retention of this planting will assist in containing views of the construction elements during the various phases and ensure that the key landscape components which characterise the site and its setting are not compromised. The

proposals will seek to retain the established tree belts associated with the northern and eastern boundaries, as well as the hedgerows and individual trees associated with the southern and western boundaries and the internal field boundaries.

- 10.1.120 The phased approach to development will also assist the integration of the development and assist in reducing the perceived presence of the construction elements within the wider landscape and visual environment. Whilst it is acknowledged that the proposed construction elements will remain evident, the extent to which they affect landscape and visual receptors can be more carefully managed to ensure that they are reduced and localised.

#### Operation Phase

- 10.1.121 The Proposed Development has incorporated a number of elements which seek to reduce the perceived effects of the proposals and mitigate for any significant effects. These key mitigation measures are outlined below.
- 10.1.122 The detailed landscape, visual and arboricultural appraisals, as part of the initial stages of this development, are considered to form key mitigation measures, identifying key sensitivities and looking to design them out at an early stage. These studies also informed the overall layout to ensure an appropriate and sympathetic scheme was achieved.
- 10.1.123 *Detailed arboricultural assessment* – The detailed arboricultural assessment identified the key individual and groups of trees associated with the application site. This enabled the layout to be designed around these features ensuring their retention as part of the Proposed Development. The detailed Arboricultural Implications Assessment sets out the anticipated effects of the proposals upon the existing treescape associated with the site. The arboriculturists have worked closely with the wider design team to ensure that the proposed access off Upper Campsfield Road is appropriately located and that key Category A and B trees have been avoided. This liaison included detailed review of trees with bat potential to ensure that the proposed access minimised potential effects upon these biodiversity assets. As such the proposed roundabout access will only necessitate the removal of up to 33no. trees within a belt of over 223 specimens. This removal does include the loss of 6no. Category B trees but will not compromise the overall group value of the tree belt. Elsewhere within the site, the tree and hedgerow loss has been minimised with the proposals utilising existing field accesses and key trees being identified in advance to ensure that the proposals can be designed around them.
- 10.1.124 *Detailed visual appraisal* – The visual assessment identified the theoretical visual envelope of the Proposed Development allowing key views to be considered at an early stage. The findings of the visual assessment then informed the design development of the proposals to ensure that the proposed built form could be introduced into the Application Site without adversely affecting the localised and wider setting. Of particular note was the location and height of development within the Application Site to ensure that the proposed built form created an appropriate transition on approaches to Woodstock along the A44 from the south east and that the landscape setting of the Blenheim Palace World Heritage Site, to the west, and Woodstock, to the north west, were sensitively treated. Taller built form is included as part of the proposals however, this is located within the eastern part of the development within the context of the existing mature tree belt to ensure that these elements are afforded the maximum degree of containment. Furthermore it will ensure that the taller buildings are set well back from the A44 road corridor to ensure that they do not overlook or appear prominent within the context of the streetscene.
- 10.1.125 *Careful design of the layout* – As noted above, the layout of the Proposed Development was informed by the visual assessments as well as extensive input from other member of the consultant team to ensure a robust, holistic approach, but a significant degree of consideration has been given to the overall internal layout, with numerous iterations being developed by the project architects for comment by the

consultant team. This careful consideration of the layout, which has also been informed by discussions with the Council, has led to a layout that can be integrated in this location without adversely affecting the landscape character and visual environment of the Application Site. As part of the considered and detailed approach to the design development a number of key features have been incorporated into the layout to ensure that the receiving landscape character and visual environment are not compromised and that the landscape setting of the World Heritage Site and SM are addressed appropriately and sensitively.

- 10.1.126 Along the southern boundary a broad landscaped linear park is proposed. This will create an amenity resource for residents and also ensure that the proposed built form is set well back from the A44 road corridor. This landscape buffer will enable the establishment of an appropriate landscaped edge to the urban area and enhance the approaches to Woodstock from the south east.
- 10.1.127 In addition to the proposed layout, the proposed built form will adopt a simple palette of material, reflective of the local vernacular and including local stone. This will assist the integration of the proposed built environment, with the proposals complementing the high quality built components associated with Woodstock and the Blenheim estate. The proposals seek to create a high quality built environment that is compatible with and complements the high quality urban environment of Woodstock.
- 10.1.128 *Comprehensive scheme of proposed landscaping* – As part of the proposals, a scheme of soft landscape treatment has been prepared to ensure that the Proposed Development is set within a robust, high quality landscape setting and that an appropriate transition between the proposals and the wider landscape context is created. This includes extensive biodiversity enhancements. The landscape proposals are illustrated on the Landscape Masterplan (ASP4) within Appendix 10.1.
- 10.1.129 The proposed landscape scheme seeks to provide a significant number of trees across the development site which will reinforce the soft landscape presence within the development. This will create a strong landscape network within which the Proposed Development will be set, that will complement and reinforce the existing vegetation associated with the site's boundaries and also enhance the localised townscape setting. The introduction of strong, tree lined avenues reflects the established parkland setting of Blenheim to the south. The proposed trees will incorporate a range of sizes to ensure a varied, high quality and successful scheme is achieved. Native species will be used where appropriate with some ornamental species used as feature elements within the scheme. The species have been coordinated with the project ecologists to maximise biodiversity. The presence of the airport has also informed the species list with fruiting plants which attract large numbers of birds avoided. The native species will be focused around the perimeters of the site and within the natural and semi-natural greenspaces. Within the built environment the use of ornamental species will create a high quality landscaped setting which complements the proposed built form to ensure a pleasant environment in which to live is achieved.
- 10.1.130 New pedestrian links will be created within the Application Site that maximise permeability and access to the open space resources. Links to the wider public right of way network will also be created, opening up the Application Site and ensuring the site becomes a public recreation resource.
- 10.1.131 Structure planting will be incorporated around the edges of the Application Site, where appropriate, to introduce a green edge to the development and enhance the existing landscape components that characterise the context of the application site. Substantial landscape buffers including appropriate structure planting to the A44 frontage will have several benefits, as it will create a degree of sound attenuation for residents within the site, will assist the visual integration of the proposals into the immediate setting and enhance the approaches to Woodstock, by introducing a high quality landscaped frontage to the streetscene, reflective of the established landscape treatment and tree avenue which characterises the southern side of the road. Where necessary,

defensive planting will be incorporated to ensure that private boundaries are not compromised.

- 10.1.132 The landscape proposals also seek to create an appropriate setting to the SM within the site and ensure that an appropriate transition between this heritage asset and the proposed built environment is achieved. The creation of tree lined streets, which front onto the SM, create a degree of breathing space between the open space and the built form, with the treescape softening the built elevations. The use of tree lined avenues is also considered appropriate in the context of the Blenheim estate to the south.
- 10.1.133 The soft landscape treatment has been informed through detailed liaison with the project ecologists to ensure that an appropriate scheme is achieved in terms of tree cover and species biodiversity. It is considered that the proposals have been informed by the identified opportunities and constraints associated with the site and will ensure that robust green corridors are created and maintained, that public access is maximised and that the landscape resource is conserved and, where possible, enhanced.
- 10.1.134 It is considered that the proposals and the associated mitigation measures present a number of enhancements and benefits in terms of the anticipated effects upon the receiving landscape character and environment and within the context of the landscape setting of the various heritage assets that existing in and around the site. It is considered that the benefits associated with the proposals include:
- Creation of accessible public open space, comprising a variety of typologies and experiences;
  - Significant enhancements to the A44 approach to Woodstock from the south east, with new tree avenues set against a wooded backdrop. The proposed landscaping will complement the parkland to the south west and also create a robust and defensible edge to the urban area, ensuing an appropriate set back of development from the road corridor;
  - Creation of a high quality green space around the SM allowing public appreciation of the heritage asset and ensuring the proposed built environment is appropriately offset from the perceived setting;
  - Extensive new tree planting across the site. This planting will include appropriate native species which will reflect the local character and represent a biodiversity enhancement.

### ***Residual Effects***

- 10.1.135 The construction phase is temporary and will not result in any significant, long term harm to these views.
- 10.1.136 In terms of the residual effects upon the residential amenities of those properties identified, it is considered that the integration of a development set back from the south eastern and south western boundaries is appropriate and will assist the integration of the proposals within the context of the properties associated with the existing built edge of Woodstock and Honeystone Cottage. Whilst the construction elements will still be perceived, the buffer zone will ensure that this phase is not overbearing or dominant on the residential amenities of these properties.
- 10.1.137 With regard to the properties to the east of Upper Campsfield Road and Perdiswell Farm, the retention of the existing tree belt on the north and south eastern boundaries will create a notable degree of separation and visual containment. It is therefore considered that the magnitude of change will be reduced to low / negligible and as such the significance of the effect will be **Moderate/Minor to Minor Adverse**. This is considered an enhancement and the anticipated effect is not considered significant.

10.1.138 In terms of the residual effects upon the landscape setting of the various heritage assets, it is considered that the incorporation of a development offset from the south western boundary and the retention of the existing vegetation structure along the sites' boundaries will reduce the perception of this phase of the development (refer to Table 10.9 in Appendix 10.11). In terms of the approaches to the World Heritage Site and Woodstock and Bladon Conservation Areas, the anticipated effect is reduced from Adverse to **Neutral**. It is considered that the adoption of the mitigation measures will ensure that the degree of change perceived is acceptable within the context of the landscape settings of these features. In terms of the SM the incorporation of appropriate development set backs from the edges of the monument will reduce the perceived magnitude to medium, giving rise to an effect of **Moderate Adverse** significance. This is considered an improvement and the mitigation measures will ensure that the effect is not significant.

#### Operational Phase

##### *Landscape Character*

- 10.1.139 With regard to the residual effect upon the wider landscape character areas, as noted earlier within this assessment, it is considered that the proposed development will have a limited effect upon the broader regional and district character areas as a result of the more extensive nature of these landscapes. It is acknowledged that some change will be experienced as a result of the introduction of the built form associated with the proposals into the landscape, however, the incorporation of a comprehensive scheme of mitigation will further reduce the perceived change upon the receiving character. The residual effects are set out within Table 10.10 (see Appendix 10.12). The proposals have been developed so that the existing boundary treatment can be retained and reinforced. The introduction of broad landscape buffers to the site's boundaries, particularly to the south west, will enhance both the approaches to Woodstock and the perceived urban edge, creating a softened green edge to the settlement. This landscaped edge will also create a defensible edge to the eastern extents of Woodstock and ensure that an appropriate transition between urban and rural landscapes is achieved. Therefore, while it is acknowledged that the various wider landscape character areas will still experience a degree of change as a result of the proposals, the perceived effect will be **Neutral** rather than adverse as it is considered that the proposals can be integrated without harm to the characteristics of these landscapes.
- 10.1.140 In terms of the more localised landscape character areas, it is considered that the proposed mitigation measures will assist the integration of the proposals. The degree of change experienced once the development is completed will be marginally greater due to the smaller scale of the various character areas. As noted earlier in this assessment, it is acknowledged that the proposals will affect the perceived character of the landscape in which the Application Site is set, however, the well-contained nature of the application site, reduces the sensitivity of the setting in which the proposals will be developed. The perceived change is further reduced through the introduction of the comprehensive scheme of mitigation associated with the proposals.
- 10.1.141 With regard to the perceived effect upon the Urban Fringe, Urban and Woodstock – Enslow Farmlands character areas, it is considered that the perceived magnitude of change will be reduced as a result of the proposed mitigation measures. The incorporation of broad landscaped buffers to the south western, western and northern boundaries of the site, will extend the presence of soft landscaping within the context of the site, softening the proposed built edge, and create an appropriate set back from the adjoining road corridors and existing urban edge. The establishment of a coordinated network of green spaces also assists the integration of the proposals, breaking up the proposed built environment and reducing the perceived presence within the landscape.



- 10.1.142 The comprehensive scheme of landscaping complements the open space network ensuring that the positive landscape features that are retained as part of the proposals are reinforced. In particular the establishment of a tree avenue along the south western boundary, adjacent to the A44 will seek to mirror the edge of the Blenheim estate parkland on the opposite side of the road, with a distinct line of trees following the road, set against a backdrop of native woodland planting. It is considered that this landscaped edge to the proposals will enhance the approaches to Woodstock from the south east, containing views of the existing hard built edge and softening the proposed built environment. Furthermore, the use of local stone and a simple palette of materials within parts of the built environment will complement the existing positive built components which characterise the approaches to, and setting of, Woodstock. It is therefore considered that the residual effect of the proposals upon the Urban Fringe character area, which includes the A44 road corridor, will be reduced to **Moderate / Minor Neutral** with the maturing woodland becoming a **Positive** feature within the character area. In terms of the residual effects of the proposals upon the Urban Area and Woodstock – Enslow Farmlands, the incorporation of the robust, landscaped boundaries will reduce the significance of the effect to **Minor/Negligible Neutral** and also become **Beneficial** as the woodland develops. These effects are considered acceptable.
- 10.1.143 The proposed mitigation measures will also reduce the anticipated effects of the proposals upon the Blenheim Parkland and Oxford Airport landscape character areas, however, in the cases of these landscapes the magnitude of change will be limited to **Minor** or **Negligible Neutral**. It is considered that the sensitive treatment of the boundaries and retention of key vegetation to the site's boundaries will ensure that an appropriate transition is created between the application site and these neighbouring landscapes.
- 10.1.144 In terms of the anticipated effects upon the Cotswolds AONB and Wychwood Forest Project Area, the proposals are located outside of these designations and will not give rise to any long term, direct adverse effects. The inclusion of the broad landscape buffer along the south western boundary assists in reinforcing the degree of separation between the proposals and the Wychwood Forest Project Area which extends across the Blenheim estate to the west.

#### *Visual Environment*

- 10.1.145 As identified within this assessment, views within the immediate setting of the proposed development will experience the greatest degree of change as a result of the introduction of the built form. As noted earlier within this section, without appropriate mitigation Viewpoints 3-5, 7-10, 13, 24 and 26 will experience a Major / Moderate Adverse effect as a result of the introduction of built form into the site. A coordinated and comprehensive scheme of mitigation has therefore been developed which has shaped the design development of the layout and seeks to assist the integration of the proposals. The residual effects are set out within Table 10.11.
- 10.1.146 Viewpoints 3 – 5 are located on the eastern edge of Woodstock, looking into and across the application site. As noted earlier in the assessment the proposals will be evident within the context of these views, introducing built form into the fields. As part of the mitigation measures, the proposals will be set back from the existing urban edge, incorporating a landscaped buffer between the existing garden boundaries and footpath and the proposed built form. The proposed dwellings will be offset from the boundary to ensure that the amenity of existing residents and users of the footpath is not compromised. The offset will ensure that the proposals do not dominate these viewpoints and a degree of breathing space is created between the existing and proposed elements. The introduction of soft landscaping into this buffer zone will further enhance the integration of the proposals, softening the built edge and creating a pleasant pedestrian route. It is acknowledged that the proposals will still result in an adverse effect upon these views, however, the incorporation of the mitigation measures will reduce the perceived magnitude and as such the significance of the

effect upon these views will be reduced to **Moderate Adverse to Moderate / Minor Neutral**. As noted within the methodology this is not considered significant.

- 10.1.147 Viewpoints 7 – 10 and 24 and 25 are located to the south west of the site and illustrate the A44 road corridor within the context of the site. The proposed mitigation measures seek to enhance the transition between the road corridor and the proposals, introducing a broad landscaped buffer along the south western boundary. The establishment of a tree avenue along the south western boundary, adjacent to the A44 will seek to mirror the edge of the Blenheim estate parkland on the opposite side of the road, with a distinct line of trees following the road, set against a backdrop of native woodland planting. It is considered that this landscaped edge to the proposals will enhance the approaches to Woodstock from the south east, containing views of the existing hard built edge and softening the proposed built environment. Furthermore, the use of local stone and a simple palette of materials within parts of the built environment will complement the existing positive built components which characterise the approaches to, and setting of, Woodstock. It is therefore considered that the residual effect of the proposals upon views from the A44 will be reduced to **Moderate Neutral** where glimpsed views of the proposed built form are available, to **Moderate / Minor Neutral / Beneficial** where the proposed landscape treatment of the south western boundary assists in softening views of the proposed built form. The positive components of the set back and maturing woodland will become positive elements as it develops.
- 10.1.148 Within those views from the localised and wider setting which are afforded a degree of separation from the site as a result of intervening built form and vegetation structure, however, it is considered that these views (1, 2, 11, 12, 17 and 18) would still experience an adverse effect as a result of the proposals without appropriate mitigation. The proposals do however seek to address the constraints associated with these views and the incorporation of robust landscape buffers to the northern and north western boundaries will assist in softening views of the proposed development. Furthermore the location of the football facilities and extensive network of green spaces assists in breaking up the proposed development ensuring that it is not perceived as a continuous, prominent built edge. The proposals seeks to locate the taller built elements associated with the employment uses together with the Link & Ride scheme within the eastern part of the site. In this location the existing retained tree belt associated with the south eastern and northern boundaries creates an established landscape context from Day One and assists in visually containing these elements. It is acknowledged that these views will still experience a degree of change as a result of the proposals, however, the effect in most cases will be reduced to **Moderate / Minor to Minor Negligible Neutral**.

#### *Wireframe Visualisations*

- 10.1.149 To further assist in defining the effects, 8 wire frames have been requested by officers from the LPAs (see Appendix 10.8). The wireframes have been created using Ordnance Survey map and a 3-D model is then created. The view is then placed within the model at the height, position and orientation of the view. The image is then superimposed into the photograph using the existing features as anchor points to position the proposals within the scene. The images illustrate the proposals at Years 0, 15 and 20 as requested by CDC and WODC.
- 10.1.150 From the north and north west views 13, 22 and 23 illustrate how the built form has been designed to be successfully accommodated with open space and retained vegetation visually containing further views of development.
- 10.1.151 Similarly, views taken from the A44, 8, 10, 24, 25 and 26, highlight how development will be located beyond the existing vegetation but will also be set back beyond the extensive proposed buffer woodland. These wireframes reinforce the effect significance provided with the Tables.

*Long Distance Views*

- 10.1.152 In terms of the identified longer distance views, it is considered that these viewpoints would experience a degree of change as a result of the proposals, however, due to the presence of intervening vegetation and distance, it is considered that this change would be neutral. The proposed landscape treatment to the sites boundaries will reinforce the degree of separation ensuring that the perceive magnitude of change remains negligible.
- 10.1.153 With regard to residential amenity, it is considered that it will be those properties directly adjacent to the site which are most affected. It is considered that the properties which lie on the eastern/south eastern edge of Woodstock, to the east of Plane Tree Way, Flemings Road and Hedge End would experience a high magnitude of change once the proposals are complete without appropriate mitigation. As part of the mitigation measures, the proposals will be set back from the existing urban edge, incorporating a landscaped buffer between the existing garden boundaries and the proposed built form. The proposed dwellings will be offset from the boundary to ensure that the amenity of existing residents is not compromised. The offset will ensure that the proposals do not dominate the settings of these properties and a degree of breathing space is created between the existing and proposed elements. The introduction of soft landscaping into this buffer zone will further enhance the integration of the proposals, softening the built edge. It is acknowledged that the proposals will still result in an adverse effect upon these views, however, the incorporation of the mitigation measures will reduce the perceived magnitude and as such the significance of the effect upon the amenities of these properties will be reduced to **Moderate Adverse to Minor Neutral**. As noted within the methodology this is not considered significant.
- 10.1.154 There are several properties adjacent to the site, near to Viewpoint 5 associated with Churchill Gate. These properties are afforded a degree of separation from the site by the established vegetation associated with the gardens of the properties. As noted above, a landscaped buffer will be incorporated along the western edge of the development which will set back the proposals from the boundaries with these properties. It is therefore considered that the magnitude of change upon these properties will be reduced and the significance of the effect will be **Moderate / Minor Neutral**.
- 10.1.155 Away from the main area of Woodstock, adjacent to viewpoint 12, are properties which are more scattered with Perdiswell Farm located off Shipton Road to the north east of the site; several properties on the eastern side of Upper Campsfield Road, to the east of the northern part of the site; and Honeystone Cottage which lies adjacent to the south eastern part of the site. With regard to the properties to the north and north east of the site, associated with Perdiswell Farm and the eastern edge of Upper Campsfield Road, it is considered that the retention and reinforcement of the existing tree belt which characterises the south eastern and northern boundaries will ensure that views of the proposals are contained. As such it is considered that the significance of the effect upon these properties will be **Negligible Neutral**.
- 10.1.156 With regard to Honeystone Cottage, this bungalow is located adjacent to the south eastern edge of the site, just to the northern of the A44 / A4095 roundabout. At present the boundary between the property and the development site is defined by a hedgerow. As part of the mitigation measures, a broad landscape buffer will wrap round the southern corner of the proposed development creating a significant offset between the existing and proposed properties. Furthermore this area will be extensively landscaped so as to create a robust green edge to the proposed development. This planting will assist in containing views of the proposals from this property, extending the existing tree belt to the south west around the edges of the site. It is therefore considered that with the incorporation of the mitigation measures the significance of the effect upon this property will be reduced to **Minor Neutral**.

*Landscape Setting of Heritage Assets*

- 10.1.157 As noted earlier in this section, it is considered that the completed proposals would not directly affect the World Heritage Site designation. The residual effects are set out within Table 10.12. It is acknowledged that the A44 forms a key approach to the Palace from the south east and as such the proposals have adopted a broad, landscaped buffer along the south western edge of the site which will complement the existing parkland to the west and create a degree of visual containment for the proposed built form within the site. It is considered that the proposals will continue to give rise to a negligible magnitude of change, however, the proposed landscaped buffer will enhance the approaches to Woodstock and as such the change is improved from adverse to neutral as the change is considered compatible. It is therefore considered that the proposals will have a **Minor Neutral** effect upon the setting of the World Heritage Site becoming **Beneficial** as the woodland matures.
- 10.1.158 With regard to the effect upon the landscape setting of the SM, it is considered that the generous open space framework in which the monument will be set significantly reduces the perceived effect of the proposed built environment. The establishment of a comprehensive scheme of landscaping further integrates the built form, softening the built elevations and creating an appropriate transition between the heritage asset and the proposals. It is therefore considered that the magnitude of change will be reduced to medium and whilst the proposals will represent a change to the landscape setting of the SM, it is considered that the landscaped green space, which allows a greater public appreciation of the heritage asset, is compatible and will give rise to a neutral effect. The significance of the effect arising from the proposals, incorporating the various mitigation measures, is considered to be **Moderate Neutral**.
- 10.1.159 With regard to the effect of this phase of the proposals upon the Woodstock and Bladon Conservation areas, as with the World Heritage Site, it is considered that the proposals would not directly affect the designations, but may be perceived on approaches from the east. The proposals adopt a broad, landscaped buffer along the south western edge of the site which will complement the existing parkland to the west and create a degree of visual containment for the proposed built form within the site. It is considered that the proposals will continue to give rise to a negligible magnitude of change, however, the proposed landscaped buffer will enhance the approaches to Woodstock and as such the change is improved from adverse to neutral as the change is considered compatible. It is therefore considered that the proposals will have a **Minor Neutral** effect upon the setting of the Woodstock and Bladon Conservation Areas.

*Cumulative Effects*

- 10.1.160 An assessment of cumulative effects has also been prepared to assess the anticipated effects of the proposals upon the landscape character and visual environment when considered alongside similar developments which are consented or in planning within the localised setting. This is in accordance with GLVIA3.
- 10.1.161 As identified within the Scoping Report, the only other scheme considered that the only other development of note which should be assessed alongside the proposed development is the recently approved Pye Homes Ltd scheme on land to the north of Marlborough School (Planning application ref: 13/0982/P/FP). This development comprises 64 dwellings and is separated from the application site by the built form associated with Marlborough School and the recently constructed residential development at Randolph Avenue.

*Landscape Character*

- 10.1.162 In terms of the cumulative effect of the proposals upon the receiving landscape character, it is considered that the two developments are afforded an appropriate degree of separation in terms of distance and intervening built form. The approved

scheme to the north of Marlborough School forms a natural extension to the development at Randolph Avenue and will not be perceived within the context of the application site. The approved development forms an infill between Marlborough School and Randolph Avenue to the south and Banbury Road to the north and does not extend the perceived urban area. The two developments will not coalesce and as such can be integrated alongside one another without detriment to the Woodstock urban fringe landscape character. It is therefore considered that the development of the application site will not give rise to any significant cumulative effects in terms of landscape character.

#### *Visual Environment*

- 10.1.163 In terms of the cumulative effect of the proposals upon the visual environment, under GLVIA3 there are 2 generic types of cumulative effect: **Combined** (where the observer is able to see two or more developments from one viewpoint) and **Sequential** (when the observer has to move to another viewpoint to see the same or a different development e.g. moving along a road or footpath).
- 10.1.164 In terms of combined effects, it is considered that the two developments will not be visible either in combination (where the viewer will see both developments in the same field of view) or in succession (where the viewer needs to turn their head to see the developments). Whilst the ZTV would indicate that there may be some longer distance views from the north which take in both developments, it is considered that intervening vegetation structure and built form will contain views of one or both of the sites to ensure that they are not perceived together.
- 10.1.165 In terms of sequential effects, it is considered that the two developments are unlikely to be perceived sequentially by drivers as a result of the intervening vegetation cover and built form. The two developments may be perceived by walkers, cyclists and horse riders on the bridleway between Banbury Road and Shipton Road, where these receptors pass the two developments. It is considered that in the scenario the time between the viewpoints from which each development is perceived will ensure that such views are infrequent. Therefore while the two developments may be perceived by the same receptor, the distance between the two will ensure that the proposals do not give rise to any significant cumulative effects upon the receiving visual environment.

#### ***Do Nothing Scenario***

- 10.1.166 Within the Scoping Report, it is noted that the alternative use for the site would be to 'Do Nothing'. In terms of the landscape character and visual implications of this scenario, by not developing this site built form would not be introduced into the immediate setting of Woodstock and the existing agricultural field boundaries would remain. It is acknowledged that this option would be favoured by those residents immediately adjacent to the site whose views would remain the same, however, the approaches to Woodstock would equally remain unenhanced. The proposed development will facilitate a comprehensive scheme of landscaping, including avenues of trees set against a wooded backdrop, along the south western boundary of the site which will complement the established vegetation cover associated with Blenheim and create an enhanced landscaped approach to the town.
- 10.1.167 Furthermore, it is considered that there are no alternative sites present around Woodstock that could accommodate the extent of development proposed without significant harm to the wider landscape and visual setting of the site. The existing vegetation structure associated with the site and its setting creates a considerable degree of visual containment, ensuing that views of the proposals will be highly localised.
- 10.1.168 It is therefore considered that whilst there would be some localised benefits to residents immediately adjacent to the site, not developing the site puts pressure on the rest of the countryside setting of Woodstock to accommodate future housing and

would mean that an enhanced landscaped approach to the town, along the A44, is not established. There are clearly disbenefits to not developing this site from a landscape and visual perspective.

- 10.1.169 As noted within this assessment it is considered that the landscape character and visual environment which forms the setting of the site has the capacity and ability to integrate the proposals. Whilst it is acknowledged that there will be some adverse effects arising from the development of the site, the harm is not considered so significant as to demonstrably outweigh the benefits of the proposals.

## CONCLUSIONS

- 10.1.170 Aspect Landscape Planning Ltd is instructed by Pye Homes Ltd and The Vanbrugh Unit Trust to assess the landscape and visual issues arising from the proposed mixed-use development at land east of Woodstock, Oxfordshire.
- 10.1.171 Aspect Landscape Planning Ltd has undertaken detailed desk studies and assessments in the field to identify and appraise the existing landscape character and key views within the localised and wider setting of the site. This has included a detailed review of landscape related planning policy.
- 10.1.172 The site currently comprises several large flat arable fields, located on the eastern edge of Woodstock. Internally, the field boundaries vary from managed hedgerows to tall, established hedges with hedgerow trees. The site reflects the general topography of the wider vale landscape, with little variation in the landform. The buried remains of a Roman Villa lie centrally within the southern part of the site and is designated as a Scheduled Monument (SM), although its location is not readable to the eye.
- 10.1.173 The site itself is not subject to any landscape related designations, however, some of the landscape to the west of the A44, associated with Blenheim Palace is designated as a World Heritage Site. There are also two Conservation Areas within the wider setting associated with Woodstock and Bladon. The World Heritage Site Management Plan also identifies an important view towards the Victory Monument, within the Blenheim Palace parkland, from Woodstock.
- 10.1.174 The land to the east of the A4095 is designated within the Cherwell Local Plan as Green Belt. The Cotswolds AONB lies to the west of the Blenheim Palace estate, and approximately 2km to the west of the site. The Wychwood Forest Area extends beyond the AONB and encompasses the Blenheim Palace estate, but does not extend beyond the A44.
- 10.1.175 In terms of the landscape character, it is considered that the site lies within a localised sub-character area, referred to as the Woodstock Urban Fringe. The character of this area is informed by the road corridors which lie on three sides and the existing hard urban edge which exists to the north west. Other sub-character areas exist within the wider setting of the site. Established vegetation associated with the site's boundaries and immediate setting creates a degree of separation between the site and these neighbouring character areas. The application site abuts the urban area of Woodstock, however, the built form associated with the eastern edge of the settlement, formed by contemporary housing, creates separation between the urban fringe landscape and the more historic core of the settlement. A detailed landscape character assessment is included within this chapter.
- 10.1.176 In terms of views, the flat topography and extensive established vegetation cover which characterises the localised landscape setting, creates a high degree of visual containment, ensuring that views into the site are highly localised.
- 10.1.177 All development, in its very nature, has an effect upon landscape character. The 2 most important landscape considerations in this proposal are the proximity to the World Heritage Site (WHS) and the approach to the historic centre of Woodstock.
- 10.1.178 The scheme proposed will focus on enhancing the entrance into Woodstock by reinforcing the planting to the north east of the A44 to mirror and strengthen that to the

south west. The planting will be to a depth through which the development will be barely visible, with only glimpses becoming apparent as you move north west and begin to merge with the existing settlement boundary. This will provide an enhanced rural setting and approach to the historic town centre.

- 10.1.179 It should be noted that the WHS is largely surrounded by a 4m high stone wall, views from within the park out along the A44 are therefore non-existent at ground level.
- 10.1.180 Within the site itself, the proposals retain the key areas of vegetation cover associated with the boundaries and internal field boundaries, ensuring that the landscape structure of the site is maintained. These landscape features will then be reinforced through the creation of an extensive network of green spaces and a comprehensive scheme of landscaping which will complement the receiving landscape character and enhance the setting and approaches to Woodstock from the south east along the A44 and Shipton Road. It is therefore considered that the proposals can be integrated without significant harm to the localised and wider landscape character in which the site is set.
- 10.1.181 In respect of the visual environment, the assessment identifies that it will be views immediately adjacent to the site, to the north, south west and west that experience the greatest degree of change. The proposals incorporate an extensive network of green spaces and a comprehensive scheme of landscaping which will create an appropriate transition between these viewpoints and the proposed built form. The proposed landscape treatment will soften the perceived urban edge. It is acknowledged that the proposals represent a change to the existing conditions, however, the comprehensive scheme of mitigation proposed will assist the integration of the proposed development and ensure that the proposals will not give rise to any significant or demonstrable harm in terms of the localised visual environment. In the longer term, the positive attributes of the proposed woodland will complement the local setting and give rise to visual benefits when approaching Woodstock along the A44.
- 10.1.182 In terms of longer distance views, such as those from the Blenheim Palace World Heritage Site, intervening vegetation, the 4m high park wall and distance will ensure that views of the proposals are contained and that these views are not adversely affected.
- 10.1.183 In terms of the effect of the proposals upon residential amenity, the assessment identifies that it will be those properties directly adjacent to the site which are most affected. It is considered that the properties which lie on the south eastern edge of Woodstock, to the east/south east of Plane Tree Way, Flemings Road and Hedge End, together with Honeystone Cottage and Cattery to the south east of the site, would experience a significant change once the proposals are complete, however, the introduction of a landscaped buffer between the existing and proposed properties will reduce the perception of the proposals and ensure that the development does not cause significant harm to the amenities of the existing properties. Properties to the north and north east of the site will not be significantly affected by the proposals due to the retention and reinforcement of the existing tree belt associated with the north eastern and south eastern boundaries.
- 10.1.184 With regard to the effect upon the landscape setting of the SM, it is considered that the generous open space framework in which the monument will be set significantly reduces the perceived effect of the proposed built environment, indeed it could be argued that the proposals set the SM in identifiable space, making a previously unidentifiable (to the layman) feature recognisable. The establishment of a comprehensive scheme of landscaping further integrates the built form, softening the built elevations and creating an appropriate transition between the heritage asset and the proposals. It is therefore considered that the proposals can be integrated without significant harm to the landscape setting of the SM.
- 10.1.185 It is considered that the proposals represent a number of benefits and enhancements in terms of landscape character, the visual environment and people's enjoyment of the site and its setting.

- 10.1.186 In summary, it is considered that the benefits associated with the proposals include:
- Creation of accessible public open space, comprising a variety of typologies and experiences;
  - Enhancements to the A44 approach to Woodstock from the south east, with new tree avenues set against a wooded backdrop. The proposed landscaping will complement the parkland to the south west and also create a robust and defensible edge to the urban area, ensuring an appropriate set back of development from the road corridor;
  - Creation of a high quality green space around the SM allowing public appreciation of the heritage asset and ensuring the proposed built environment is appropriately offset from the perceived setting;
  - Extensive new tree planting across the site. This planting will include appropriate native species which will reflect the local character and represent a biodiversity enhancement.
- 10.1.187 National and local policy identifies that there is a general presumption in favour of sustainable development unless any significant impacts would significantly and demonstrably outweigh the benefits. It is considered that the application site and receiving environment have the capacity to accommodate the proposals. It is considered that the proposed development can be integrated in this location and is supportable from a landscape and visual perspective.

## REFERENCES

1. NPPF
2. Adopted West Oxfordshire Local Plan
3. Adopted Cherwell District Local Plan
4. GLVIA3
5. Topic Paper 6: Techniques for Judging Capacity and Sensitivity
6. Natural England Joint Character Area Assessments
7. West Oxfordshire District Landscape Character Assessment
8. Cherwell District Landscape Character Assessment
9. Oxfordshire Wildlife and Landscape Study (OWLS)

## APPENDICES

- Appendix 10.1 Aspect Plans:
  - ASP1 Location Plan
  - ASP2 Landscape Analysis - Topographic
  - ASP3 Landscape Analysis – Key Vegetation
  - ASP4 Landscape Character
  - ASP5 Landscape Masterplan
  - ASP6 Landscape Strategy
- Appendix 10.2 National Character Areas Extract
- Appendix 10.3 West Oxfordshire Landscape Character Assessment Extract
- Appendix 10.4 Cherwell District Landscape Character Assessment Extract
- Appendix 10.5 Oxfordshire Wildlife And Landscape Study (Owls) Extract



- Appendix 10.6 Zone Of Theoretical Visibility Plan
- Appendix 10.7 Visual Assessment
- Appendix 10.8 Proposed Visualisations
- Appendix 10.9 Table 10.7 Assessment of Construction Effects: Landscape character
- Appendix 10.10 Table 10.8 Assessment of Construction Effects: Visual Environment
- Appendix 10.11 Table 10.9 Assessment of Construction Effects: Landscape Setting of Heritage Assets
- Appendix 10.12 Table 10.10 Assessment of Operation Effects: Landscape Character
- Appendix 10.13 Table 10.11 Assessment of Operation Effects: Visual Environment
- Appendix 10.14 Table 10.12 Assessment of Operation Effects: Landscape Setting of Heritage Assets

# 11 GROUND CONDITIONS

## 11.1 Agricultural Land Quality

### INTRODUCTION

- 11.1.1 Pye Homes Ltd and the Vanbrugh Unit Trust are applying for planning permission for a mixed use development including residential, retail and employment areas, plus a care village, school and open space on a site of approximately 70.4ha of mainly agricultural land, to the south east of Woodstock. The land lies between Shipton Road in the north east, Upper Campsfield Road and the Oxford Airport in the south east and the A44 with Blenheim Estate beyond in the south west. Houses already about the north western boundary.
- 11.1.2 The *quality* of the agricultural land that would be affected is a consideration in deciding planning permissions. To provide information on this, ADAS was instructed by West Waddy ADP to carry out a land quality assessment on approximately 48 ha of the land under consideration. The remaining land on the western side of the site had already been classified by ADAS in 1993, on behalf of MAFF (now Defra with reports available from Natural England).
- 11.1.3 The land was classified using the system outlined in the Ministry of Agriculture, Fisheries and Food (MAFF) publication: 'Agricultural Land Classification of England and Wales - Revised guidelines and criteria for grading the quality of agricultural land' (October 1998).

### RELEVANT LEGISLATION

- 11.1.4 Planning law requires that all local planning authorities take into account the benefits of 'Best and Most Versatile' agricultural land (BMV) when considering planning applications. It is Government policy to protect high quality land from development if other sites are available. The policies are laid out in the National Planning Policy Framework (NPPF), its purpose being to achieve sustainable development.
- 11.1.5 Local planning authorities must take the NPPF into account when preparing its Local Plan and it is a material consideration when making planning decisions. Importantly, the NPPF requires Local Plans to identify what their areas, housing, employment and other development needs are and to demonstrate how they will be met. In meeting these needs they should be balanced against other relevant planning matters.

### PLANNING POLICY CONTEXT

- 11.1.6 The National Planning Policy Framework states that local planning authorities should consider the following points of relevance to rural areas when formulating development plans and reviewing planning applications. The aim should be to:
- support economic growth in rural areas; (paragraph 28)
  - protect the Green Belt; (paragraphs 79 - 92)
  - contribute to and enhance the natural environment by (paragraph 109) :
  - protecting and enhancing valued landscapes, geological conservation interests and soils;
  - recognising the wider benefits of ecosystem services;
  - minimising impacts on biodiversity and providing net gains in biodiversity.
  - take into account the economic and other benefits of the best and most versatile agricultural land (BMV). Where significant development of agricultural land is

demonstrated to be necessary, seek to use areas of poorer quality land in preference to that of a higher quality; (paragraph 112).

- where development is required, allocate land with the least environmental or amenity value, where consistent with other policies in the NPPF (paragraphs 151-157).

11.1.7 The best and most versatile land (BMV) is categorised as Grades 1, 2 and 3a of the Agricultural Land Classification system (ALC). The preference to use the poorer quality Subgrade 3b, Grade 4 or Grade 5 land for development is consistent with the NPPF.

### **Planning Policy Guidance**

11.1.8 This guidance refers to the policies in the NPPF as follows

11.1.9 *How can planning take account of the quality of agricultural land?* (Paragraph: 026 Reference ID: 8-026-20140306)

*‘The National Planning Policy Framework expects local planning authorities to take into account the economic and other benefits of the best and most versatile agricultural land. This is particularly important in plan making when decisions are made on which land should be allocated for development. Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of a higher quality. The Agricultural Land Classification provides a method for assessing the quality of farmland to enable informed choices to be made about its future use within the planning system. Natural England provides further information on Agricultural Land Classification. The Agricultural Land Classification system classifies land into five grades, with Grade 3 subdivided into Sub-grades 3a and 3b. The best and most versatile land is defined as Grades 1, 2 and 3a and is the land which is most flexible, productive and efficient in response to inputs and which can best deliver food and non food crops for future generations. Natural England has a statutory role in advising local planning authorities about land quality issues.’*

### **West Oxfordshire**

11.1.10 The West Oxfordshire Local Plan 2011 which covers the western part of the site states:

- “farming remains the major user of land and continues to play an essential role in shaping and maintaining the fabric of the countryside”.
- “Proposals for development in the countryside should maintain or enhance the value of the countryside for its own sake: its beauty, its local character and distinctiveness, the diversity of its natural resources, and its ecological, agricultural, cultural and outdoor recreational values.”
- “the presence of BMV ‘should be taken into account alongside other sustainability considerations (e.g. biodiversity; the quality and character of the landscape; its amenity value or heritage interest; accessibility to infrastructure, workforce and markets; maintaining viable communities; and the protection of natural resources, including soil quality) when determining planning applications”.

11.1.11 These considerations are reiterated in the West Oxfordshire Draft Local Plan 2012 which refers to soil protection guidance within the NPPF and states:

- “All development proposals...will be required to show consideration of the efficient and prudent use and management of natural resources, including minimising their impact on the soil resource.
- Protecting and enhancing our soil resources is particularly important in a predominantly rural area such as West Oxfordshire.”

- 11.1.12 The current 'development plan' for the Cherwell District is the Cherwell Local Plan 1996, adopted in November 1996. Its saved policies (confirmed in September 2007) are the primary consideration in the determination of any planning application within the District.
- 11.1.13 The Non Statutory Cherwell Local Plan 2011 was intended to review and update the Local Plan adopted in 1996. Work on this plan discontinued in December 2004. The Non Statutory Local Plan 2011 is not part of the statutory development plan. However, in December 2004 Cherwell District Council approved it as interim policy.
- 11.1.14 Both the adopted and the non-statutory local plan policies are considered time expired and so out of date. Therefore, any little weight afforded to these adopted policies is reduced.
- 11.1.15 For completeness those policies that are relevant to this planning application contained in the above plans are referenced below:
- 'EN16 Development on greenfield land including the best and most versatile (grades 1, 2 and 3a) agricultural land will not be permitted unless there is an overriding need for the development and opportunities have been assessed to accommodate the development on previously developed sites and land within the built-up limits of settlements'.*
- 'If development needs to take place on agricultural land, then the use of land in grades 3b, 4 and 5 should be used in preference to higher quality land except where other sustainability considerations suggest otherwise'.*

### **Cherwell District Emerging Local Plan (2011-2031)**

- 11.1.16 The Cherwell District Local Plan 2031, which covers the eastern part of the site states:
- 'ESD10 The protection of trees will be encouraged, with an aim to increase the number of trees in the district.*
- The reuse of soils will be sought'.*

## **METHODOLOGY**

### **Desk Study**

- 11.1.17 A desk study of geology, soils and climatic information was undertaken using reference material held by ADAS. In addition the Environment Agency flood maps were checked for evidence of flooding and existing ALC data was requested from Natural England.

### **Fieldwork**

- 11.1.18 Fieldwork was undertaken with a hand held 50 mm diameter "Dutch" auger and/ or spade to an impenetrable stony layer. The auger investigation points were spaced on a standard 100 m x 100 m grid. The area of a scheduled monument was not surveyed.
- 11.1.19 As part of the ALC survey, it was also necessary to examine soil pits to determine subsoil characteristics which could not be identified from the auger sample. Five pits were dug with a mechanical excavator to a depth of up to 2.5 metres; to provide information on soil structure, stone content and depth to limestone.
- 11.1.20 The locations of the soil examination points are shown on the attached plan Appendix 1. Brief descriptions of the auger profiles are given in Appendix 2 and descriptions of the soil profile pits are given in Appendix 3. Photographs of the individual pit profiles are shown in Appendix 4.

- 11.1.21 Three soil samples were taken, from the upper 250 mm of the soil profile, for laboratory determination of particle size distribution; this was done to verify the hand textures carried out on site during the survey; the results are given in Appendix 5.
- 11.1.22 The field work was carried out in September 2014 in dry and bright conditions.

### ***The Agricultural Land Classification System***

- 11.1.23 The Agricultural Land Classification System provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. The limitations can operate in one or more of four principal ways. They may affect:
- the range of crops which can be grown
  - the level of yield
  - the consistency of yield
  - the cost of obtaining the crop
- 11.1.24 The classification system gives considerable weight to flexibility of cropping, whether actual or potential, but the ability of some land to produce consistently high yields of a somewhat narrower range of crops is also taken into account.
- 11.1.25 The principal physical factors influencing agricultural production are climate, site (including relief) and soil. By assessing these factors, it is possible to assign land into one of five land classification grades, Grade 1 land being the highest quality and Grade 5 the lowest quality land. Grade 3 is sub-divided into Subgrades 3a and 3b, to identify good quality agricultural land from moderate quality land. (see *Appendix 6* for a description of the grades used in the ALC system). Using the above criteria, the site has been classified into 1 of 5 agricultural grades or 1 of 3 non-agricultural grades, the results of which are detailed later in this chapter.

## **RESULTS OF DESK STUDY**

### ***Geology***

- 11.1.26 The underlying solid geology of the area is Jurassic limestone, over which shallow soils have developed.

### ***Soils***

- 11.1.27 The soils of the area have been mapped by the Soil Survey of England and Wales at a scale of 1:250,000<sup>(2)</sup>. They are mapped as Elmton 1 Association. These soils typically consist of shallow, brashy clay loam to clay soils over shattered limestone at 250mm. They occur in association with Morton and Shippon soils which tend to be heavier textured and deeper, having limestone below 600mm.

### ***Flooding***

- 11.1.28 The ALC guidelines take account of the extent, frequency, duration and seasonality of flooding. The Environment Agency Flood Map shows that the site does not flood.

### ***Climate***

- 11.1.29 The site climatic variables have been interpolated from grid point data surrounding the site, as follows:

Grid Reference (mid point of site)	SP455164
Altitude (m)*	90m
Accumulated Temperature (day °C)	1407
Average Annual Rainfall (mm)	684
Overall Climatic Grade	1
Field Capacity Days	148
Moisture deficit (mm): Wheat	103
Moisture deficit (mm): Potatoes	94

The site is almost level and climate is quite uniform across the site.

*Table 11.1.1: Climatic variables*

- 11.1.30 Accumulated Temperature which for ALC purposes is taken to be the excess of daily air temperature above 0°C between January–June each year, provides a measure of the relative warmth of the area; it is 1407 day °C and the average annual rainfall is 684mm. This site is warm and dry and the climate is a neutral factor in the classification of the land.

### **Previous Land Classification Surveys**

- 11.1.31 ADAS on behalf of MAFF (now Defra) classified the western part of the site in 1993 as Subgrade 3b up to the boundary of the land covered by this survey.
- 11.1.32 The only known previous classification of the rest of the site is that carried out for the Provisional ALC mapping exercise in 1970s and reissued in 1990s. This showed the site as Grade 3. However, the provisional mapping was based mainly on a desk exercise and was not meant to give detailed grading for small parcels of land. In addition since the provisional mapping exercise, there have been changes to the classification scheme and for these two reasons the classification of the eastern part of the site was determined for this planning application.

## **RESULTS OF FIELD SURVEY**

### **Present Land Use**

- 11.1.33 The majority of the survey area supports a catch crop of mustard sown after growing cereals. A recent application of slurry was observed across the field.
- 11.1.34 There is a landscaping screen of mature trees along the northern and eastern boundaries and grass margins have been sown along the edge of the trees.

### **Site Limitations**

#### Slope

- 11.1.35 The land is almost level and gradient and micro-relief do not affect land quality.
- 11.1.36 Soil and Interactive Limitations
- 11.1.37 The physical limitations which result from interactions between climate, site and soil are soil wetness, droughtiness and erosion.
- 11.1.38 Soil wetness is not a limitation to the classification of the land on this site.

#### Stoniness

- 11.1.39 The presence of limestone close to the surface has given rise to a high stone content in the topsoil, typically stones larger than 20mm account for 15-25% of the topsoil and total stone contents are 5-10% higher. The platy limestone is hard and holds little water. Stones have an adverse effect on crop growth and production costs and so have an influence on land quality. Where stones greater than 20mm account for more

than 15% of the topsoil the land cannot be graded higher than Subgrade 3b and if more than 35% the land cannot be classified higher than Grade 4.

Droughtiness

- 11.1.40 The interaction between climate and soil type determines how prone to drought stress a soil will be. Droughtiness is determined by assessing the amount of water the soil profile can hold and comparing it with the potential soil moisture deficit, i.e. the difference between crop requirements and rainfall in the area. A susceptibility to droughtiness has limited land quality on this site. The high stone content and shallow soils prevents deep rooting of crops making the soils prone to drought in most years.

Soil depth

- 11.1.41 The whole site has shallow soils which are typically 250 – 280mm deep but the depth to bedrock is not the main limiting factor in the classification of the land. The shallow soil reduces the amount of water the soil profile can hold making the land susceptible to drought in most years and drought is the main limiting factor in the assessment of land quality on this site.

Disturbed land

- 11.1.42 The site of a Scheduled Monument occurs within the survey area; land within the monument boundary has not been classified due to the intrusive nature of the soil survey work.

**Land Quality**

- 11.1.43 The site is classified as Subgrade 3b although several small areas of Grade 4 land were located where limestone lies close to the surface making the soils too stony or too prone to drought for a higher grade.

Grade 1

- 11.1.44 No land of this quality was mapped in the study area.

Grade 2

- 11.1.45 No land of this quality was mapped in the study area.

Grade 3, Subgrade 3a

- 11.1.46 No land of this quality was mapped in the study area.

Grade 3, Subgrade 3b

- 11.1.47 This Subgrade is mapped over soils, which have formed in shattered limestone where the rock occurs at depths below 230mm. Typically 230-280mm of moderately stony, heavy clay loam to clay topsoil overlies shattered limestone. 15-35% of the volume of the topsoil consists of stones larger than 20mm.
- 11.1.48 Pits excavated into the rock indicate that the rock is shattered into hard platy blocks with little soil between the plates, so that rooting into the rock is minimal below 500mm. These areas are prone to drought having a moisture balance of no worse than –50mm for wheat and –55mm for potatoes. Small areas of Grade 4 have been included within this Subgrade to include more drought prone soils.

Grade 4

11.1.49 No land of this quality was mapped in the study area due to the limits of mapping land at 1:5000 scale, but profiles of Grade 4 were located where the soils had a topsoil stone content (>20mm diameter) of more than 35%. The very stony areas usually coincided with the shallowest soils where cultivation equipment had pulled the limestone to the surface; these areas had a moisture balance of > -50mm for wheat and >-55mm for potatoes.

Grade 5

11.1.50 No land of this quality was mapped in the study area.

Farm Buildings

11.1.51 No land of this quality was mapped in the study area.

Non Agricultural

11.1.52 This classification is placed over woodland shelter belts in the north and east.

Not surveyed

11.1.53 This classification is placed over the Scheduled Monument. The area was not surveyed to prevent any auger or spade damage of the underlying structures.

**Summary of Land Quality in the Survey Area**

Grade	Surveyed Area (ha)	% of Surveyed Area	Total Area (ha) including NE survey + other	% of Total Area
1	-	-	-	-
2	-	-	-	-
3a	-	-	-	-
3b	43.63	89.6	59.74	84.85
4	-	-	-	-
5	-	-	-	-
Not surveyed	2.25	4.6	2.79	3.98
Non agricultural	2.82	5.8	7.87	11.17
Total	48.7	100.0	70.4	100.0

Table 11.1.2: Agricultural Land Classification Measurements

**EVALUATION, IMPACTS AND MITIGATION**

11.1.54 The site was assessed to determine the impact of the development on agriculture. There are no recognised significance criteria for use in Environmental Impact Assessment which enables a determination of the significance of the loss of an area of agricultural land. The criteria used in this report have been developed against compliance with existing policy.

**Summary of Land Quality in the Survey Area**

11.1.55 The criteria adopted are as follows:

- There should not be a significant loss of 'best and most versatile land'. Significant in this context means greater than 20ha. (There is little current guidance on what area of loss is considered significant, 20ha is the threshold adopted by previous policies in PPG7 and the consultation threshold set out in the 'Town and Country



Planning (General Development Procedure) Order' (1995) which requires Local Planning Authorities to consult Defra about any planning application that is not in accordance with the development plan, and would involve the loss of 20ha or more 'Best and Most Versatile Land'.)

- Where significant areas of 'Best and Most Versatile Land' are affected, there should not be areas of land of a lower quality that are available and do not have other sustainability factors that would preclude their development. The site does not contain areas of 'Best and Most Versatile Land'.
- The loss of land should be necessary, i.e. there should be a recognised need for the development; the need is being assessed by others.

### **Impacts**

- 11.1.56 The loss of land cannot be mitigated but with careful planning of the building programme the land can remain in productive use until it is required for development.
- 11.1.57 The land is not classified as 'best and most versatile land' and should therefore be used in preference to land of a higher agricultural quality.
- 11.1.58 This Subgrade 3b land is capable of growing a range of crops but will not produce high yields in most years due to the droughtiness of the soils. It has to be managed intensively to maintain yields as evidenced by the applications of slurries and catch crops to maintain organic matter levels. As a consequence the loss of this land should not have a significant effect on either regional or national agricultural production. The effect of the development on local agriculture can only be determined by farmer interviews; interviews were not undertaken because they were outside scope of the work commissioned.

### **Mitigation**

- 11.1.59 There are areas shown on the revised indicative master development plan for the site that suggests that not all of the land will be built on. Some land will be retained as grassland, woodland or sports/ recreation areas. This would mean that a proportion of the land would still potentially be available for agricultural use if required in the future.
- 11.1.60 Project design and soil handling will influence the impact of development on the land. The land will be permanently lost to agriculture but with careful soil management before and during development soil functions can be preserved. A soil management plan should be developed which advises on the correct trafficking and handling of soils during the development; it should aim to:
- avoid damage to the soils during development by careful soil stripping and traffic management,
  - reduce the amount of waste soils by reusing excavated soils on site.
- 11.1.61 The soils can be preserved by ensuring that all topsoil is stripped and stored separately from any subsoil. The soils should be restored in the correct sequence to ensure that the topsoil is returned as the surface layer. Soil can be used for landscaping, forming amenity areas and within Sustainable Urban Drainage Systems to treat pollutants and manage peak flood flows from the developed areas.
- 11.1.62 A Code of Practice<sup>(5)</sup> is available which outlines the principles which should be adopted for the sustainable use of soils on construction sites.
- 11.1.63 Any surplus soils can be exported off site for use on sites where soils are in short supply; with appropriate planning permission and permits. Reuse of the soils will maintain some of the important functions which soils deliver such as carbon storage and water filtration and will reduce the amount of waste generated.

## CONCLUSIONS

- 11.1.64 The 1:250,000 scales Provisional Land Classification Map of the area shows the site as Grade 3. These maps are only accurate to about 80ha.
- 11.1.65 The detailed fieldwork undertaken for this study has shown that the Provisional Maps are correct and the site is classified as Subgrade 3b. There is no 'best and most versatile land' on this site and as such the land is afforded little protection through the planning system by virtue of its agricultural land quality.
- 11.1.66 The loss of 59.74ha of Subgrade 3b land will not have a significant effect on either regional or national agricultural production but the cumulative effect of the loss of land from this and other development sites in the area may need to be considered.
- 11.1.67 Surplus soil can be used on site or used to restore other sites which are short of soil, thus reducing the amount of waste material generated and retaining soil functions such as water and carbon storage.

## REFERENCES

1. Department for Communities and Local Government (2012) National Planning Policy Framework
2. 'Soils and their Use in South Eastern England' (1984). Soil Survey of England and Wales, Bulletin No. 14. Harpenden. (ISBN 0 7084 0298 4)
3. Environment Agency (Dec 2013)\_[www.environment-agency.gov.uk/homeandleisure/floods](http://www.environment-agency.gov.uk/homeandleisure/floods)
4. Ministry for Agriculture Fisheries and Food (1976). 1:250,000 Series Agricultural Land Classification, South Eastern Region, and updates.
5. DEFRA (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.
6. ADAS for MAFF (now Defra) 1993: West Oxfordshire Local Plan, Site 268: Woodstock Agricultural Land Classification ALC Map and Report, August 1993 (published on: [www.natureonthemap.naturalengland.org.uk/Login.aspx?ReturnUrl=%2fMagicMap.aspx](http://www.natureonthemap.naturalengland.org.uk/Login.aspx?ReturnUrl=%2fMagicMap.aspx))

## APPENDICES

- Appendix 1: Agricultural Land Classification Map and Location of Soil Pits
- Appendix 2: Auger Boring Descriptions
- Appendix 3: Soil Pit Descriptions
- Appendix 4: Photographs of Soil Pit profiles
- Appendix 5: Soil Analysis Results
- Appendix 6: Descriptions of Grades and Sub-Grades

## 11.2 Contamination

### Introduction

- 11.2.1 A desk study (14.08.005 dated August 2014) and ground investigation (14.08.005a dated October 2014) has been undertaken for land to the east of Woodstock, Oxfordshire, with an approximate postcode of OX20 1QF by Listers Geotechnical Consultants. The Ordnance Survey National Grid reference for the site is 445780, 216300.
- 11.2.2 This report summarises the work carried out by Listers Geotechnical Consultants, the ground conditions encountered and discusses their implications with regard to contaminated land aspects of the proposed mixed-use development.
- 11.2.3 The scope of the investigation was to undertake a desk study of the site to establish potential pollutant linkages and investigate them. In addition, an assessment of the ground conditions and the extent of any soil contamination on the site was required. A contaminated land risk assessment was undertaken based on the Contaminated Land Exposure Assessment (CLEA) and Environment Agency Remedial Targets Methodology guidelines.
- 11.2.4 It is proposed to redevelop the site to accommodate a mixed development including up to 1,500 residential dwellings, a relocated football stadium, a care village, a link and ride facility, locally led employment area, a primary school and a local centre.

### Site context

- 11.2.5 A walkover survey of the site and its immediate surrounds was undertaken on the 11<sup>th</sup> August 2014. This description below is based on that walkover survey undertaken on that day.
- 11.2.6 The site lies in a rural area, and is currently occupied by agricultural fields. The site consists of an approximately rectangular parcel of land, trending southeast-northwest, with approximate dimensions of 850 metres by 750 metres, the site extends to approximately 75 hectares.
- 11.2.7 The site is generally flat lying with a slight ridge sloping down a few metres towards the south of the site, between the ridge and the A44. The site is bordered to the north by Shipton Road leading to more agricultural land; to the northwest by Shipton Road leading onto Marlborough School; to the west by residential dwellings adjoining "Flemings Road"; to the south by Oxford Road (A44) with a single dwelling, "Littlecote", in the centre of the southern boundary, adjoining the road; and to the east by Upper Campsfield Road (A4098) with a row of bungalows and a cattery towards the southeast of the site. Further afield, the town of Woodstock is located to the immediate west of the site area; London Oxford Airport is located to the southeast of the site; and Blenheim Palace and Park are located to the southwest of the site area.
- 11.2.8 On the site area itself, there were three large fields and a school playing field separated by hedge lines. The largest of the fields was located across the central and eastern area of the site and was approximately 700m by 700m square. It had just been harvested and stubble and chaff was still across the ground surface. A wooded border, approximately 10 metres wide was located along the north and eastern boundaries and in the northeast corner was a small triangular wooded area that was slightly topographically depressed. The small wooded area was once a quarry. To the southeast of this field were a row of residential bungalows and a cattery; and in the southwest corner was a residential property called Littlecote. Neither properties form part of the site.
- 11.2.9 The smallest field is located in the southwest corner of the site and measures approximately 250m by 200m. Again it is flat lying and had stubble and chaff across its surface. Littlecote was located in its southeast corner.

- 11.2.10 The third field was located towards the northwest and measured approximately 400 metres by 250 metres. Again, the field was generally flat lying and covered with chaff and stubble. Towards the northeast of this field was a stone built house and grounds (Pest House), with a small enclosure for goats and a driveway leading down from Shipton Road.
- 11.2.11 The school playing field was located between the third field and Shipton Road to the north. This was approximately 250m by 150m and rectangular in shape. It was flat lying with well-kept grass and a grass running track on the centre of it.
- 11.2.12 Across all of the fields, limestone fragments, or “brash”, could be seen, betraying the near surface geology under the site. There was no evidence of potentially contaminative point sources across the whole site.

### **Planning Policy Context**

#### National Policy

- 11.2.13 Paragraph 121 of the National Planning Policy Framework (NPPF) states that:
- “Planning policies and decisions should also ensure that:
- *the site is suitable for its new use taking account of ground conditions and land instability, including from natural hazards or former activities such as mining, pollution arising from previous uses and any proposals for mitigation including land remediation or impacts on the natural environment arising from that remediation;*
  - *after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and*
  - *adequate site investigation information, prepared by a competent person, is presented.”*

#### West Oxfordshire

- 11.2.14 The responsibilities of potential land developers are set out in paragraph 3.100 of the West Oxfordshire Local Plan, where it says “Responsibility for providing information on whether land is contaminated rests primarily with the developers. Developers will be required to cover the costs of suitable investigations to assess the nature and extent of contamination and the costs of any appropriate sustainable mitigation or remedial measures. While the District Council will encourage appropriate development on or near land which is known or suspected to be contaminated, permission will only be given if effective remediation measures can be taken to remove the threat of contamination to future occupiers of the site and the development is not likely to result in contamination of the local environment, including surface or underground water resources.”

#### Cherwell

- 11.2.15 In Chapter 9 (En17) of the Cherwell Local Plan, the policy on contaminated land is set out. This states the following:
- *“Development on land which is known or suspected to be contaminated will only be permitted if:*
  - *Adequate measures can be taken to remove any threat of contamination to future occupiers of the site:*
  - *The development is not likely to result in contamination or surface or underground water resources”*

## METHODOLOGY

### Desk Study

- 11.2.16 A desk study review of the site and its history has been undertaken to establish the former land usage and the potential for any historically derived sources of chemical contamination.
- 11.2.17 The desk study comprises a review of the following consultations and information sources:
- Environment Agency (EA)
  - Natural England
  - Health Protection Agency
  - National Geoscience Information Service
  - British Geological Survey (BGS)
  - Contemporary Trade Directories
  - Historical Ordnance Survey maps
  - National Monuments and Records Office
- 11.2.18 Information from the above referenced sources has been utilised to develop a conceptual model of the site for use in the source-pathway-receptor risk assessment

### Field Survey

- 11.2.19 A total of 65 No. exploratory holes were formed at the site, inclusive of 40No. machine excavated trial pits, 19 No. continuous tube sample boreholes and dynamic probe holes and 6No. rotary boreholes between the 8<sup>th</sup> and 17<sup>th</sup> September 2014.
- 11.2.20 As the desk study and walkover survey had identified a small number of potential pollution sources at the site several of the exploratory holes were targeted on these sources. These were:

Target	Exploratory Hole
Old quarry to northeast	WS R and S, BH 105
Old quarry to southeast (off-site)	BH 106
Old isolation hospital ground	BH 103, TPs 16, 18, 19 & 20
Old radio mast structure	TPs 26,27 &31 WS N
Old infilled railway cutting (landfill) to the north (off-site)	BH 101

*Table 11.2.1 Exploratory Holes*

- 11.2.21 Where off-site targets have been identified these have been placed within the site boundaries adjacent to the off-site targets for the installation of ground gas and water monitoring standpipes. These are to assess the possibility of ground gas or contaminated groundwater entering the site, under the ground.
- 11.2.22 The other exploratory holes were positioned to create a semi regular pattern across the site (avoiding excavation in the area of the Scheduled Monument), in order to provide a spread of information.

## RESULTS OF DESK STUDY

### History of the Site

- 11.2.23 The history of the site has been established by reviewing the historical Ordnance Survey maps, aerial photography and literature concerning the area, collected as part

of the desk study information. This has established that the site has been under agricultural usage from at least 1880, but that there has been an isolation hospital to the north, a small quarry to the northeast and a small structure in the centre of the large field. Also, there has been a small quarry off-site to the south-east and an infilled railway cutting to the north.

### **Geology**

- 11.2.24 Reference to published geological information on the area (British Geological Survey (BGS) Map 1:50,000 - Sheet 236) indicates that the site is underlain by Middle Jurassic age strata comprising Cornbrash Formation to the centre, north and east of the site and Forest Marble Formation towards the southwest of the site, with a small normal fault, downthrown to the north, to the immediate west of the site.
- 11.2.25 Cornbrash Formation strata are described as ‘medium- to fine-grained, predominantly bioclastic limestones. Generally bluish grey when fresh, but weathers to olive or yellowish brown. Thin argillaceous partings or interbeds of calcareous mudstone may occur’
- 11.2.26 The Forest Marble strata are described as ‘greenish grey, silicate-mudstone, with lenticular typically cross-bedded limestone units that form banks and channel-fills, especially in lower part. A variety of limestone types occur, of which grey, weathering brown and flaggy, variably sandy medium to coarsely bioclastic grainstone predominates.’
- 11.2.27 The records of four exploratory holes, put down on or near the site in July 1990 as part of a possible Woodstock By-Pass scheme, were obtained from the British Geological Survey. These indicate that the site is underlain by topsoil to between 0.25m and 0.60m thick followed by a sequence of interbedded stiff buff and grey-green locally sandy clays and weak to strong oolitic fractured limestone, with individual beds between 0.50m and 3.00m thick on average, and was encountered down to a maximum depth of 9.50m bgl (the base of the hole).
- 11.2.28 Groundwater was struck in one borehole at 5.22m bgl and rose to 3.53m bgl

### **Unexploded Ordnance and Bomb Sites**

- 11.2.29 The site is located in an area where there is a low risk of unexploded ordnance. An unexploded bomb risk map obtained from Zetica is provided in the Appendices. Reference to historical literature indicates that the airfield to the east was attacked during the Second World War, twice, but that no bombs landed outside the confines of that field.

### **Hydrology**

- 11.2.30 The nearest surface watercourse is the Rowell Brook that flows towards the south, approximately 100m to the southeast of the site. There is also a small pond 270m to the south of the site and a reservoir 260m to the northeast, neither of these have been named and both appear to be man-made ponds.
- 11.2.31 There are two current surface water abstraction licenses located from the reservoir to the northeast of the site. These are for spray irrigation purposes.

### **Hydrogeology**

- 11.2.32 Information obtained from the Environment Agency indicates that the site is located on a Secondary A Bedrock Aquifer, the Cornbrash Formation.
- 11.2.33 There are no current groundwater abstraction licenses located within 1000m of the site.

- 11.2.34 According to information provided by the Environment Agency the site is outside of any Source Protection Zone/s (SPZ). An SPZ is a protection zone placed around a well or borehole that supplies groundwater of potable quality.
- 11.2.35 There have been no substantiated pollution incidents to controlled waters within 250m of the site.

### **Landfill, Waste Treatment and Industrial Usage Sites**

- 11.2.36 Reference to records from the BGS, the Environment Agency and the Local Authority indicates that there are no waste transfer, waste treatment or waste management facilities within 1000m of the site area. However, reference to records indicates that there is a historic landfill site in a railway cutting 270m to the north of the site. It was used during the late 1970s and early 1980s for deposition of inert, domestic, industrial and commercial waste.
- 11.2.37 There is one active trade directory entry that has been found within 250m of the site, this is a printing firm 160m to the south of the site.

### **Worked Out Ground/Made Ground**

- 11.2.38 Worked out ground is recorded on the historical map of 1884 to the extreme northeast of the site and adjacent to the site in the southeast corner.

### **Radon Gas**

- 11.2.39 Reference to information obtained from the National Geoscience Information Service/Health Protection Agency indicates that the site lies within an area where between 1% and 3% of homes exceed the action level for radon gas. The BGS recommends that no radon protection measures are necessary in new dwellings or extensions

### **Risk of Gaseous Contamination**

- 11.2.40 We have provisionally assessed the risk of ground gas impacting the site, by reference to guidance given in the paper "A pragmatic approach to ground gas risk assessment for the 21<sup>st</sup> Century" (Card and Wilson, 2011). This is a follow up paper to the CIRIA Report 665 and is compatible with that document. It concluded that limited gas monitoring was required at this site adjacent to the possible sources to check for any ground gases.

### **Adjacent Site Usage**

- 11.2.41 The site area is surrounded to the south, east and north by roads leading to fallow or agricultural land with no existing potential pollution sources. To the west of the site are residential properties, again with no existing potential pollution sources. The only two potential pollution sources encountered were historical; an old quarry seen in historical map to the south of the site across Upper Campsfield Road; and the disused landfill site within an old railway cutting 200m to the north of the site. It is possible that both of these may produce ground gases that may migrate onto the site. However, in both cases this is considered highly unlikely as they are both very small in size and unlikely to produce significant volumes or flows of ground gases.

## **RESULTS OF FIELD SURVEY**

- 11.2.42 Topsoil was encountered at each location from ground level to depths ranging from 0.10m bgl to 0.50m bgl. It consisted of brown sandy topsoil with some roots and platy limestone gravel.

- 11.2.43 Cornbrash Formations strata were encountered at 39 of the 40 trial pit locations from beneath the Topsoil and down to depth ranging from 0.50m bgl towards the southwest of the site; to 4.90m bgl towards the east of the site. The Cornbrash Formation strata consisted of interbedded layers of sub-horizontally bedded platy orange-brown and grey fossiliferous limestones and sandy limestones.
- 11.2.44 Forest Marble Formations strata were encountered in 19No. of the 40No. trial pits (as the Cornbrash Fm. strata could not be penetrated in the remaining 21No.) from beneath the Cornbrash strata and to the full depth of the investigation in each case, a maximum depth of 15.00m bgl. It consisted, initially of a stiff to very stiff light grey and grey closely fissured silty clay with localised calcareous nodules, mudstone and limestone lithorelics.
- 11.2.45 Groundwater was not encountered in any of the exploratory holes during the fieldwork down to 5.00m depth below the existing ground level. Monitoring standpipes revealed standing groundwater levels within the natural deposits of between 4.31m and 9.53m below the existing ground level (or between 80.03mAOD and 88.31mAOD). This equates to an hydraulic gradient across the site of 1 in 100 (0.01) in an easterly direction, towards the River Cherwell.
- 11.2.46 There was no visual or olfactory evidence of contamination during the fieldwork, in fact there was no noticeable Made Ground anywhere on the site.
- 11.2.47 Ground gas monitoring carried out as a part of this investigation has revealed oxygen levels of between 12.7% and 21.1% by volume, carbon dioxide levels of between 0.1% and 1.6% by volume, and methane levels below detectable limits, and atmospheric pressures ranging from 983 mb to 1020 mb.

## EVALUATION, IMPACTS AND MITIGATION

### ***Evaluation***

#### Human Health and Controlled Waters Risk

- 11.2.48 Twenty-seven soil samples and six groundwater samples collected on site during this investigation were tested for a range of contaminants.
- 11.2.49 A human health risk assessment was undertaken using the guidance provided in the Environment Agency's publication CLR11, Model Procedures for the Management of Contaminated Land, published in September 2004. Human health assessment criteria used are based upon the proposed final land use of the site, in this case the guidelines for 'Residential with plant' were used.
- 11.2.50 For assessing impact to surface or underground water, the procedures set out in the Environment Agency's Remedial Targets Methodology *Hydrogeological risk assessment for contaminated land* (2006), were followed.
- 11.2.51 The groundwater test results were compared to the UK Drinking Water Standards (UKDWS) set out in The Water Supply (Water Quality) Regulations 2000. Where the environmental setting is sensitive, results were also compared to the Environmental Quality Standards (EQS) as set out in the EC Dangerous Substances Directive (76/464/EEC).
- 11.2.52 Of all the contaminants tested in all the 27 No. soil and 6 No. groundwater samples none recorded values higher than their relevant environmental standard value.

#### Ground Gas

- 11.2.53 The risk of ground gases impacting the site was assessed by reference to the paper "A pragmatic approach to ground gas risk assessment for the 21<sup>st</sup> Century" Card and Wilson, 2011.



- 11.2.54 Using the maximum carbon dioxide reading of 1.6% with the highest recorded flow rate of 0.4l/hr, the maximum gas screening value is 0.006l/hr. There were no carbon dioxide levels above 5% and no methane levels above 1%. This classifies the site as Characteristic Situation 1.
- 11.2.55 Therefore, for residential, educational or commercial buildings on this site there is considered to be no requirement for gas protection measures against methane or carbon dioxide gas.
- 11.2.56 The BGS advises that no radon gas protection measures are necessary.

#### Impacts

- 11.2.57 Reference to the Conceptual Site Model from the desk study indicated that three potential point sources of contamination were identified on site. These were the old worked out quarry to the northeast, the old isolation hospital to the north and the structure in the centre of the large field. All these areas were investigated and no potential contaminants were encountered at any of the locations. In addition to this a wide spread of chemical tests were undertaken across the site at random locations. None of these encountered any chemicals at elevated levels. As such, it is considered that there is no elevated risk to Human Health or Controlled Water receptors from the proposed development at this site.
- 11.2.58 Also there was found to be no elevated risk from gas or contaminated groundwater migration onto the site, as such there is no need for gas protection measures.

#### **Mitigation**

- 11.2.59 Therefore, there is considered to be no need for ongoing mitigation measures (remedial measures or further investigative works) with regard to risk to Human Health or Controlled Water receptors.

#### **CONCLUSIONS**

- 11.2.60 Long term groundwater and gas monitoring recorded negligible levels of carbon dioxide and methane in the ground from the one on-site and two off-site sources indicated in the desk study. As such there is considered to be no elevated risk and no need for ongoing mitigation measures.
- 11.2.61 With regard to contaminated land investigation, the desk study indicated three potential (but unlikely) sources of on-site contamination. All three were investigated, along with a spread of other holes and samples across the site. Contaminant levels were all below relevant environmental quality standards. As such, there was no elevated risk encountered on this site for all possible Human Health or Controlled Waters receptors, therefore, no further investigation or remedial measures were recommended.

#### **REFERENCES**

1. Building Research Establishment (BRE) BR 211, Radon: Guidance on Protective Measures for New Buildings. 2007
2. Environment Agency, The Model Procedures for the Management of Land Contamination, CLR 11, 2004
3. Environment Agency, Remedial Target Methodology, Hydrogeological Risk Assessment for Contaminated Land, 2006
4. Site Investigations, Code of Practice, BS5930:1999+A2 2010
5. Soils for Civil Engineering Purposes, BS1377, 1990

6. Code of practice for the characterization and remediation from ground gas in affected developments, BS8485:2007
7. Assessing Risks Posed by Hazardous Ground Gases to Buildings, CIRIA C665, 2007.
8. "A pragmatic approach to ground gas risk assessment for the 21st Century" (Card and Wilson, 2011)

## APPENDICES

- Appendix 1: Ground Investigation
- Appendix 2: Phase 1 Geoenvironmental Desk Study

## 12 ARCHAEOLOGY AND CULTURAL HERITAGE

### 12.1 Archaeology

#### INTRODUCTION

- 12.1.1 This Chapter presents an assessment the effect of the Proposed Development on archaeological remains. In particular it considers the potential effects of construction on buried archaeology.
- 12.1.2 An assessment of the effects of the Proposed Development on above ground heritage assets is provided in Chapter 12.2 'Cultural Heritage'.
- 12.1.3 The detailed desk-based assessment (Preston 2014) and reports on geophysical survey (Bray and Dawson 2014) and evaluation trenching (Bray and Taylor 2014) on which this assessment relies are presented as Appendices arch1, arch2, and arch3.

#### **Site context**

- 12.1.4 The proposal is a hybrid planning application for a mixed-use development comprising: Outline Planning Application for up to 1,500 dwellings, including affordable housing and up to a 150 unit care village with associated publicly accessible ancillary facilities; site for a new primary school; up to 930sqm of retail space; up to 7,500sqm locally led employment (B1/B2/B8) including link and ride; site for a Football Association step 5 football facility with publicly accessible ancillary facilities; public open space; associated infrastructure, engineering and ancillary works, (all matters reserved except for means of access to the development); and Full planning application for the development of Phase 1 at the south western corner of the site for the erection of 29 residential dwellings (29 of the 1,500 described above) with associated open space, parking and landscaping; with vehicular access provided from Upper Campsfield Road (A4095), Shipton Road and Oxford Road (A44).

#### RELEVANT LEGISLATION

##### **Legislative Framework**

- 12.1.5 The applicable legislative framework is summarised as follows:
- The Ancient Monuments and Archaeological Areas Act (1979) (The Ancient Monuments and Archaeological Areas Act 1979);
  - Planning (Listed Buildings and Conservation Areas) Act 1990 (Planning (Listed Buildings and Conservation Areas) Act 1990)
- 12.1.6 In summary any development or any other works which would result in damage to a Scheduled Monument require the consent of the Secretary of State and similarly, changes affecting a Listed Building or Conservation Area require consent from the local planning authority.

#### PLANNING POLICY

- 12.1.7 Planning policy at the national, regional, county and local level and its relevance to environmental design and assessment is discussed in the 'Planning Policy Context' section.

##### **National Policy**

- 12.1.8 The National Planning Policy Framework (NPPF 2012) was published in 2012 and is a key part of the reforms to make the planning system less complex and more

accessible, to protect the environment and to promote sustainable growth. There is an overarching presumption in favour of sustainable development that should be the basis of every plan and every decision.

- 12.1.9 The NPPF consolidates all of the previous Planning Policy Statements (PPSs) and Planning Policy Guidance Notes (PPGs) into one document. The following paragraphs/policies are considered relevant to this assessment:

*‘128. In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets’ importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.*

*‘129. Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this assessment into account when considering the impact of a proposal on a heritage asset, to avoid or minimise conflict between the heritage asset’s conservation and any aspect of the proposal.’*

- 12.1.10 A ‘heritage asset’ is defined as:

*‘A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. Heritage asset includes designated heritage assets and assets identified by the local planning authority (including local listing).’*

- 12.1.11 ‘Designated heritage asset’ includes any:

*‘World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area designated under the relevant legislation.’*

- 12.1.12 Specific guidance on assessing significance and the impact of the proposal is contained in paragraphs 131 to 135:

*‘131. In determining planning applications, local planning authorities should take account of:*

*The desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;*

*The positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and*

*The desirability of new development making a positive contribution to local character and distinctiveness.*

*‘132. When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset’s conservation. The more important the asset, the greater the weight should be. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting. As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification. Substantial harm to or loss of a grade II listed building, park or garden should be exceptional. Substantial harm to or loss of designated heritage assets of the highest significance, notably scheduled monuments, protected wreck sites, battlefields, grade I and II\* listed buildings, grade I and II\* registered parks and gardens, and World Heritage Sites, should be wholly exceptional’.*

*‘133. Where a proposed development will lead to substantial harm to or total loss of significance of a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply:*

- The nature of the heritage asset prevents all reasonable uses of the site; and*
- No viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and*
- Conservation by grant-funding or some form of charitable or public ownership is demonstrably not possible; and*
- The harm or loss is outweighed by the benefit of bringing the site back into use.*

*‘134. Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use.*

*‘135. The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that affect directly or indirectly non designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset.*

- 12.1.13 Paragraph 139 recognises that new archaeological discoveries may reveal hitherto unsuspected and hence non-designated heritage assets

*‘139. Non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments, should be considered subject to the policies for designated heritage assets.’*

- 12.1.14 Paragraph 140 requires local planning authorities to ensure that any loss of heritage assets advances understanding, but stresses that advancing understanding is not by itself sufficient reason to permit the loss of significance:

*‘141. Local planning authorities should make information about the significance of the historic environment gathered as part of plan-making or development management publicly accessible. They should also require developers to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible. However, the ability to record evidence of our past should not be a factor in deciding whether such loss should be permitted.’*

- 12.1.15 In determining the potential heritage impact of development proposals, ‘significance’ of an asset is defined (NPPF 2012, 56) as:

*‘The value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset’s physical presence, but also from its setting.’*

- 12.1.16 while ‘setting’ is defined as:

*‘The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral’.*

- 12.1.17 In considering setting, the government’s guidance is contained in ‘Conserving and enhancing the historic environment’ [ID: 18a, revised 2014]

*‘A thorough assessment of the impact on setting needs to take into account, and be proportionate to, the significance of the heritage asset under consideration and the*

*degree to which proposed changes enhance or detract from that significance and the ability to appreciate it.*

*'Setting is the surroundings in which an asset is experienced, and may therefore be more extensive than its curtilage. All heritage assets have a setting, irrespective of the form in which they survive and whether they are designated or not.*

*'The extent and importance of setting is often expressed by reference to visual considerations. Although views of or from an asset will play an important part, the way in which we experience an asset in its setting is also influenced by other environmental factors such as noise, dust and vibration from other land uses in the vicinity, and by our understanding of the historic relationship between places. For example, buildings that are in close proximity but are not visible from each other may have a historic or aesthetic connection that amplifies the experience of the significance of each.*

*'The contribution that setting makes to the significance of the heritage asset does not depend on there being public rights or an ability to access or experience that setting. This will vary over time and according to circumstance.*

*'When assessing any application for development which may affect the setting of a heritage asset, local planning authorities may need to consider the implications of cumulative change. They may also need to consider the fact that developments which materially detract from the asset's significance may also damage its economic viability now, or in the future, thereby threatening its ongoing conservation.'*

## **Local Plans**

### West Oxfordshire

- 12.1.18 The boundary between West Oxfordshire and Cherwell District Councils crosses the site, so policies from both councils are relevant. The West Oxfordshire Local Plan 2011 (WODC 2006) has not yet been replaced, so that policies which were 'saved' in 2009 continue to apply. This includes policies BE8, BE11, BE12 and BE13 relevant to listed buildings, historic parks and archaeological remains.
- 12.1.19 'POLICY BE12 - Archaeological Monuments  
*'Development proposals that adversely affect the site or setting of nationally important archaeological monuments and monuments of local importance, whether scheduled or not, will not be permitted.'*
- 12.1.20 'POLICY BE13 - Archaeological Assessments  
*'Prior to determining applications affecting sites and areas of archaeological potential, applicants may be required to provide an archaeological assessment and/or field evaluation to determine:*
- a) the significance, character and importance of any archaeological monument or remains and*
  - b) the likely impact of the proposed development on such features*
  - c) the level of mitigation required to suitably protect the archaeological resource through preservation in situ or preservation by record including excavation, post excavation analysis and publication.'*
- 12.1.21 Although not yet adopted, the emerging Local Plan (formerly Core Strategy) includes the following which can be expected to influence development in the future:
- 12.1.22 'CORE POLICY 23 - Historic Environment  
*'All development proposals will be expected to respect, protect and enhance the special character and distinctiveness of West Oxfordshire's historic environment and its heritage assets and their setting.*

*'Development must not result in loss or damage to important heritage assets, or their settings, particularly those of national importance.'*

*'Development should make a positive contribution to the historic environment's local character and distinctiveness, especially where this will address local issues identified in, for example, Conservation Area appraisals.'*

Cherwell

12.1.23 The emerging Cherwell District Council Local Plan (CDC, 2014) has been taken into account and contains a single over-arching policy relating to the Built and Historic environment:

12.1.24 Policy ESD 16 The Character of the Built and Historic Environment

*'Successful design is founded upon an understanding and respect for an area's unique built, natural and cultural context. New development will be expected to complement and enhance the character of its context through sensitive siting, layout and high quality design... Where development is in the vicinity of any of the district's distinctive natural or historic assets, delivering high quality design that complements the asset will be essential.'*

*'New development proposals should: ...*

*'Contribute positively to an area's character and identity by creating or reinforcing local distinctiveness and respecting local topography and landscape features, including skylines, valley floors, significant trees, historic boundaries, landmarks, features or views, in particular within designated landscapes, within the Cherwell Valley and within conservation areas and their setting*

*'Conserve, sustain and enhance designated and non designated 'heritage assets' (as defined in the NPPF) including buildings, features, archaeology, conservation areas and their settings, and ensure new development is sensitively sited and integrated in accordance with advice in the NPPF. Proposals for development that affect non-designated heritage assets will be considered taking account of the scale of any harm or loss and the significance of the heritage asset as set out in the NPPF.*

*'Regeneration proposals that make sensitive use of heritage assets, particularly where these bring redundant or under used buildings or areas, especially any on English Heritage's At Risk Register, into appropriate use will be encouraged*

*'Include information on heritage assets sufficient to assess the potential impact of the proposal on their significance. Where archaeological potential is identified this should include an appropriate desk based assessment and, where necessary, a field evaluation.*

*'Respect the traditional pattern of routes, spaces, blocks, plots, enclosures and the form, scale and massing of buildings. ...*

*'The Council will require design to be addressed in the pre-application process on major developments and in connection with all heritage sites.'*

12.1.25 The relevant policies from the existing Cherwell Local Plan (1996) were not saved when that plan was reviewed.

12.1.26 In summary the effects of national and local policies and guidance are to make the desirability of the preservation of significant archaeological remains (heritage assets) a material consideration in planning decisions, with the ultimate aim of enhancing the significance of the heritage asset, or where assets cannot realistically be physically preserved, to mitigate any loss of significance by minimizing harm and/or providing preservation by record.

## METHODOLOGY

### **Scope of the Assessment**

- 12.1.27 An EIA Scoping Report was submitted to West Oxfordshire and Cherwell District Councils in May 2014 (see appendix 1 of Section 3) and agreed with them. During consultation held as part of the preparation of this ES and in the EIA Scoping Opinion, the Local Planning Authorities, as advised by Oxfordshire County Archaeological Service, gave the opinion that further information derived from field evaluation would be required to identify the potential significance of any archaeological effects of the Proposed Development. This work was subsequently completed in accordance with specifications which were provided to Oxfordshire County Archaeological Service and English Heritage for comment. The evaluation results are discussed in this chapter and the evaluation reports is provided in Appendices arch2 and arch3.
- 12.1.28 As there is a Scheduled Monument within the area, consideration of any impact on this takes two forms: direct physical impact and indirect impacts such as those on the setting of the monument. Fieldwork has revealed further archaeological remains within the areas evaluated, beyond the Scheduled area, as detailed below.

### Guidance

- 12.1.29 Desk based assessment (Preston 2014 presented as Appendix arch 1) drew on the following sources recommended by the Institute for Archaeologists paper 'Standards in British Archaeology' covering desk-based studies:
- Historic and modern maps (Ordnance Survey);
  - The Oxfordshire Historic Environment Record,
  - Geological maps (British Geological Survey);
  - National Monuments Record air photograph collection; and
  - Any relevant publications or reports (full list in Appendix arch 1)
- 12.1.30 The geophysical survey report (Bray and Dawson 2014 presented as Appendix arch2) followed guidance contained in the Institute for Archaeologists paper 'Standards in British Archaeology', and English Heritage paper Geophysical Survey in Archaeological Field Evaluation (IFA 1999; IFA 2002; 2011; EH 2008) covering the use of geophysical techniques in field evaluation and followed the issuing of a licence for the area of the scheduled monument by Dr Chris Welch, English Heritage Inspector of Ancient Monuments.
- 12.1.31 The fieldwork report (Bray and Taylor 2014 presented as Appendix arch3) followed guidance contained in the Institute for Archaeologists paper 'Standards in British Archaeology' (IFA 2001) covering field evaluation.
- 12.1.32 The setting of the scheduled monument has been considered with reference to English Heritage's 'The setting of heritage assets' (EH 2011). This document contains guidance and advice on managing the heritage resource. It was prepared before the publication of the National Planning Policy Framework, but is considered by English Heritage still to contain useful advice and case studies. Its key theme is that while *a 'consideration of setting is necessarily a matter of informed judgement, the aim of the guidance is to assist effective and timely decision-making by ensuring it takes place within a clear framework and is as transparent and consistent as possible.'*

### Relevant Elements of the Proposed Development

- 12.1.33 The most relevant elements of the Proposed Development to this Chapter are:



- The site preparation and construction works (as described in Chapter 2 'The Proposed Development');
- The proposed areas of built development
- The route of a foul drainage pipeline once it exits the main area of development
- The location of these elements is identified on in Figure 1 (appendix arch 4).

#### Insignificant Effects

- 12.1.34 Insignificant effects arise only where no significant archaeological remains are present. All archaeological remains are fragile and irreplaceable. The significance of construction impacts mirrors the significance of the asset(s) affected.

#### Potentially Significant Effects

- 12.1.35 Potentially significant effects that are considered further within the assessment section include the damaging effects of construction on known heritage assets and their setting(s) and on hitherto undiscovered fragile archaeological remains, their contexts and settings. Construction effects on archaeological remains in this case are limited to below-ground impacts (including but not limited to foundations, service trenches, landscaping), while the settings of heritage assets can also be affected by above ground effects, and even by less tangible impacts such as noise or dust. The significance of the effects depends in the main on the significance of the asset affected, as even 'slight' damage can reduce the significance of, and the information value inherent in, archaeological deposits, and all effects are permanent. Even where remains are physically preserved, their information value might be reduced by destruction of other remains nearby, resulting in a loss of 'legibility', which is the added information gained from knowledge of their surroundings ('context'). More broadly, the 'setting' of heritage assets can also be affected directly or indirectly, again, in proportion to the contribution which that setting makes to the significance of the asset.
- 12.1.36 Assessment of the significance of heritage assets and thus of the potential significance of the effects of development is guided by the Town and Country Planning (Environmental Impact Assessment) Regulations (2010); English Heritage documents, the *Historic Environment Planning Practice Guide* (2010) and *Conservation Principles (Policies and Guidance)* (2008); the DCMS *Scheduled Monuments Policy Statement* (2013); and the criteria used by the Secretary of state in determining applications for Scheduling. Assessment of the significance of the setting of heritage assets is guided by 'The setting of heritage assets' (EH 2011).

#### Site Preparation, Earthworks and Construction Phase

- 12.1.37 Construction, landscaping and earth moving in general inevitably can potentially destroy any archaeological deposits that they encounter; and even where particular deposits, features, or entire sites are not physically destroyed, they can suffer 'loss of significance' through damage to the surroundings in which they are to be understood. Dewatering can also cause the loss of significance of potentially informative waterlogged deposits even if those deposits are not themselves destroyed. The scope of any such effects depends on the nature, extent and significance of any heritage assets on the Site.

#### Operational Phase

- 12.1.38 There are no additional effects on buried archaeology during the operational phase.
- 12.1.39 Potential effects without the proposed development
- 12.1.40 The Site is currently arable land, including the Scheduled Area. Without the proposed development, modern deep ploughing techniques may threaten gradually to destroy all but the deepest archaeological features, including the Scheduled remains. The

continuation of ploughing is not currently subject to any requirement for Scheduled Monument Consent.

#### Cumulative effects

- 12.1.41 Loss of any part of the archaeological resource is permanent and cumulative on local, regional and national levels, unless mitigated by preservation by record. England is believed to contain no more than 2100 Roman Villas (estimated: Holbrook and Morton 2008). The cumulative effects on the settings of designated heritage assets may be added to the negative effects of all recent development in the area.

#### Extent of the Study Area

- 12.1.42 An area of 1km radius around the Site centre was assessed in detail (Appendix arch 4 Figure 1) as was a corridor to the north for the route of a pipeline to the sewage treatment works. There was a broad background assessment for a wider area (nominally the historic parishes of Woodstock and Kidlington).

### **Method of Baseline Data Collation**

#### Desk Study

- 12.1.43 Desk based assessment (Preston, 2014 presented as Appendix arch 1) drew on the following sources recommended by the Institute for Archaeologists paper 'Standards in British Archaeology' (IfA.1999) covering desk-based studies.
- 12.1.44 Historic and modern maps (Ordnance Survey) from the 16th century to the 21st (full list in Appendix arch 1);
- The Oxfordshire Historic Environment Record,
  - Geological maps (British Geological Survey);
  - National Monuments Record air photograph collection; and
  - Any relevant publications or reports (full list in Appendix arch 1)

#### Fieldwork

- 12.1.45 The Scheduled Area within the Site has already been subject to limited trenching and fieldwalking, and magnetic susceptibility survey, following the recognition of a possible buried Roman Villa site from aerial photography. The area to be scheduled was based on the results of these studies.
- 12.1.46 Part of the Site also lies within a wide area that had been field-walked as part of preparations in advance of a proposed ring road (never built) (OAU 1992), and a part of the Site along the northern fringe of the Site had seen geophysical survey (Bartlett 1992).
- 12.1.47 Further field evaluation by means of geophysical survey (magnetometry) across the whole site and trial trenching (comprising 265 trenches) across the site but outside of the Scheduled Area, was carried out between 23rd September and 21st October 2014 by Thames Valley Archaeological Services (Bray and Dawson, 2014; Bray and Taylor, 2014).

### **Significance Criteria**

- 12.1.48 The assessment of potential effects as a result of the Proposed Development has taken into account both the site preparation, earthworks and construction phase and the operational phase. The significance level attributed to each effect has been assessed based on the magnitude of change due to the Proposed Development and the sensitivity of the affected receptor/receiving environment to change, as well as a

number of other factors that are outlined in more detail in Chapter 3 'Approach to the EIA'. Magnitude of change and the sensitivity of the affected receptor/receiving environment are both assessed on a scale of high, medium, low and negligible (as shown in Chapter 3 'Approach to the EIA'). The significance of archaeological remains can be assessed against the criteria used by the Secretary of State when considering Scheduling, which include but are not limited to:

*Period; Rarity; Documentation/finds; Group value; Survival/condition; Fragility/vulnerability; Diversity; and Potential*

#### Effect Significance

- 12.1.49 The following terms have been used to define the significance of the effects identified:
- 12.1.50 Major effect: where the Proposed Development could be expected to have a very significant effect (either positive or negative) on heritage assets, whether designated or not, including previously unrecorded heritage assets (i.e. below-ground archaeological remains);
- 12.1.51 Moderate effect: where the Proposed Development could be expected to have a noticeable effect (either positive or negative) on heritage assets, whether designated or not, including previously unrecorded heritage assets (i.e. below-ground archaeological remains);
- 12.1.52 Minor effect: where the Proposed Development could be expected to result in a small, barely noticeable effect (either positive or negative) on heritage assets, whether designated or not, including previously unrecorded heritage assets (i.e. below-ground archaeological remains); and
- 12.1.53 Negligible: where no discernible effect is expected as a result of the Proposed Development, only possible as a result of there being no heritage assets present.

#### ***Sensitive Receptors***

- 12.1.54 The following are the sensitive receptors which will be assessed in the following assessment:
- All archaeological deposits, features or finds (artefacts and ecofacts) and deposits holding potential for palaeoenvironmental reconstruction.
  - The Setting of any designated assets, or of undesignated assets considered to be of comparable significance to a designated asset.

### **RESULTS OF DESK STUDY**

#### ***Baseline Conditions***

- 12.1.55 Desk based assessment (Preston 2014) has shown that the Site lies within an area of high archaeological potential for several periods, with a range of archaeological finds and sites within the broad study area. More specifically, there is a buried Roman villa within the Scheduled Area, and now demonstrated to extend beyond it, with associated enclosures. Field evaluation (Bray and Dawson 2014; Bray and Taylor 2014) has identified archaeological sub-surface features on the Site itself, which in summary, comprise a concentration of Iron Age or Roman deposits in the far north-eastern corner coincident with an area of geophysical anomalies with additional Roman deposits across a second geophysical anomaly complex well to the north of the scheduled area (see Appendix arch 4 Figure 2)

#### Designated Assets

- 12.1.56 There is a Scheduled Monument within the Site.

- 12.1.57 Blenheim Palace is a World Heritage Site (WHS) consisting of numerous Listed Buildings set within a Registered Park. The eastern edge of the Park is across the Oxford Road (A44) from the south-western edge of the Site. The visual impact of the proposed development on the WHS and the Park is considered in Chapter 10.
- 12.1.58 There are no Registered Battlefields on the Site or in the vicinity.
- 12.1.59 There are no Listed Buildings on the Site. In the vicinity there are several Grade II Listed Buildings but of these only the farm complex at Cowyards, to the south-west, is in a position where its setting would need to be considered.

#### Archaeological baseline for the Site by period

- 12.1.60 The Oxfordshire Historic Environment Record (HER) lists few findspots of archaeological material from the vicinity of the Site, other than those relating to the Scheduled Monument. These are detailed in Appendix arch1 and here summarized by period: their locations are plotted on Figure arch1 (numbers in the text refer to this figure and correspond to those in Appendix Arch1). Discoveries made in the course of this project are detailed in following sections.

#### Prehistoric (pre Iron Age)

- 12.1.61 The only HER records for the prehistoric period are for very limited scatters of worked flint recovered by fieldwalking, one for just nine flints widely spread across the villa site [1] and three for further small quantities of flints to the north of the site [2, 3, 4]. None of these suggests settlement or significant prehistoric potential, but the limited nature of the fieldwork may be masking greater potential for the period.
- 12.1.62 Beyond the Site to the south [5] there is an HER record of a probable Bronze Age round barrow (burial mound) although it is also considered possible that this might be post-medieval landscaping.

#### Iron Age

- 12.1.63 The HER contained no entries specifically relating to this period within the search radius.

#### Roman

- 12.1.64 The most relevant record for the proposal site is a known Roman complex within it [6]. First seen from the air, this consists of a series of ditched enclosures within which are stone-footed rectangular buildings, which has been known as Blenheim villa or Begbroke villa. Limited trenching across the site (OAU 1985) revealed surprisingly well preserved walls, with wall plaster, below which could well be preserved floors (the excavations did not penetrate to this depth). The building was set within a ditched enclosure and appears to be associated with a field system to its north. Prior geophysical survey also seemed to confirm and add to (Roberts 1993) the boundary ditches and fieldwalking recovered a substantial assemblage of 3rd- and 4th-century Roman pottery (although containing rather few imported wares). The site is now a Scheduled Monument. The main building appears to have been of rather simple form but nonetheless includes a corridor and an apsidal room. It is not clear if any ancillary structures also exist.
- 12.1.65 At the extreme northern limit of the search radius [7] is another Scheduled Monument at Hensington which is another enclosed Roman site, presumably a simple farmstead. A small scatter of Roman pottery was also located in fieldwalking to the north of the Site.
- 12.1.66 Not far to the south-east of the Site at Campsfield [8] is another Roman settlement, thought to be a village, based on very limited investigation (Hunter and Kirk 1952/3). The original excavators of the Campsfield site considered it likely to have been set in a

clearing in an extensive forest (based on even less evidence). The line of the Roman road from Alchester to Cirencester (Akeman Street) passed not far to the north of the Site and a small quantity of pottery is recorded from fieldwalking, also to the north [4].

#### Saxon

- 12.1.67 There are no entries in the HER relating to physical remains of the Saxon period in this area. There is an HER entry for a documentary reference to 'Heh strete' which is thought to be a branch of the Ridgeway [9].

#### Medieval

- 12.1.68 Medieval pottery was found during fieldwalking within the Site [12]. A chapel of St John [10] is believed to have existed in the vicinity though its exact location is unknown, and there may have been a medieval cross in Hensington [13]. An iron arrowhead has been found in a garden to the north-west [11].

#### Post-medieval

- 12.1.69 The major post-medieval features in the area are within the Blenheim Palace complex and are discussed in Chapter 12.2. Evaluation trenching not far to the north of the Site revealed only ridge and furrow earthworks, and a 19th-century boundary ditch [15]. There is a record of the building of an icehouse in Blenheim Park in 1707, which was certainly still in existence in 1979 but now appears to be represented only as an earth mound [16]. The Oxford Road, the modern A44, was a turnpike in the 18th century and a milestone from this period still stands to the west of the site [17], while the location of a toll house is known from cartographic sources to the south [18]. Various buildings in the mainly 19th-century farm complex of Cowyards, to the south-west of the site [19], are Listed Buildings.
- 12.1.70 Not included in the HER, 19-century Ordnance Survey maps record a 'Pest house' in the north-west of the site, and 20th-century Ordnance Survey maps show the location of an isolation hospital within the northern part of the site, surrounded by a small paddock. Both buildings were demolished later in the 20th century.

#### Modern, Undated, Negative

- 12.1.71 Two small pieces of fieldwork within the proposal site discovered nothing of archaeological interest. Neither of these can be located particularly accurately from the information available. One was a watching brief during the digging of a pipeline around the north and west sides of the field in 1981; and the other was a single trench opened by the landowner on the location 'where the Ordnance Survey shows the villa' at Kidlington. It was suggested that the site may have been quarried close to the roadside. Two other small investigations within Woodstock also produced no evidence of archaeological interest [20, 27].

### **Summary**

- 12.1.72 In summary, finds from within the Site itself include:
- Worked flints, in very low numbers;
  - A buried Roman villa in a good state of preservation, with Roman pottery and other finds; and
  - Medieval pottery.
- 12.1.73 The sensitivity of these remains varies. Finds contained within the ploughsoil are constantly being reworked and degraded by ploughing; development on the Site would remove all or almost all the significance attaching to these finds, however this significance is only modest. More significant are the anticipated sub-surface remains

which may be the ultimate source of ploughsoil artefacts. Again, development, without mitigation, potentially may damage the significance of these, wholly or partially. The inherent significance of any such remains cannot be established without further field investigation, such as by evaluation: and this has now been undertaken, see below.

#### Future Baseline

- 12.1.74 It should be noted that the baseline environment may change without the Proposed Development in place, for example ploughing out of sub-surface features, including even substantial masonry and (if present) mosaic floors, or re-working of the ploughsoil dispersing artefact clusters and degrading the artefacts themselves.

### **RESULTS OF FIELD SURVEY**

- 12.1.75 Two stages of evaluation (running partly concurrently) were undertaken across all or parts of the site: geophysical survey (magnetometry) over the whole available area and sample trenching, which avoided the Scheduled Area. An area at the northern side of the Site was also not accessible at the time of the fieldwork. The area covered therefore totalled 60.6ha. The trenches were in the main located randomly to ensure statistical rigour but additional trenches were added to target geophysical anomalies as these results became available; 265 trenches were eventually excavated.
- 12.1.76 The geophysical survey (Appendix arch 2) revealed widespread anomalies across the site, many of which relate to natural geological effects, modern agricultural practice, modern facilities such as pipelines and relatively modern field boundaries. Amongst these, however, are clusters of anomalies certainly or probably of archaeological interest, including a well-defined plan surrounding the buried Roman Villa Scheduled Monument. These geophysical anomalies (excluding the latter zone) were subsequently examined by trial trenching to confirm or refute their presence, and if present, their nature and date.
- 12.1.77 The trenching survey (Appendix arch 3) confirmed that most of the geophysical clusters were of archaeological origin and of Late Iron Age into Roman date. One area adjacent to a geophysical cluster also contained deposits of Roman date. These two clusters of archaeological origin would appear to represent non-villa occupation sites. Several geophysical anomalies were shown to be modern or late post-medieval in date and several could not be identified below ground and were thus of deeply buried geological origin or activity now only represented within the ploughsoil. Large areas of the site contained no archaeological deposits nor artefacts of archaeological interest. The trenching also confirmed the western and eastern limits of the Roman villa complex.
- 12.1.78 The Baseline Conditions for the archaeological potential of the site can now therefore be updated:

#### Prehistoric (pre Iron Age)

- 12.1.79 The geophysical survey has not suggested the presence of any distinctive anomalies of prehistoric date. Similarly, the evaluation trenching has revealed no earlier prehistoric remains but did recover a few struck flints.

#### Iron Age

- 12.1.80 The evaluation trenching revealed finds and deposits, such as ditches, pits and postholes of this period, mainly from the Late Iron age, broadly coincident with those of Roman date.

Roman

- 12.1.81 The geophysical survey considerably extends the area covered by the enclosure system beyond the Scheduled Area and has also accurately located the villa site itself. The trenching programme confirmed that the majority of the datable features belong to the Roman period and indicate an occupation site in the north-eastern corner of the Site, and features associated with the field system that extends northwards from the Scheduled Area, besides the villa itself (which was not trenched). These areas have archaeological potential which can be categorized as High for the features likely to be directly associated with the Scheduled Monument and Moderate for those further away.

Saxon

- 12.1.82 A number of rectangular geophysical anomalies on the Scheduled Monument are tentatively identified as early Saxon sunken floored buildings, though other equally valid interpretations are possible.

Medieval

- 12.1.83 The fieldwork revealed just a single sherd of medieval pottery, and therefore possibly one pit dated to this period.

Post-medieval

- 12.1.84 The location of the hospital within the northern part of the Site is visible in some aerial photographs and can be identified by a marked geophysical anomaly, though the evaluation revealed few below ground remains.
- 12.1.85 The geophysical survey has identified additional field boundaries of probable 19th century date which do not appear on cartographic sources.

Modern, Undated, Negative

- 12.1.86 Inevitably the fieldwork resulted in the recording of undated and modern features, whose interest must necessarily be limited. The geophysical survey and sample trenching showed nothing of archaeological interest across large areas of the Site, which can therefore be considered to have Low or Negligible archaeological potential.

**EVALUATION, IMPACTS AND MITIGATION**

***Site Preparation, Earthworks and Construction Phase***

Design Solutions and Assumptions

- 12.1.87 As a result of the statutory protection afforded by the designation of the Scheduled Monument, the layout of the development will exclude the Scheduled Area and a buffer zone around it, which has been drawn up using the results of the geophysical and trial trenching evaluations. There is therefore no direct impact in this zone. Indirect impacts are considered below.
- 12.1.88 Other aspects of the development design initially remained flexible such that should any buried assets of national significance be identified, these could be retained in situ without hindering the proposed layout. The submitted proposal takes account of the findings of the archaeological fieldwork to achieve a mixture of mitigation including preservation *in situ* by design, and preservation by record where appropriate.
- 12.1.89 Nothing of archaeological significance was found to be present in large areas within the Site; no mitigation is required for these areas (Appendix arch 4 figure 2).

Destruction of Archaeological Remains

- 12.1.90 All earth-moving activities within the Site carry the potential to damage or destroy archaeological remains, if present. 'Damage' may extend to deposits which are physically preserved intact, through 'loss of legibility' i.e., the loss of interpretability resulting from damage to surrounding context, leading to a loss of significance. Significance can also be lost through adverse changes to the setting in which a monument is experienced.
- 12.1.91 Positive effects include the enhancement of the setting of a monument, or enhanced public awareness and understanding, possibly through excavation, and publication or display of results. NPPF, however, makes it clear that advancing understanding should not be a factor in deciding whether to permit loss of an asset. Therefore the Scheduled Monument will be preserved in situ and its setting enhanced by increasing public awareness of it, access to and understanding of the surroundings in which it was created and used.
- 12.1.92 The baseline data indicate that there are deposits of archaeological interest in the areas of the Site that have been evaluated. The extent, character, date and state of preservation of these 'sites' has been established within the accepted parameters of field evaluation.
- 12.1.93 The remains of the villa, which is the basis for the Scheduled Area, have been shown to extend beyond that Scheduled Area (Appendix arch 4 figure 2); the remains of the building itself that lie outside the SM are demonstrably of comparable significance to the Scheduled remains. An appropriate response might be for English Heritage to consider the new information and revise the Scheduled Area's boundaries. Even without this statutory protection, however, the development proposal will preserve these remains along with the Scheduled Area, and a substantial area of their surroundings.
- 12.1.94 The sensitivity of archaeological remains is high and the magnitude of change is considered to depend on the significance of the remains. These are generically classed as of national importance (Designated Heritage Assets, taken to include undiscovered and therefore undesignated remains of equal significance); of regional significance; or of local significance only, corresponding with Major, Moderate and Minor as used in this assessment.
- 12.1.95 All potential effects on these assets are classified according to the significance of the asset. All of the negative effects considered here are permanent and irreversible. Positive effects may be permanent or temporary. Therefore, there is likely to be a direct, permanent, long-term effect on heritage assets of negative significance which may range from major to minor depending on the nature of the assets, prior to the implementation of mitigation measures.
- 12.1.96 Positive effects include the enhancement of a heritage asset itself (not practically achievable for buried remains) or of the setting of a heritage asset. The interpretation of buried archaeology can significantly enhance public appreciation of its setting. This desirable outcome can be achieved within the current proposal.
- 12.1.97 Negligible effects would occur only where no archaeological remains were present.
- 12.1.98 Some effects may be considered neutral, regardless of magnitude: such as, for example, preservation in situ of nationally significant remains, which merely means that the development has had no effect, unless accompanied by increased interpretation and awareness.
- 12.1.99 The development is designed to have no direct impact on the designated heritage asset (and an undesignated asset of comparable significance (the site of the buried Roman Villa outside of the scheduled area) so there are no major negative effects: indeed for this part of the Site there will be a Positive effect. Indirect effects are addressed below Most of the development will involve areas with negligible archaeological significance and therefore negligible effect. Two areas where



development will take place, in the north and north east of the Site, will affect archaeological zones of Moderate significance and the effects here will be mitigated by preservation by record, balancing the loss of the asset with the information gain to achieve a neutral net effect.

#### Setting of Designated Heritage Assets

- 12.1.100 Heritage Significance can also be lost through changes to the Asset's setting. 'Setting' in this case is specifically:

*'the surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral (EH 2011, 5)'*

- 12.1.101 The English Heritage guidance also advises:

*'Heritage assets that comprise only buried remains may not be readily appreciated by a casual observer, they nonetheless retain a presence in the landscape and, like other heritage assets, have a setting.'* (EH 2011, 8),

and;

*'The contribution that setting makes to the significance does not depend on there being public rights or an ability to access or experience that setting' (EH 2011, 5).*

- 12.1.102 In the present case, the buried Roman Villa is not effectively 'experienced' in any physical sense, and its current surroundings can therefore make no positive contribution to the experiential element of its significance. The large field in which it is currently located in no way resembles the series of small enclosures (almost certainly hedged) which surrounded it when it was in use. Development on the site will certainly alter its surroundings but, as boundaries to the open space will be screened from the new housing by existing and new hedging, and will not detract from the significance of the asset.

- 12.1.103 It is suggested that by the simple provision of an information board detailing what is known of the monument and the surrounding archaeological landscape, the development has the opportunity to enhance the public experience and appreciation of this nationally important site, and will thereby contribute positively to the local area's character and identity. Details of how the effects of the development on setting will be mitigated are provided below (8.4).

- 12.1.104 An important consideration in planning terms must be:

*'the potential for appreciation of the asset's significance in the present and the future. People may, for example, be better able to appreciate the significance of a heritage asset once it is interpreted or mediated in some way. Equally they may be able to appreciate the significance of an asset from land that is currently inaccessible'* (EH 2011).

- 12.1.105 The current proposal makes an important positive contribution in both these respects.

#### Specific Setting of the Scheduled Monument

- 12.1.106 The development proposal transforms the Site from one that is rural farmland to one that is a large open space with a built urban landscape. In the case of a scheduled monument this process can be described as potentially being harmful to the setting and thus it is incumbent on the developer to minimise or remove effects of development on setting, or indeed to enhance the setting. In this instance, as with the vast majority of archaeological sites, the original setting is broadly that of being rural and agricultural. Consultation with English Heritage for this site has indicated that the specific issues for this Site are the potential for harm that might be generated by the transformation to a built environment, and specifically the effects on the 'aspect' of the

villa. Detailed consideration of the background for the villa's setting is therefore provided here, following the process outlined in *The Setting of Heritage Assets: English Heritage Guidance* (EH 2011) and addressing the factors outlined therein. [All quotations in this section are from this guidance unless indicated otherwise.]

- 'Step 1: identifying the heritage assets affected and their settings'
- 'Step 2: Assessing whether, how and to what degree these settings make a contribution to the significance of the heritage asset(s)'
- 'Step 3: Assessing the effect of the proposed development on the significance of the asset(s)'
- 'Step 4: Maximising enhancement and minimising harm'
- 'Step 5: Making and documenting the decision and monitoring outcomes'

12.1.107 The asset primarily affected and under consideration here is a Roman villa, which is a Scheduled Monument.

12.1.108 English Heritage advise: *'The second stage of any analysis is to assess whether the setting of a heritage asset makes a contribution to its significance and the extent of that contribution. In other words to determine 'what matters and why?' in terms of the setting and its appreciation. We recommend that this assessment should first address the key attributes of the heritage asset itself and then consider:*

- *'the physical surroundings of the asset, including its relationship with other heritage assets;*
- *'the way the asset is appreciated; and*
- *'the asset's associations and patterns of use.'*

#### Topography

12.1.109 The site of the Blenheim Roman Villa is currently within a c. 40ha field north of a busy main road, south-east of the town/village of Woodstock and north-west of Kidlington airport/airfield. There is nothing to indicate to the public that it is the site of a villa and access is limited. The general area is broadly very flat with just a very gentle fall towards the east and south-east. The field is bordered by the A44, A4095 and Shipton Road, and the overall development site is bordered on the north-west by the town of Woodstock (Appendix arch 4 figure 1). There is a limited amount of modern housing along Campsfield Road to south-east and north-east, on Shipton Road to the north, and beyond the A4095 to the south, and further off, Woodstock itself to the north-west, as well as the airport. All of these can be considered to contribute negatively to the significance of the asset. Consent was recently granted for housing development on Shipton Road adding further housing to the setting (in the wider meaning of this word) without substantial harm to the significance of the asset.

12.1.110 The main feature of the topography, however, is agricultural land bounded by mature trees. The following paragraphs (particularly relating to and use) will assess whether and, if so, to what extent, this contributes positively to the significance of the asset.

12.1.111 Other heritage assets (buildings, structures, landscapes, areas or archaeological remains)

12.1.112 Other designated heritage assets in the immediate vicinity include the listed buildings at Cowyards, the Registered Park and the World Heritage Site at Blenheim Palace. The locations of these other heritage assets in the area, all post-medieval, cannot lead to any greater appreciation of the Roman Villa's buried remains and therefore cannot be considered to contribute to its significance. Further afield, to the north, is another Scheduled Monument at Hensington, likely to be a broadly contemporary Roman farm. The buildings of Woodstock, however, intervene between the two Scheduled Monuments.

- 12.1.113 Undesignated heritage assets in the vicinity revealed by the fieldwork for the current project include a small area some 600–700m north-east of the villa site, which contains further Roman occupation; and (previously known) another Roman occupation site at Campsfield, a similar distance south-east (Figure [ESFig1](#), number 8). Both the geophysical survey and the trenching exercise suggest that the overall site (beyond the villa complex) is remarkably devoid of other archaeological remains. This density of settlement is entirely typical for the Roman period, and does not suggest anything special in terms of the villa’s location. The other settlement areas do provide a broad general context in which the villa needs to be considered, but it is unlikely that the villa would be considered less important if they were not present.
- 12.1.114 Definition, scale and ‘grain’ of surrounding streetscape, landscape and spaces
- 12.1.115 The ‘grain’ of the landscape in which the villa was set, as revealed by the geophysical survey, is broadly north-south, slightly curving, with the building itself closer to NNE–SSW. The relationship of this grain to the modern landscape makes no special contribution to the significance of the monument.

#### Formal design

- 12.1.116 The villa appears of a fairly simple design: its landscape setting is most unlikely to have been ‘designed’. It is not possible on current evidence to judge if an architect was employed to design the building but it was a reasonably ‘standard’ type for the period, and comparatively small.

#### Historic materials and surfaces

- 12.1.117 The building materials used contribute greatly to the villa’s significance, as the presence of painted wall plaster, masonry, etc, enhances the importance of the architecture and the materials may well be one key factor in the designation of the asset as of national importance. These remains are buried, however, and possibly subject to ongoing plough damage in the current use of the site. Without the proposed development, the condition of these materials can only deteriorate, possibly dramatically with modern deep ploughing techniques.

#### Land use

- 12.1.118 As argued in detail below, current landuse does not reflect the original setting of the villa except in the most superficial sense that it is agricultural.
- 12.1.119 The villa sits within an enclosure approximately 38m by 24m, one of a series of 6–8 fields arranged in a ‘ladder’ pattern broadly aligned north of the house, with one to the south, some of which were probably subdivided (Figure [ESFig2](#)). The largest of these plots of land, at its maximum, is around 60m by 80m (0.48ha), the entire ‘ladder’ extending some 400m N–S, and never wider than 90m. The full extent of this system may be increased by another 160m (N–S) if a second group of similar geophysical anomalies was originally connected, giving a maximum area of 3.6 ha (or possibly 4.5 ha), thoroughly subdivided. Although both the current and the likely original setting can be characterized as ‘agricultural’, there the similarity ends. Modern industrialized agri-business does not compare with the type of farming carried on in Britain in Roman times. The contrast between the small enclosed spaces of the Roman landscapes and the huge 40 ha field currently in place could not be more stark. Typical field sizes were fractions of a hectare (Reynolds 1996, quotes 0.16 to 0.25 ha for the Iron Age: Roman fields need have been no larger: Henig and Booth 2000, 95–101). There is little evidence from Oxfordshire for a suggested shift to ranching, seen elsewhere in Roman Britain in the later Roman period, which would have seen an increase in field size, but within a very different setting based on animal husbandry.
- 12.1.120 The villa complex is most likely to have been a working agricultural estate (not all necessarily were), but details of its contemporary environment are more difficult to

assess. In particular, whilst it is a reasonable assumption that the complex of enclosures in the zone north and south of the main villa building are likely to have been used for animals, the evaluation fieldwork found remarkably little evidence for any organised landscape to the east nor even indirect evidence for arable farming such as pottery introduced to fields along with manure.

- 12.1.121 Although the nearby Scheduled Monument at Hensington to the north-west has not been positively dated, the limited evidence suggests a similar Roman date and recent aerial photographs show that it is set within a 'ladder' pattern of fields similar to those around the Blenheim villa. Assuming they are of comparable date, then the landscape in which these two sites existed was a busy and tightly packaged one, with settlements within very narrowly bounded field systems, and with a farm or settlement of some sort every kilometre or so in every direction, as has long been noted for the Thames gravels. Indeed the spacing here may be even closer; geophysics and evaluation trenching show another cluster of anomalies probably indicating occupation within the site, around 600m north-east, and there is another settlement site at Campsfield a similar distance to the south-east. This would still leave large unbounded spaces between settlements. This unclaimed space could have been forested or open, pastoral or arable, waste (*agri deserti* – Faulkner 2002), or a mix of all of these: current evidence is unable to offer a reliable guide, but the fact that it remained unenclosed suggests it was not all farm land, and the survival of some or much woodland (probably managed) is usually taken for granted in discussions of the region's environment (Henig and Booth 2000; Dark and Dark 1997).

#### Green space, trees and vegetation

- 12.1.122 The environment in which the villa complex operated cannot be reconstructed in any detail, except that it is possible to set the building (reasonably certainly) within a series of small ditched/banked and probably hedged enclosures, which the current setting fails to reflect.

#### Openness, enclosure and boundaries

- 12.1.123 The same considerations apply as above. The vast 40 ha field in which the Scheduled Monument lies does not reflect the boundedness of its original landscape. In addition, the proposal leaves a substantial buffer zone around the Scheduled Area undeveloped, striking a better balance than is currently possible between openness and boundedness.

#### Functional relationships and communications

- 12.1.124 Villas in some parts of the country can be shown to have been sited specifically to be intervisible with other villas (on neighbouring hilltops, facing one another across a valley, etc). There is no evidence that this was the case here in a relatively level setting, and with no other villa known nearby. The villa may have had connections or relationships with similarly-dated (but perhaps less conspicuously 'Romanized', ie non-villa) settlements to its north-east, south-east and north-west (if all were contemporary), and probably trade links with nearby Roman towns, though the closest known Roman road link is around 1km to the north. The current setting does nothing to enhance an appreciation of these factors.

#### History and degree of change over time

- 12.1.125 The villa site was entirely unknown until its discovery in the 1970s and thus has no history beyond the limited trenching it has witnessed; the only known change since its abandonment is the continuing ploughing of the field which will be inexorably eroding its fabric. Cartographic review has shown that the field in which the asset lies was heath or waste land (and possibly used as a military training ground, though this is not certain) in the 1790s but arable by the 19th century and has changed little since. It is

arguable that the change from heath to arable has harmed the setting (and the fabric) of the monument and that a reverse change away from arable to grassland will remove this harm.

#### Integrity

- 12.1.126 A significant part of the importance of the villa, undoubtedly a contributory factor in its being Scheduled as of national Importance was its remarkable degree of preservation demonstrated by limited trenching across it, although the trenching (sensibly) did not penetrate deeply enough to establish whether, for example, floors or hypocausts survived. This remarkable preservation cannot be appreciated in today's setting; nor can it be assumed that it remains the case.

#### Issues such as soil chemistry and hydrology

- 12.1.127 No issues are known.

#### **Experience of the asset**

#### Surrounding landscape or townscape character

- 12.1.128 The site is not currently accessible to be experienced by the public, few of whom know of its existence.

#### Views from, towards, through, across and including the asset

- 12.1.129 The aspect of the Blenheim villa is not clear cut. The plan of the villa (the geophysical results confirming the initial Scheduling document), shows it possessed a corridor along its eastern side, aligned NNE–SSW, connecting a single suite of rooms to the north-west and a large square room and an apse to the south-west, all set within a roughly rectangular enclosure, open to the south-west. Reconstructions of this simple form of building tend to assume that the corridor was porticoed, or an open verandah. If so, then this may be the side from which the villa was supposed to be approached: but this need not apply if the corridor was closed. Other villas in Oxfordshire and beyond can be considered to favour a south-eastern aspect, but it is not overwhelmingly so. Several in the county have a south or south-west aspect, with that at Barton Court Farm possibly facing north-east (Appendix arch 4 figure 3). That at Shakenoak, with whose earlier phases the current site can be compared, originally faced south-east but was rebuilt to face (probably) south-west. Wider studies within England indicate more variation rather than conformity. In Yorkshire, for which extensive data are available, as many villas face north-east as south-east but the preponderance there is due south or south-west (Burroughs 2001).
- 12.1.130 At the Blenheim villa, views from the suite of rooms would all look north-west; views from the apsidal room would span a panorama from the south-east, through due south to south-west. The north gable end would have provided only limited viewing north-eastwards, and as it was northwards that the associated field system lay, the north end of the building was probably the 'working' end and the south for entertaining: the most likely interpretation of the apsidal room is as the *triclinium* or dining room which would be the chief focus of the house, as confirmed by excavation, showing it had plastered and painted walls. The geophysical survey suggests that the villa enclosure opens onto another larger enclosed area south/south-west of the apse which could be interpreted as a courtyard or perhaps garden, and it may be that this was the main direction of approach to the house. It would have been this space that any window(s) in the apsidal room were designed to view.

#### Visual dominance, prominence or role as focal point

- 12.1.131 The site currently holds no prominence in the local landscape.

Intentional intervisibility with other historic and natural features

- 12.1.132 The site setting is broadly flat. There is no spectacular scenery, there are no other known villas that would have been intervisible for the original occupants. It is conceivable that the villa may have had views towards similarly dated settlements to its north-east, south-east and north-west (if all were contemporary) but unlikely that these were of prime importance in its location. See also Tranquillity, remoteness, 'wildness', below

Noise, vibration and other pollutants or nuisances

- 12.1.133 The site is currently close to a main road and an airport, detracting considerably from any appreciation of its setting that might have been possible in other circumstances.

Tranquillity, remoteness, 'wildness'

- 12.1.134 Depending on the importance assigned to any putative relations with neighbouring settlements the importance of tranquillity, remoteness, 'wildness' diminish in proportion. It is considered more likely that the original inhabitants would have valued interconnectedness (economic, political and/or social) more than remoteness, but this can only be conjecture. Certainly, a site less than 1km from two, perhaps three (probably contemporary) other farms cannot be classed as 'remote'. How much 'wild' terrain may have existed in the region in the Roman period is open to doubt: some surviving natural woodland is quite probable but it is generally assumed that most of the landscape will have been parcelled up and intensively exploited (Henig and Booth 2000).

Sense of enclosure, seclusion, intimacy or privacy

- 12.1.135 As noted above, the villa remains sit within an enclosure approximately 38m by 24m, one of a series of 6–8 small fields arranged in a 'ladder' pattern broadly aligned north of the house, with one to the south, some of which were probably subdivided. It is probable, though not demonstrated, that the enclosures around the villa would have included a garden or gardens, increasing the intimacy of the setting. The introduction of gardens is one of the more easily overlooked of the innovations brought by the Romans. The contrast between the small enclosed spaces of the Roman landscapes and the huge 40 ha field currently in place could not be more stark. Assuming the enclosures were banked and hedged rather than simply open ditches, the whole complex would have had quite a 'closed' feel, both for those within and as an exclusion to those without. The current setting provides nothing of this feel.

Dynamism and activity

- 12.1.136 A villa estate can be pictured as a very vital combination of rich house owner (and family), slaves, farm labourers, itinerant traders, and animals (typically, all three of cattle, sheep and pig would be kept, probably horse and dogs, probably poultry). The construction of the house itself would have been quite an event in the local community. The nearby main road hardly provides a sympathetic reconstruction of this activity.

Accessibility, permeability and patterns of movement

- 12.1.137 The site is not currently accessible to the public and there is no movement across or through it.

Degree of interpretation or promotion to the public

- 12.1.138 The site is not currently accessible to the public and there is no interpretation or promotion of its heritage value.

The rarity of comparable survivals of setting

- 12.1.139 It is difficult to quantify the rarity of comparable survivals, but with around 2100 villas known in England alone (Holbrook and Morton 2008), and very few of these in an urban setting, the setting of this villa can be suggested to be broadly typical of the majority of the class.

***The asset's associative attributes***

Associative relationships between heritage assets

- 12.1.140 Little detail is available on this topic. No associative relationships are clearly demonstrable (such as may be the case if pottery made at one villa is found in another, or a similar style of mosaic flooring exists in several).

Cultural associations

- 12.1.141 None demonstrable.

Celebrated artistic representation

- 12.1.142 None

Traditions

- 12.1.143 The site was unknown until the 1970s; it has no associated traditions and indeed remains barely known.

- 12.1.144 Assessing the effect of the proposed development on the setting:

- Location and siting of development
- Proximity to asset
- Extent
- Position in relation to landform
- Degree to which location will physically or visually isolate asset

- 12.1.145 The development will bring housing closer to the site of the villa than it currently exists. However, the proposal leaves a very large open space clear of development around the villa, much larger than the space within which it was originally set. This includes preservation not only of the asset but of much of the enclosure system within which it is assumed to have existed. The proposed layout also emphasizes the original 'grain' of the landscape around the villa and the alignment of the building itself. It does not isolate the asset, as it leaves the approach open from the south and south-west (arguably the original approach, though this is not clearly demonstrated) and north (arguably the 'working' end of the complex). The Scheduled Area will not be dominated by the new development, and the proposal is designed to allow the open space to blend into the wider background, with the design of the housing sympathetic to the rural setting more generally.

'Position in relation to key views'

- 12.1.146 As discussed above, the 'aspect' of the villa is not clear cut.

- 12.1.147 If the villa's intended viewshed is believed to be to the south-west, then the development proposal will have no negative effect, as it will leave the viewscape into the Scheduled Area from this direction open, and draw attention to it, as appears to have been the Romano-British architect's intention.
- 12.1.148 The layout of the proposed development to the east emphasizes the south-west to north-east alignment of the original layout (the 'grain' of the surroundings).
- 12.1.149 If the viewshed is considered to be to the south-east, however, the development would block views to and from the villa site. As the villa cannot currently be seen, however, blocking the view towards it marks no detrimental change to the significance of the monument. What remains to be discussed therefore is the viewscape away from the villa site (bearing in mind that the English Heritage view is that the lack of visitor experience of the monument itself need not be a factor in assessing change to its setting). In fact the proposal contains elements which may enhance the setting by restoring something akin to the original view in this direction.
- 12.1.150 The geophysical survey (although not ground-proofed within the Scheduled Area) has provided what appears to be a very detailed ground plan of the villa complex, and the results that have been ground proofed, beyond the Scheduled Area, show that it is accurate there. What field-derived data we have from the original trenching of the villa itself and the current trenching results at the north end of the complex, suggest that the complex as a whole is predominantly of Roman date. Thus in broad terms it is realistic to consider both the villa and other elements of the complex as being in use at the same time. A notable feature of the plan of the complex is its 'ladder' arrangement, arranged roughly north-south, but with a marked eastern boundary. This boundary curves slightly and appears to be present for at least 200m and possibly 300m. Beyond this to the east, the evaluation trenching found no Roman deposits or even stray finds, suggesting no or minimal Roman activity in this zone represented by below ground deposits, not even field boundaries. The curving boundary does then appear to mark the eastern boundary of the villa complex.
- 12.1.151 Small ditches, as routinely encountered on archaeological sites, dug within an agricultural landscape are, almost invariably intended to provide upcast to plant a stock-proof hedge. As such, the curving boundary here will have been hedged, perhaps 3-4m high and set on a bank from the ditch upcast. 'Small ditched enclosures proliferated..., probably surrounded by hedges with some standard trees; many were probably horticultural plots, a new environment for the area at this time' [sc. early Roman] (Booth *et al.* 2007, 21). The introduction of gardens is one of the more easily overlooked of the innovations of the Roman period. Several Roman writers praise the solidity and permanence of a boundary marked by a hedge and the presence of hedging plants on Roman sites in Britain is well attested: rose, hawthorn/blackthorn and box for example, all common on Roman sites but not in the Iron Age, even on the same sites. At Farmoor, for example, there is evidence for rose, hawthorn/blackthorn, abundant in Roman but not in Iron Age deposits (Lambrick and Robinson 1989) and box was also present. The seeds from Watkins Farm (Northmoor) also indicate a primarily hedgerow rather than woodland mix of tree species (blackberry, hawthorn, osier, poplar, ash and elder) (Allen 1990). The gardens at Fishbourne have been reconstructed with box hedges. Here, there is no evidence as to the plants involved. On a limestone substrate, box thrives and it is possible that beech hedges could also have been grown. Either of these varieties would have provided a year round limit to the viewshed in the south-east direction. In this light therefore, it is unlikely that the most significant view to/from the villa was that to/from the corridor/portico towards the south-east, since this view is constrained by the presence of the boundary a mere 15-20m away.
- 12.1.152 It may be argued that the presence of this hedge is incongruous if the villa was *supposed* to face south-east; but this ignores the evidence (limited as it is). Either the enclosures around the villa are not related to it, in which case the villa is effectively deprived of any sort of contemporary setting that can be assessed at all, or this boundary is integral to the villa complex and deliberately positioned. This argues most



strongly that the key view is not to the south-east. Much Roman architecture, in fact, is focussed inwards rather than outwards (town houses designed around a central atrium, villas around a central courtyard). While the villa building here is not elaborate enough to have an interior 'focus' the possibility (which is admittedly only speculation) that the enclosure in which it was set, and perhaps also that to its south, were gardens, may suggest that the limits of the desired view from the house could have been quite narrow, extending no further than the owner's immediate property. There is no evidence to suggest that the wider view to the south-east was 'key'.

- 12.1.153 Regardless of which direction is considered to be the key view from the villa, any possible harm from the development on the setting on the monument can be minimized and in fact the setting's contribution to its significance enhanced, by the construction of a new hedge(s), harking back to the original setting. Such a hedge would be positioned to mark the boundary between the open space around the villa and the adjoining development to the east, well away from the Scheduled Area, and, in concept, reflecting the original boundary.

### ***The form and appearance of the development***

- Prominence, dominance, or conspicuousness
- Competition with or distraction from the asset
- Dimensions, scale and massing
- Proportions
- Visual permeability (extent to which it can be seen through)
- Materials (texture, colour, reflectiveness, etc.)
- Architectural style or design
- Introduction of movement or activity
- Diurnal or seasonal change

- 12.1.154 These considerations relate more to standing buildings than to below-ground remains, and cannot affect the setting of this particular asset, with the exception of the 'introduction of movement or activity'. Development of the surrounding area will undoubtedly re-introduce vitality to the setting of this now-neglected monument.

### ***Other effects of the development***

- Change to built surroundings and spaces
- Change to skyline
- Noise, odour, vibration, dust, etc
- Lighting effects and 'light spill'

- 12.1.155 As above, these relate to the standing built environment and are not relevant to the current site.

- Change to general character (e.g. Suburbanising or industrialising)
- Changes to public access, use or amenity
- Changes to land use, land cover, tree cover
- Changes to archaeological context, soil chemistry, or hydrology
- Changes to communications/accessibility/permeability

- 12.1.156 The effect of the proposed development is largely beneficial or neutral in all of these factors. The site's current location will be transformed from agricultural to 'suburbanising', but this will not diminish the contribution that setting makes to the

significance of the monument, as the current agricultural setting in no sense adds to it. Public access, use and amenity, communications/accessibility/permeability are all increased. Changes in the land use will protect the asset from future ploughing, assuring its sustainable future. There is no anticipated change to archaeological context, soil chemistry, or hydrology.

***Permanence of the development***

- Anticipated lifetime/temporariness
- Recurrence
- Reversibility

12.1.157 The effects of the proposed development on below-ground archaeological remains would be (for all practical purposes) permanent and irreversible. Without the development, the site would remain under recurrent threat from ploughing.

***Longer term or consequential effects of the development***

- Changes to ownership arrangements
- Economic and social viability
- Communal use and social viability

12.1.158 The proposed development would bring the site into communal use and the Scheduled Area will form part of an open space managed as wildflower meadow, with the provision of archaeological interpretation.

***Step 4: Maximising enhancement and minimising harm***

12.1.159 'Enhancement may be achieved by actions including:

- 'introducing a wholly new feature that adds to the public appreciation of the asset;
- 'introducing new views (including glimpses or better framed views) that add to the public experience of the asset; or
- 'improving public access to, or interpretation of, the asset including its setting.

12.1.160 The proposal includes elements that accomplish all of these enhancements, bringing the villa site to public notice, creating a new space in which to view the area of the asset (albeit the asset itself is not visible), which reflects the 'grain' of the original setting, re-creating a part of the original environment, framing the area around the monument, and creating an interpretative display to highlight the national significance of the asset. The very fact that such a large area is left undeveloped draws attention to the existence of the buried villa complex.

	<b>Evidential</b>	<b>Historical</b>	<b>Aesthetic</b>	<b>Communal</b>
Explanation	Derives from the potential of a place to yield evidence about past human activity	Derives from the ways in which past people, events and aspects of life can be connected through a place to the present	Derives from the ways in which people draw sensory and intellectual stimulation from a place	Derives from the meanings of a place to the people who gain identity from it
Conditions				
Current; as seen by casual visitor with no research guide	Potential is unrealized: the average visitor will not know there is a villa site; none of the heritage value is realized.	No connection for a visitor the asset is currently likely without expert guidance	The aesthetic contribution of the setting is compromised by busy roads, airfield, caravan park, etc. The large field gives no impression of the tightly enclosed landscape immediately surrounding the original villa.	No communal identity is likely to derive from the asset
Current: as seen by an averagely knowledgeable person with access to all available information	The limited investigation of the monument provides a very broad outline of its importance; the site itself remains undisturbed but its potential is unrealized	The average visitor armed with background information can connect with the asset in very general terms: access is restricted and the asset itself is buried.	The average visitor armed with background research can connect with the open space in very general terms; access is restricted	Apart from its presence, as one of a series of Roman Villas in the area, the asset contributes little to any sense of community
After the proposed development, with provision of expert interpretation, access and new setting	Future evidential value of the physical asset remains unchanged but detailed potential to disseminate information to a wider public is realized	Enables all visitors to connect to the significance of the asset and its setting; the asset remains buried.	Partial reconstruction of the asset's original setting will increase the aesthetic contribution of setting to the significance of the asset	The potential of the asset to contribute to a local sense of community will be realized as fully as possible without damaging the asset itself
Without proposed development	No change from current condition; the monument is not affected by development (but can still be subject to plough damage) and its evidential potential is unrealized.			

Table 12.1.1: Summary of Contribution of Setting to Significance of the Scheduled Monument under current and hypothetical future conditions

### **Mitigation**

12.1.161 Mitigation proposals take various forms.

12.1.162 Heritage Assets of National significance will be preserved *in situ*, that is the development excludes those areas and a substantial buffer around them. This has been incorporated into the design as an area of open space with a long term management plan to ensure that there are no below ground impacts on archaeological deposits, which will therefore suffer no harm, including both the Scheduled Area and part of the villa now known to be outside the Scheduled Area but considered to be of comparable significance.

- 12.1.163 The mitigation of impacts on the Setting of the Scheduled Monument includes minimizing the visual effect of the proposal while enhancing the setting by recreating part of the ambience of the villa in its lifetime. Appreciation of the monument will also be enhanced by provision of interpretative materials. There will be no substantial harm to the monument's setting.
- 12.1.164 Mitigation of the effects on remains of lesser significance will effectively be achieved by their preservation by record, that is, excavation, recording and publication to professional standards. These areas comprise the Roman occupation sites in the north-east and north of the Site and a narrow east-west corridor for the main access road, various services and the route of the sewage pipeline which lies to the north of the site.
- 12.1.165 The effects on any as yet unknown archaeological deposits that might be encountered on the route of the sewage pipeline once it leaves the Site to the Sewage Treatment Works to the north can also be mitigated by the routine measure of a watching brief during construction.
- 12.1.166 A mixture of mitigation via these methods can be secured by a suitably worded planning condition following consultation with the archaeological adviser to the local planning authorities.

### ***Residual Effect***

- 12.1.167 The proposed combination of mitigation measures produces a neutral residual effect, either an asset (such as the scheduled monument) is simply not affected by the Development or the negative effect of the loss of an asset is balanced by a positive effect (archaeological excavation which enhances understanding and creation of an archive for future research).
- 12.1.168 Mitigation by preservation *in situ* physically preserves the heritage asset for future generations, the existence of the asset would remain a residual material consideration for all future use of the Site. Any future development within the designated open space around the Scheduled Monument would still require Scheduled Monument Consent.
- 12.1.169 Mitigation by preservation by record physically destroys the asset and replaces it with a publicly accessible archive. There is no residual effect insofar as the Site is concerned; the archive becomes a resource for the future.

### ***Operational Phase***

- 12.1.170 Mitigation solutions adopted in the Site Preparation, Earthworks and Construction Phase mean that completion the Proposed Development will not result in any effects on known or unknown buried archaeology. A management plan for the Scheduled Area and its buffer zone will ensure both preservation and sustainable use of this area, with enhanced public awareness of the asset.

### ***Limitations and Assumptions***

- 12.1.171 Desk-based assessment concluded that the Base-line conditions were understood only in part for the majority of the site, although better information was available for the Scheduled Area, and that it would be necessary to provide further information about the area outside the SM. This information has now been provided.
- 12.1.172 The Baseline Conditions for the archaeological resource on the Site are now known within the accepted limits of normal sample evaluation, substantially enhanced by ground-proofed geophysical survey. This has allowed a comprehensive mitigation strategy to be devised.

Harm to or destruction of:	Significance of asset	Significance of effect without mitigation	Mitigation proposed	Significance of effect with mitigation	Effects without development
Designated heritage asset (Scheduled Monument) (1 area)	National	Major Negative Long term / permanent	Preservation in situ	Neutral or slight positive: no physical change but enhanced public awareness	Subject to continuing damage by ploughing; potential unrealised
Non-Designated heritage assets of comparable significance to Scheduled Monument (1 area)	National	Major Negative Long term / permanent	Preservation in situ	Neutral: no change	Subject to continuing damage by ploughing; potential unrealised
Setting of designated asset	National	Major Negative Short or Long term Reversible	Enhancement of setting and provision of interpretation	Positive	Neutral: no change
Non-Designated heritage assets of lesser significance (2 areas)	Local/ Regional	Moderate Negative Long term / permanent Irreversible	Preservation by record: excavation	Neutral: loss of asset balanced by information gain	Subject to continuing damage by ploughing; potential unrealised
Areas of low or negligible archaeological potential (most of site)	Negligible	Negligible	Nil	Nil	Negligible
Undiscovered archaeological remains on Pipeline route (not evaluated)	Unknown	Unknown	Preservation by record: Watching brief	Neutral: loss of asset balanced by information gain	Unknown

Table 12.1.2. Summary of archaeological effects and mitigations

## CONCLUSIONS

12.1.173 The Proposed Development has taken into account the presence of both designated and undesignated heritage assets in order to minimise or eliminate the effects of development on sub-surface archaeological remains. The preliminary fieldwork carried out as a part of the project has allowed previously unsuspected archaeological deposits to be discovered and characterised so as to allow the formulation of a comprehensive series of mitigation measures.

12.1.174 The Scheduled Monument and adjacent deposits in a large surrounding area (which has now been shown to include an undesignated asset of comparable significance to the Scheduled villa) will be preserved intact within the development. By creating public access and leaving open space within the development, the proposal will draw attention to the asset, and heighten public appreciation of the buried villa. The setting of the monument will be enhanced by the increased understanding of its context provided by fieldwork around it, leading to increased awareness and appreciation of the asset and adding to the sense of identity of the local area. The development will also remove the area of the Scheduled Monument and adjacent areas from the attritional effects of annual ploughing in their current arable setting, and thus enhance

its long-term preservation *in situ*. A management plan can be drawn up in consultation with English Heritage and the local planning authorities to ensure the future of this important asset.

- 12.1.175 Beyond this area, site preparation, earthworks and construction all potentially impact on the undesignated heritage assets. The effects of development in these areas can be mitigated by preservation by record, the precise details of which can be agreed with the archaeological advisor to the local planning authority according to the perceived significance of these assets.
- 12.1.176 The measures proposed are in accordance with Local Plan policies and National Planning Policy Framework paragraphs 131 to 139, inasmuch as the designated heritage asset, and the area of comparable significance, will be physically preserved *in situ* by development design, while remains of lesser significance can be preserved by record, that is excavation, recording and publication to professional standards.

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## APPENDICES

- Arch 1: Desk-based Assessment
- Arch 2: Geophysical Survey
- Arch 3: Evaluation Trenching
- Arch 4: Figures
  - Figure 1: Location of site within Woodstock and Oxfordshire, showing locations of HER entries and Scheduled Area (approximate). [Pipeline route indicative only.]
  - Figure 2: Areas of archaeological potential, showing geophysical anomalies and evaluation trenches
  - Figure 3: Orientation of Oxfordshire Roman Villas; after Henig and Booth 2000, fig 4.2

## 12.2 Cultural Heritage

### INTRODUCTION

- 12.2.1 West Waddy ADP have a been commissioned by Pye Homes Ltd and the Vanbrugh Unit Trust to co-ordinate the submission of an outline planning application for mixed development for a site 'East Woodstock' south-east of Woodstock. The heritage asset assessment considers the heritage aspects of the proposal and includes an assessment of any potential effect on the identified assets and their settings. The report should be read in conjunction with the archaeological report by Thames Valley Archaeological Services.
- 12.2.2 All the assets described below are mapped on drawing 273/P100 (see Appendix 1), including the site of a buried Roman Villa (a Scheduled Monument, covered by the archaeological section).

### RELEVANT LEGISLATION

- 12.2.3 Legislation is found in: the Planning (Listed Buildings and Conservation Areas) Act 1990 (as amended) which provides for the listing and protection of buildings of special historic and architectural interest and the designation, protection and enhancement of Areas of Special Architectural or Historic Interest; and in the 1972 UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage under which sites and monuments are put forward and inscribed as World Heritage Sites (ratified by the UK in 1984).

### PLANNING POLICY CONTEXT

#### ***National Planning Policy Framework***

- 12.2.4 Under the terms of the National Planning Policy Framework ('NPPF') (March 2012) the World Heritage site, the Scheduled Monument, Listed Buildings and Conservation Areas are all 'designated heritage assets'. This section in reviewing the development history of the site and its setting and the relative significance of the site complies with the requirement of the NPPF that the applicant "describe the significance of any heritage assets affected, including any contribution made by their setting (paragraph 128). The level of detail should be proportionate to the asset's importance and no more than is sufficient to understand the potential impact of the proposal on their significance.
- 12.2.5 The NPPF retains two concepts: 'heritage asset' and 'significance', introduced by PPS5 (March 2010). Heritage assets are defined in the NPPF as:  
*"a building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. Heritage asset includes designated heritage assets and assets identified by the local planning authority (including local listing)"* (Annex 2).
- 12.2.6 'Significance' is defined only in terms of heritage policy as:  
*"The value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting"* (Annex 2).
- 12.2.7 'Setting' is also only defined only in terms of heritage policy:  
*"The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may*



*make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral* (Annex 2).

- 12.2.8 It is not always the case that all components of a heritage asset contain the same level of significance or indeed contain any significance.
- 12.2.9 'Not all elements of a World Heritage Site or Conservation Area will necessarily contribute to its significance' (*paragraph 138*).
- 12.2.10 The Framework advises that, in the exercise of their planning powers, local authorities should avoid or minimise conflict between the heritage asset's conservation and any aspect of the proposal by taking account of the available evidence and any necessary expertise (*paragraph 129*).

### **Planning Practice Guidance**

- 12.2.11 The guidance (March 2014) states with reference to World Heritage Sites that *'England protects its World Heritage Sites and their settings including any buffer zones or equivalent, through the statutory designation process and through the planning system. The Outstanding Value...is to be taken into account by:*
- *'The relevant authorities in plan making, determining planning and related consents [etc]*
  - *'and by the Secretary of State in determining such cases on appeal or following call in.'*
- 12.2.12 Furthermore, 'policy frameworks at all levels should conserve the Outstanding Universal Value, integrity and authenticity (where relevant...) for each World Heritage Site and its setting, including any buffer zone or equivalent. World Heritage sites are designated heritage assets of the highest significance.'
- 12.2.13 'When developing Local Plan policies to protect and enhance World Heritage Sites and their Outstanding Universal Values, local planning authorities should aim to satisfy the following principles:
- 'Protecting the World Heritage Site and its setting, including any buffer zone, from inappropriate development
  - 'Striking a balance between the needs of conservation, biodiversity, access, the needs of the local community, the public benefits of a development and the sustainable economic use of the World Heritage Site in its setting, including any buffer zone
  - 'Protecting the World Heritage Site from the effect of changes which are relatively minor but which, on a cumulative basis, could have a significant effect
  - 'Enhancing the World Heritage Site and its setting where appropriate and possible through positive management
  - 'Protecting the World Heritage Site from climate change but ensuring that mitigation and adaptation is not at the expense of integrity or authenticity'
- 12.2.14 Regarding setting, the Planning Policy Guidance states that that 'the UNESCO operational guidelines seek protection of "the immediate setting" of each World Heritage Site, of "important views and other attributes that are functionally important as a support to the Property'. A buffer zone may be designated: if so, this has complementary legal restrictions placed on its use and forms part of the setting of the WHS. The Guidance recognises that other landscape designations may also prove effective in protecting the setting of a WHS. 'However it is intended to protect the setting, it will be essential to explain how this is to be done in the Local Plan.'

## **Local Planning Policy**

### Cherwell Local Plan 1996

- 12.2.15 Under Policy C9, development will normally be resisted that would have a detrimental effect on the character and appearance of historic landscapes, parks and gardens.
- 12.2.16 Policy C20 states that special care will be taken to ensure that development within the setting of a listed building respects its architectural and historic character.
- 12.2.17 Policy C26 requires detailed information before determining an application for development that may affect a known or potential site of archaeological interest or its setting which may include an archaeological field evaluation.

### Cherwell submission local plan 2006-2031 (January 2104)

- 12.2.18 The Council will, under Policy ESD 16, conserve, sustain and enhance designated and non designated 'heritage assets' and their settings and ensure that development is sensitively sited and integrated.

### West Oxfordshire Local Plan 2011 (adopted 2006)

- 12.2.19 Relevant policies are found in the Environment Chapter of the plan.
- Policy BE8 - development affecting the setting of a listed building  
*Development should not detract from the setting of a listed building.*
- BE11 – Historic parks and gardens  
*Development will not be permitted that adversely affects the character, setting, amenities, historical context or views within, into or from a Park and Garden of historic Interest.*
- The supporting text adds:  
*'in addition Blenheim Palace is also registered [sic] as a World Heritage Site. Although no further additional statutory controls follow from the inclusion of a site in the World Heritage List, its inclusion does however highlight the outstanding international importance of the site which should be taken into account when considering any proposals likely to affect Blenheim.'*
- B12 – Archaeological monuments  
*Development proposals that adversely affect the site or setting of nationally important archaeological monuments and monuments of local importance, whether scheduled or not will not be permitted.*

### Draft West Oxfordshire Local plan 2029 (October 2012)

- 12.2.20 The publication of the replacement local plan has been delayed to take account of a new Strategic Housing Market Assessment (SHMA) for the county. It contains a number of core policies to oversee development in the district to 2029. There are two core policies of relevance:
- CORE POLICY 23 - Historic Environment  
*All development proposals will be expected to respect, protect and enhance the special character and distinctiveness of West Oxfordshire's historic environment and its heritage assets and their setting.*
- Development must not result in loss or damage to important heritage assets, or their settings, particularly those of national importance.*

*Development should make a positive contribution to the historic environment's local character and distinctiveness, especially where this will address local issues identified in, for example, Conservation Area appraisals.*

CORE POLICY 34 - Eynsham-Woodstock Sub-Area

*Development will be focussed in Eynsham, Long Hanborough and Woodstock and will be of an appropriate scale and type that would help to reinforce the existing service centre role.*

*Development will be consistent with (inter alia) the protection of historic and community assets including in particular the safeguarding of the Blenheim World Heritage Site and its setting.*

## METHODOLOGY

- 12.2.21 Desk study of available documentation including the WHS Management Plan, relevant policy documents and information supplied by the Oxfordshire County Heritage Environment Record ('HER') which identifies the heritage assets that might be affected by the proposed development, was followed by a site visit to assess the potential issues. This included a photographic survey with panoramic views from significant locations to assess how well the world heritage site is insulated by its boundary wall from the likely visual effects of the development of the proposed Site (drawing 273/P101 in Appendix 1) and, conversely, views towards the Site from within the WHS (drawing 273/P102 in Appendix 1).

## RESULTS OF DESK STUDY

### **World Heritage Site**

- 12.2.22 Blenheim Palace was inscribed by UNESCO as a World Heritage Site ('WHS') in 1987. Guidance from the International Convention on Monuments and Sites ('ICOMOS') is that all work on potential impacts must be related to the Outstanding Universal Value of the Site ('OUV'). All site attributes that contribute to OUV must be appropriately protected.

The **Palace** in its landscaped park is inscribed as a WHS under two established criteria:

**firstly** (criterion ii) as an exhibit of an 'important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design' (*because the palace and the park reject French models of classicism and illustrate the beginnings of the English Romantic movement, characterised by the eclecticism of its inspiration, its return to national sources and its love of nature. Its influence was greatly felt in England and abroad*);

**secondly** (iv) as an outstanding type of building, architectural or technological ensemble or landscape which illustrates a significant stage in human history (*because it was the home of an English aristocrat, also a Prince of the Germanic Holy Roman Empire. Blenheim is typical of 18<sup>th</sup> century European princely residences*).

- 12.2.23 The Outstanding Universal Value of the Palace and its park as a WHS resides partly and significantly on its integrity and the extent of the preservation of the work of Vanbrugh and Hawksmoor and later of Brown, both overlaid on earlier historic landscapes. The integrity of the WHS is exemplified and maintained by its estate wall (which 'defines its extent and maintains its physical integrity' according to the OUV as defined by ICOMOS) and by the preservation of a significant number of veteran trees. The OUV is based primarily on the quality, the cultural influence and the survival of the internal features and interrelationships of the Palace and Park.

- 12.2.24 The historic landscape at Blenheim began as the medieval royal hunting park of Woodstock which may have been set up under King Henry I (reigned 1100-35) and focused on Woodstock Palace (its site was on the north side of the Lake). 'Woodstock appears to be the earliest of over thirty parks created in Oxfordshire during the Middle Ages, and it remained the largest and most important'. (Bond and Tiller 1997, p23). At some 1000ha. (WHS management plan) it was never as extensive as the great deer park and palace at Clarendon, Wiltshire (where the modern Clarendon Park estate, which at 1821ha 'still lies very largely within the mighty earthworks of the medieval park' (Beaumont James and Gerrard [2007])). Deer were owned by the crown and deer parks were licensed areas deliberately set apart from the surrounding countryside by design and by legislation to prevent poaching. The origins of the town of Woodstock itself derive from the commercial opportunities associated with the royal connections with this park. Royal hunting parks and palaces were established to give monarchs leisured time away from the public gaze. Edward, Prince of Wales, the eldest son of Edward III (known in modern times as 'the Black Prince') was born at Woodstock: in his own times he was known as Edward of Woodstock (d.1376). Political uncertainty contributed to late medieval monarchs such as those of the House of York making less use of royal parks and the Tudors tended to concentrate their palaces closer to London (Beaumont James and Gerrard [2007]). Probably as a result, the palace suffered such that only a few rooms were habitable by the time Princess Elizabeth was held there in 1554. After a brief resumption of royal hunting under James I (r.1603-1625) and Charles I (r.1625-1649), the popularity of the park again waned. Further damage was incurred during the Civil War. The royal manor was eventually awarded with a stupendous new **palace** by Queen Anne in 1705 to John Churchill, 1<sup>st</sup> Duke of Marlborough in gratitude for his brilliant campaign ending with a victory over French forces at Blindheim close to the Danube in 1704. The palace was designed by Sir John Vanbrugh.
- 12.2.25 'Vanbrugh, a soldier and dramatist turned architect, had many ideas far in advance of his contemporaries and had already experimented with the dramatic potential of buildings in the landscape at Castle Howard in Yorkshire.' [Bisgrove 1993]
- 12.2.26 The designed **landscape** was originally laid out by the Queen Anne's master gardener, Henry Wise who was a partner of George London at Brompton Park Nursery, the foremost nursery in the land at the time. Wise's apprentice, Charles Bridgeman, is responsible for a plan of the park in 1709 when he was about twenty in age, possibly too young to have been entrusted alone with the design. Bisgrove suggests that he arrived at Blenheim following training as a surveyor and draughtsman and formed an informal association with Vanbrugh and then laid out the general lines of the garden.
- 12.2.27 The WHS is generally set within a listed stone **park boundary wall**, extending in all to 14.5 km. In many locations this is a tall and substantial structure. At its most formidable the Park Wall is of squared and coursed limestone with a canted coping, attributed to the Oxford architects William Townesend and Bartholomew Piesley. Along the boundary of the south eastern part of the Park closest to the site, the Park Wall and the WHS boundary run inside a less substantial frontage treatment provided by a drystone wall more typical of the rural area.
- 12.2.28 The section of the medieval park closest to the site is known as the 'Lower Park'. It began as part of a medieval wooded deer forest known as 'Hensgrove' and was added to the Royal park 'as a result of an exchange of lands with the Knights Templars when New Woodstock was laid out': references to this new area appear from 1256 though it may have happened before c.1200 (Bond and Tiller 1997, pp 48-9). This part of the Park still contains veteran trees from the medieval period which were retained during its transformation to a pleasure garden with a lattice of intersecting walks designed by Henry Wise as a part of the grounds for the new Palace in the early C18. The walks were left intact by Capability Brown in his outstanding scheme later in the century so that their general layout survived long enough to be included on the initial Ordnance survey of the early 1830's. This part of the Park is now pleasant grassland dotted with

individual trees. It is not identified in the WHS Management Plan as containing items of greater age or significance than 'other 19<sup>th</sup> and 20<sup>th</sup> century components' in a plan showing the landscape chronology of the Park (Bond and Tiller 1997, p.14) because it was only during this relatively late period that the formal avenues from the original scheme as retained by Brown were removed.

- 12.2.29 The listed **Cowyards** (the former Estate Home Farm and converted by West Waddy ADP to 12,000 sq.ft. of offices with their own access and parking) stand just inside the Park Wall as it turns southwards along with the boundary of the WHS, inside the boundary of the Registered park.
- 12.2.30 Some way north of the Cowyards registered on the Sites and Monuments Record (SMR) is the mound surrounding an **icehouse** which is assumed to survive as its egg-shaped interior was re-cemented in 1946 but was bricked up c.1950 (HER ref 321-MOX3785). It was commissioned in the long hot summer of 1707.
- 12.2.31 Figure 8 'Conservation of the Setting' in The WHS Management Plan identifies those areas that are either:
- 'areas that are significant to the visual setting of Blenheim World Heritage Site. Any development should not impact on the setting of the World Heritage Site'* and:
- 'areas of intervisibility between the Park and surrounding agricultural land where significant development could have an impact on the setting of the World Heritage Site'*
- 12.2.32 Drawing 273/P100 (Appendix 1) includes these designations. The application site is not included in either category. The Figure also contains a warning that existing developed areas that in general fringe the WHS might in future become:
- 'Residential zones where significant, tall or prominent developments could affect the setting of the World Heritage Site or important listed buildings at Blenheim'*
- 12.2.33 Because only existing developed areas are identified, once again the application site does not feature in this analysis. The areas involved include the town centre, and the residential ribbon along the north-east side of Oxford Road almost up to the application site's road frontage - but not including the house known as Long Close, which is well screened by vegetation.

#### **Other designated heritage assets**

- 12.2.34 The Park to Blenheim Palace is also a Registered Park and Garden (grade I). Unlike the WHS its boundary runs alongside the main road frontage itself and is bounded by the more conventional drystone walling noted above. The registered site extends beyond the WHS as far as a back road connecting directly with the Bladon Road. This road serves the access to the 92-pitch Bladon Chains Caravan Club Park located within the extreme south-eastern corner of the park. The online entry for the Registered Park (the English Heritage website 'the National Heritage List for England') is only a summary and contains little about the Lower Park and nothing in addition to what is said above.
- 12.2.35 The site of a small buried Roman Villa, now a Scheduled Monument (SM 35545), is covered by chapter 12.1.

#### **Other non-designated site features of heritage interest**

- 12.2.36 On the north eastern boundary of the application site lies a separate curtilage, accessed from one of the right-angled turns in Shipton Road. The considerable but plain 2½ storey building of stone rubble here is referred to as a 'Pest House' on the current and former Ordnance Survey maps as already in place by c.1887 (but is absent from the First Edition Ordnance Survey 1 inch of 1833). Woodstock has a long history of consideration for sick residents: the corporation first provided a small pest

house in 1720. This was at 23 Rectory Lane in Woodstock (VCH). Furthermore, according to the Victoria County History (VCH):

*'Most references to a pest house between 1765 and 1881 relate to the Hensington building, which was on the eastern boundary of the township ... Although described as new in 1765 there was a building on the site in 1750, and it may have been rebuilt as a pest house ... from 1811 the duke leased part of the building for 3 gn. a year ... During a smallpox outbreak in 1893 the corporation applied to recover the building from the duke, who was thanked in 1895 for providing alternative accommodation at Furze Platt in Blenheim Park; later the corporation arranged with local hospital boards to take patients with infectious diseases.'*

- 12.2.37 The 'Heh Straet' (SMR 8862) runs across the application site on the line of the major north south hedgerow and probably dates from the Romano-British settlement of the area (Blair 1998) and was named as above in the Shipton-Cherwell charter of 1005. (HER) It is classed by the HER as an 'early medieval/Dark Age to Medieval' feature.
- 12.2.38 The hedges around or within the Site are not all historic features. Only the east-west hedge in the southern half of the western half of the Site and that running north-south between the Site's eastern and western components (on the former line of 'Heh Straet'), are shown on the First Edition OS plan of 1887 and have survived through to the present day. By the time of the survey for the Second Edition of 1899, the southern part of the western field had been divided into two and an earlier subdivision of the larger northern field had disappeared and the northern extremity of the site had been converted to allotments. The western boundary of the Site is not historic and has been created by the considerable post war housing expansion of Hensington. (See maps in Appendix 1)

### **Surrounding development**

- 12.2.39 Hensington has a longer history than its larger and more famous neighbour, as the borough of Woodstock was created out of this small township in the later 12<sup>th</sup> century. The old part of the village was on the north side of the Banbury Road. By 1750 Woodstock had begun to encroach across the western edge of Hensington: Hensington as a location separate from Woodstock has virtually disappeared. Development along the main road was perhaps initiated by the erection of a large house ('Hensington House') built for the Duke of Marlborough's agent (and used later by estate auditors) in 1768/9 opposite the Hensington Gate to Blenheim Park. The house was designed by Sir William Chambers and was occupied on one occasion in the mid 19<sup>th</sup> century by the Marquess of Blandford before he succeeded to the dukedom. It was later let to tenants (all information from VCH), its grounds extended south-eastward as far as the houses on either side of the current entrance to Cadogan Park.
- 12.2.40 The Duke of Marlborough considered its redevelopment for houses in 1913 and it was eventually demolished in the late 1920's but the houses did not arrive until the 1950's (VCH) and then along its north and western perimeter. The large housing estate immediately to the west of the site (Cadogan Park, Princes Ride, Hedge End, Flemings Road etc) is even more recent in date, only appearing on Ordnance survey mapping in the mid 1970's. Sporadic residential development had occurred in this vicinity over a longer period. The houses fronting the main road called 'Littlecote, 'Long Croft' and a group of four houses on the west side of Churchill Gate are all evident on the 1945 RAF flyover aerials available to view on Google Earth but are not of any heritage importance. The general expansion of Hensington at this date was confined to the north side of Shipton Road and both sides of New Road. Churchill Gate as a self-contained cul-de-sac off the A44 followed after the mid 1970's (See map pages 1 and 2 in Appendix 1).

## RESULTS OF FIELD SURVEY

- 12.2.41 As stated above, field survey included a photographic survey with panoramic views from significant locations to assess how well the world heritage site is insulated by its boundary wall from the likely visual effects of the development of the proposed Site (drawing 273/P101 in Appendix 1) and, conversely, views towards the Site from within the WHS (drawing 273/P102 in Appendix 1). These demonstrate the limited effect of the East Woodstock proposal such that heritage assets will be preserved in a manner consistent with their significance as required by the relevant Planning Practice Guidance, so that there is furthermore no harm to the contribution made by the assets to our understanding and interpretation of our past.

## EVALUATION, IMPACTS AND MITIGATION

### *World Heritage site and constituent assets*

- 12.2.42 The WHS Management Plan demonstrates that the WHS itself and its constituents are insulated from the 'outside world' by the **Park Boundary Wall and existing planting**. The World Heritage Site Management Plan in considering the potential threat of development to the setting of the WHS states that in locations not identified as vulnerable, it states that the Park Wall:

'provides an obvious barrier of protection in the context of the WHS' (Paragraph 4.5.1)

- 12.2.43 This is confirmed by Management Plan figure 8 (relevant information is included in drawing 273/P100 in Appendix 1) which does not identify the application site as an external area of concern. Furthermore field analysis shows that mature planting also screens the application site from the WHS and this will be supplemented by mature planting within the site along the opposite road frontage. The **icehouse** is too far from the Site and too secluded within the Park boundary to have any relationship with the Site. The Outstanding Universal Value of the Palace and its park as a WHS, as set out above, will not be affected by the proposal. No further mitigation is required. In the **short term** the construction phases will occur over a considerable number of years over various parts of the application site but can be managed to avoid any physical effects on the fabric of the assets. Construction noise as cumulative to the traffic noise from the A44 is unlikely to have any material affect on any 'quiet enjoyment' of the Lower Park, the area in closest proximity.

### *Registered park and garden*

- 12.2.44 The small area of the registered park outside the WHS boundary wall which is situated on the frontage of the A44 is also protected in some measure by the mature hedgerow. Its character and significance are less than the WHS because it was never a full part of the Park as designed and altered (it is outside the boundary park wall and not part of the inscribed WHS) and a nearby part of it is the location for a caravan park. It does however provide a strong landscape access feature when approaching Woodstock from Oxford, along the A44 from the south, particularly when compared to the opposite eastern side of the A44. The planting proposed on the eastern side of the A44 will complement and complete any necessary screening and in practise enhance the setting as you approach the historic centre of Woodstock.
- 12.2.45 No further mitigation is required. In the **short term**, The construction phases will occur over a considerable number of years over various parts of the application site but can be managed to avoid any physical effects on the fabric of the assets
- 12.2.46 Construction noise as cumulative to the traffic noise from the A44 is unlikely to have any material affect on any 'quiet enjoyment' of the Lower Park, the area in closest proximity outside the WHS boundary wall.

**Other assets**

- 12.2.47 The 'Pest House', now within the site boundary, is a severely plain vernacular house of 2½ storeys in stone rubble. Its significance lies in its supporting role in the town's history. Development up to this house will not affect its curtilage but will deprive it of its original secluded location, which has already been compromised to a certain extent by encroachment by the expansion of Hensington. This situation is redolent of the seven cemeteries ('the magnificent seven') authorised between 1833 and 1841 by Parliament to relieve chronic overcrowding in London's cemeteries. These were originally established in rural locations but all (e.g. Brompton, incorporated 1837) have been engulfed in the continuing inexorable expansion of London. This has not affected their significance but has given them a new valuable role, as 'green lungs' in the capital with the considerable addition of historic and social interest. The surroundings of the 'Pest House' will be altered considerably by the proposed development, which will increase its public profile that, along with an appropriate use being found for it, may enhance public understanding and interpretation of this asset.
- 12.2.48 Apart from the buried Roman Villa, the Pest House and a long-disappeared isolation hospital, the site itself has no built development history. There are developed sites adjacent, including sporadic ribbon development on the A44 and on Upper Campsfield Road (A4095), and the post-war estate around Princes Ride.
- 12.2.49 The Conservation Area designated over the historic centre of Woodstock is too distant to be affected. While a 'place' can be a heritage asset (NPPF, Annex 2), it is clear that virtually all of the parts of the town of heritage interest have been included in the Conservation Area. There is no published character appraisal of the Conservation Area nor enhancement proposals. Woodstock as a 'place' with heritage interest is at least 500m from the site.
- 12.2.50 'The Cowyards' across the A44 within the WHS represent the former Estate Home Farm and has been listed, grade II. The group is located where the WHS boundary wall decisively leaves the A44. The neat buildings have been converted to office use with integral parking, and is reached by a new short access drive from the A44 across the strip of Registered landscape in front of the WHS. The mature planting on the road frontage largely screens the Site from the Cowyards and the substantial planting proposed will complete the screening. No further mitigation is required.
- 12.2.51 The various likely effects of the development on heritage assets are minimal and indeed in some instances positive and can be assessed as set out below:
- **Direct** - The proposal will incorporate assets that are currently isolated and generally unrecognised into a planned expansion of Woodstock without harm to their fabric. Incorporation and preservation in a larger scheme provides the potential for interpretation and investment, both largely positive outcomes
  - **Indirect and secondary** - There are thought to be no indirect or secondary effects other than those articulated above
  - **Cumulative** - There are no other proposals in the near vicinity that might add cumulative effects to those articulated above.
  - **Short term** - The construction phases will occur over a considerable number of years over various parts of the application site but can be managed to remove any physical effects on the fabric of the assets. Construction noise may affect any 'quiet enjoyment' of the Lower Park from time to time, but not material so.
  - **Long term and residual impact following implementation and mitigation** - The proposal will alter these fields from their current open nature to the south east built edge of Woodstock into a mixed development. The surroundings of isolated assets will be altered but their integration into the planned expansion of Woodstock but it will raise their profile and increase public awareness of their existence and interest.



**Section 12.2 Cultural Heritage (West Waddy ADP)**

- 12.2.52 If the development does not take place, the assets will continue to exist, unrecognised by the general public with little if any investment. There will be no funding for the management objectives and actions set out in the WHS Management Plan.
- 12.2.53 Below is a table assessing the significance, the potential impact (adverse or beneficial) and the proposed mitigation for each Heritage Asset identified, using colours as set out in ICOMOS (2011).

VALUE OF HERITAGE ASSET	SCALE AND SEVERITY OF CHANGE/IMPACT				
For WH properties Very High – attributes which convey OUV	SIGNIFICANCE OF EFFECT OR OVERALL IMPACT (EITHER ADVERSE OF BENEFICIAL)				
	Neutral	Slight	Moderate/large	Large/very large	Very large
For other heritage assets or attributes	SIGNIFICANCE OF IMPACT (EITHER ADVERSE OF BENEFICIAL)				
	Very High	Neutral	Slight	Moderate/large	Large/very large
High	Neutral	Slight	Moderate/slight	Moderate/large	Large/very large
Medium	Neutral	Neutral/Slight	Slight	Moderate	Moderate/large
Low	Neutral	Neutral/Slight	Neutral/Slight	Slight	Slight/Moderate
Negligible	Neutral	Neutral	Neutral/Slight	Neutral/Slight	Slight

Asset	Significance/OUV	Potential impact (adverse or beneficial) pre-mitigation	Mitigation	Impacts after mitigation
World Heritage Site: Outstanding Universal Value attribute: Palace	Illustrates the beginnings of the English Romantic movement, characterised by the eclecticism of its inspiration, its return to national sources and its love of nature. The influence of Blenheim on the architecture and organisation of space in the 18 <sup>th</sup> and 19 <sup>th</sup> centuries was greatly felt both in England and abroad.	Neutral Continuing expansion of Hensington will not affect OUV of the Palace as this resides in the integrity and authenticity of the property and the survival of its historic relationship with its designed landscape setting	Mature deep tree belt to Oxford Road frontage. Ensure no tall buildings included in Site design. Development will significantly contribute to the repair works required by the WHS management plan	Neutral
World Heritage Site: Outstanding Universal Value attribute: Park	Large landscaped park within walled enclosure, its structure set out by Vanbrugh [probably with the assistance of Henry Wise] overlaid by 'Capability' Brown as one of the	Neutral Continuing expansion of Hensington will not affect OUV of the Park as the site is outside the areas identified by the WHS management plan as significant to the setting of the WHS.	Mature deep tree belt to Oxford Road frontage. Ensure no tall buildings included in Site design.	Neutral

	greatest examples of naturalistic landscape design.			
World Heritage Site: Outstanding Universal Value attribute: Integrity	Enclosed by an 18 <sup>th</sup> century dry stone wall which defines its extent and maintains its physical integrity. Within the wall, the layout of the principal buildings remains unaltered since their construction, and the overall structure of the landscaped park remains largely as set out by Vanbrugh and Brown. Changes to the landscape and buildings by their owners have continued to the present day though these have not detracted from the Outstanding Universal Value of the property.	Neutral Continuing expansion of Hensington will not affect the integrity of the property as an OUV because the site is outside the perimeter and does not impact on the layout of principal buildings or the surviving structure of the property as a whole.	Mature deep tree belt to Oxford Road frontage. Ensure no tall buildings included in Site design.	Neutral
World Heritage Site: Outstanding Universal Value attribute: Authenticity	The overall relationship between the Baroque Palace and its Park is still clearly in place and the Outstanding Universal Value of the property can be readily understood despite the early 20 <sup>th</sup> century changes to the landscape. The form and design of Palace and Park survive well and there is a high degree of survival of fabric and indeed original fittings and furnishings.	Neutral Continuing expansion of Hensington will not affect the authenticity of the property as an OUV because it will not impact on the perception or the survival of the overall relationship between the Palace and its park or on the form or design of the Palace or Park.	Mature deep tree belt to Oxford Road frontage. Ensure no tall buildings included in Site design. The enhancement of planting to the east of the A44 will enhance the WHS setting and approach into historic Woodstock.	Neutral
Blenheim Park (Registered Park or Garden)	Grade 1 designation recognises its	Slight South-east park (Lower Park) plays a supporting	Mature deep tree belt to Oxford Road frontage.	Slight

Importance: very high	beginnings as an important royal park and its subsequent transformation as palace and designed landscape by most the important artists of the day, and further transformation as a masterpiece by 'Capability' Brown at the pinnacle of his powers	role in the development of the park landscape and now contains little evidence of previous activity or design other than surviving trees of great age. Boundary wall to small area extending beyond WHS does not have same 'insulating' qualities as the Estate Wall. Remainder as for WHS. Bladon Chains Caravan Site is situated within SE extremity of the Registered Site	Ensure no tall buildings included in Site design. The enhancement of planting to the east of the A44 will enhance the WHS setting and approach into historic Woodstock.	
Ice House (OUV attribute) Importance: very high	Element in early Palace landscape (now disappeared), typical of facilities provided by great houses	Neutral No harm as too distant and well within park boundary	N/A	Neutral
Cowyards Cottage and Cowyards (listed grade II) (OUV attribute) Importance: very high	19 <sup>th</sup> C well-designed farm buildings for former Estate Home Farm: characteristic element of the historic estate and park relating to former management and agricultural activities	Moderate/large Setting and relationships are within park (ie inwards rather than outwards) Historically associated with management of park and wider estate as farmland. Sensitively converted to offices. New access gap in estate wall and in mature tree belt on A44 frontage means this is the only place in the WHS from where the site can be glimpsed.	Mature deep tree belt to Oxford Road frontage. Ensure no tall buildings included in Site design.	Slight
Pest house (undesignated) Importance: medium	Provided and adapted c1750 by Estate to replace facility in town.	Moderate/large Compromised secluded location will be lost. House itself is set within a	Reinforcement with planting of curtilage boundary and careful siting and design of	Slight

		well-defined curtilage which will not be affected	nearby proposals.	
Early medieval trackway Importance: medium	Identified as 'Heh Straet' from Shipton on Cherwell charter of 1005. May represent line of earlier (Roman) route serving Begbroke villa.	Major change with Potential enhancement Post-Roman open setting will be reduced but opportunity with interpretation	Retain as footpath and improve surface, Provide interpretation (link with villa?) Careful siting and design of nearby proposals.	Slight

## CONCLUSIONS

- 12.2.54 The heritage assets and their settings within, and in close proximity to the proposed site will not be adversely affected by the proposed development, the conservation of the assets will not be harmed and improved public recognition and interpretation will be beneficial. The public interest in realising the houses and the facilities that the proposal offers outweighs the minimal effect on heritage assets.
- 12.2.55 The application of agreed significant funds realised will be applied to the management objectives and actions listed in part 5 of the Blenheim Palace WHS Management Plan to help secure the future of the most significant and relevant heritage asset future in perpetuity.

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## APPENDICES

- Appendix 1: Maps and figures
  - Map 1a: 1830-33
  - Map 1b: 1900
  - Map 2a: c.1938
  - Map 2b: 1967
  - Drawing P100: Heritage constraints in Site setting
  - Drawing P101: Photograph panoramas of the World Heritage Site and Registered Landscape boundaries
  - Drawing P102: Aspects of the World Heritage Site boundary

# 13 ECOLOGY AND NATURE CONSERVATION

## INTRODUCTION

- 13.1.1 This chapter presents the approach and findings of the assessment of potential impacts on Ecology and Nature Conservation from the proposed development of the planning application area at Woodstock East. The chapter sets out the assessment methodology, provides a review of the baseline conditions of the planning application area and surrounding area, and determines the value of the identified ecological resources. The chapter goes on to determine the potential impacts of the proposed development on the ecological resources and describes these with reference to appropriate mitigation, compensation and enhancement measures which have been incorporated as an integral part of the scheme design. The likely significance of the effect of the identified impacts is discussed. Additional mitigation, compensation or enhancement measures (beyond those that are an inherent part of scheme design) that will be undertaken prior to or during construction or operation in order to minimise the effects of the development are then presented. Taking into account these measures, the ecological significance of the residual impacts of the development of the planning application area is determined. This assessment is set within the relevant planning and legislative context applicable to ecological and nature conservation resources.
- 13.1.2 This chapter has been produced by BSG Ecology on behalf of Pye Homes Ltd and the Vanbrugh Unit Trust
- 13.1.3 The development of the planning application area will include the erection of up to 1,500 dwellings including affordable housing and a 150 unit care village with associated publicly accessible ancillary facilities; site for new primary school; up to 3,000 sqm of retail space including 2,325sqm supermarket; up to 7,500 sqm of locally led employment (B1, B2, B8) space; site for a Football Association step 5 football facility with publicly accessible ancillary facilities; public open space; provision of site for new park and ride facility; and associated infrastructure, engineering and ancillary works, with vehicular access provided from Upper Campsfield Road (A4095), Shipton Road and Oxford Road (A44).

## RELEVANT LEGISLATION

- 13.1.4 The following pieces of legislation were taken into account in the production of this chapter:

The Conservation of Habitats and Species Regulations, 2010 (as amended)

- 13.1.5 This legislation consolidates all the various amendments made to the Conservation (Natural Habitats, &c.) Regulations 1994 in respect of England and Wales. The 1994 Regulations transposed Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) into national law. The Regulations provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites. Under the Regulations, competent authorities i.e. any Minister, government department, public body, or person holding public office, have a general duty, in the exercise of any of their functions, to have regard to the EC Habitats Directive.

The Natural Environment and Rural Communities (NERC) Act, 2006

- 13.1.6 This Act places a duty on all public bodies to have regard to the conservation of biodiversity when exercising their duties, and requires the secretary of state to identify a list of habitats and species which are of principal importance for the conservation of

biodiversity in England (Section 41 habitats and species). The presence of species or habitats of Principal Importance is a material consideration in planning decisions, in accordance with the NPPF and Planning Practice Guidance.

- 13.1.7 The Wildlife and Countryside Act, 1981 (as amended)
- 13.1.8 This act provides national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the conservation of wild birds (Birds Directive) in Great Britain. The Act provides for the notification and confirmation of Sites of Special Scientific Interest (SSSIs), provides protection to all wild birds and special protection for certain species of birds, animals and plants listed in the Schedules of the Act.

#### The Countryside Rights of Way Act, 2000

- 13.1.9 The "CRoW Act" primarily provides for public access on foot to areas of open land. However, it also strengthens the legal protection for species under the Wildlife and Countryside Act, 1981 (as amended) and introduces a new offence relating to reckless disturbance and/or killing and injury of these species. The CRoW Act also provides increased powers for the protection and management of SSSIs.

#### The Protection of Badgers Act, 1992

- 13.1.10 This Act makes it an offence to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so; or to intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it. A licence can be granted by Natural England to permit works that would otherwise result in an offence (e.g. to allow sett closure where activities close by may otherwise result in disturbance or damage to the sett). This legislation was introduced for welfare, rather than for reasons of conservation.

#### The Wild Mammals (Protection) Act, 1996 (as amended)

- 13.1.11 Under the Wild Mammals (Protection) Act 1996 it is an offence to cause unnecessary suffering to wild mammals, including crushing and asphyxiating. This Act is primarily concerned with animal welfare and aims to prevent cruelty. As a result, offences include those actions with the intent to inflict unnecessary suffering. A wild mammal includes any mammal which is not domestic or captive. Red foxes, wild deer and other mammals such as rabbits are therefore covered by the Act.

## **PLANNING POLICY CONTEXT**

### ***National Policy***

- 13.1.12 Planning applications must be determined in accordance with an up-to-date Development Plan, unless material considerations suggest otherwise. Other material considerations include the National Planning Policy Framework (NPPF), Planning Practice Guidance and other development plan documents. The application site falls within two planning authority areas, West Oxfordshire and Cherwell District Councils. It is therefore necessary to consider the application in the context of two sets of policies.

#### National Planning Policy Framework (NPPF)

- 13.1.13 The National Planning Policy Framework (NPPF) sets out the government's planning policies for England and how these are expected to be applied. At the heart of the NPPF (March, 2012) is the presumption in favour of sustainable development; all developments that accord with the development plan should be approved without delay. The following paragraphs are relevant to this application;



- 13.1.14 The National Planning Policy Framework (NPPF) came into effect on 27 March 2012. The NPPF states that planning system should seek to contribute to and enhance the natural and local environment by minimising impacts on biodiversity and; provide net gains in biodiversity where possible and contribute to the Government's commitment to halt the overall decline in biodiversity.
- 13.1.15 With reference to planning applications and biodiversity paragraph 118 of the NPPF states that, *"When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles:*
- *If significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
  - *Proposed development on land within or outside a Site of Special Scientific Interest likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in combination with other developments) should not normally be permitted. Where an adverse effect on the site's notified special interest features is likely, an exception should only be made where the benefits of the development, at this site clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of Sites of Special Scientific Interest;*
  - *Development proposals where the primary objective is to conserve or enhance biodiversity should be permitted;*
  - *Opportunities to incorporate biodiversity in and around developments should be encouraged;*
  - *Planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss; and*
  - *The following wildlife sites should be given the same protection as European sites:*
    - *potential Special Protection Areas and possible Special Areas of Conservation*
    - *listed or proposed Ramsar sites; and*
    - *sites identified, or required, as compensatory measures for adverse effects on European sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites."*
- 13.1.16 Paragraph 117 of the NPPF also states that local authorities should seek to promote the preservation, restoration and re-creation of priority habitats and recovery of priority species populations, linked to national and local targets, through planning policies. Priority habitats and species referred to in the NPPF relate to species and habitats of principal importance listed in accordance with section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.
- 13.1.17 The NPPF (paragraph 117) indicates that local authorities should take measures to "promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species" linking to national and local targets through local planning policies. Priority species are those species shown on the England Biodiversity List published by the Secretary of State under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Planning authorities have a duty under Section 40 of the NERC Act to have regard to priority species and habitats in exercising their functions including development control and planning.

- 13.1.18 There are 943 Species of Principal Importance (SPIs) and 56 Habitats of Principal Importance (HPIs) listed in accordance with Section 41 list of the NERC Act. These are the species found in England which were identified as requiring action under the United Kingdom (UK) Biodiversity Action Plan (BAP) and which continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework.

Planning Practice Guidance

- 13.1.19 The government's Planning Practice Guidance was released as an online resource in March 2014 and supersedes historic planning guidance documents and circulars.
- 13.1.20 The Planning Practice Guidance (March 2014 and as updated) provides further guidance with respect to ecological issues. In Paragraph 007 Reference ID: 8-007-20140306), it reinforces what was laid out in the National Planning Policy Framework: "*..pursuing sustainable development includes moving from a net loss of biodiversity to achieving net gains for nature, and that a core principle for planning is that it should contribute to conserving and enhancing the natural environment and reducing pollution*".
- 13.1.21 The application site falls within two planning authority areas, West Oxfordshire and Cherwell District Councils. It is therefore necessary to consider the application in the context of two sets of policies.

**Local Planning Policy**

West Oxfordshire District Council Local Development Framework

- 13.1.22 The current Development Plan for West Oxfordshire District includes; the West Oxfordshire Local Plan 2011 adopted in 2006 extending to 2011, and the saved policies (confirmed in June 2009) included in the Local Plan 1996-2011 (adopted 2011). Both of the adopted local plan policy documents are considered time expired and so out-of-date. Therefore, the weight afforded to these adopted policies is reduced.
- 13.1.23 For completeness those policies that are relevant to this planning application contained in the above plans are referenced below:
- NE1 – Safeguarding the Countryside
  - NE4 – Cotswold Area of Outstanding Natural Beauty
  - NE5 – Oxford Green Belt
  - NE6 – Retention of Trees, Woodlands and Hedgerows
  - NE7 – The Water Environment
  - NE13 – Biodiversity Conservation
  - NE14 – Sites of Nature Conservation or Geological Importance
  - NE15 – Protected Species

West Oxfordshire District Council Emerging Local Plan 2011-2029)

- 13.1.24 This plan (commenced formerly as a 'Core Strategy') is the principal document of the local development framework, which is due to replace the adopted Local Plan 2011. The emerging Plan has been subject to several setbacks, including the revocation of the South East Plan and the publication of the Oxfordshire Strategic Housing Market Assessment (SHMA).
- 13.1.25 In response to the SHMA, WODC published its Local Plan Housing Consultation Paper on the 9th August 2014. In response to further technical work required by WODC, the planned timetable to forward the Submission Local Plan document to

Cabinet has been postponed indefinitely, without any indication of future likely timescales. Subsequently, little weight can be given to these policies.

- 13.1.26 For completeness those policies relevant to this application included in the emerging Local Plan are referred to below;
- Core Policy 17 - Landscape Character
  - Core Policy 18 – Biodiversity
  - Core Policy 22 - Environmental Protection
  - Cherwell District Council Local Framework
- 13.1.27 The current ‘development plan’ for the Cherwell District is the Cherwell Local Plan 1996, adopted in November 1996. Its saved policies (confirmed in September 2007) are the primary consideration in the determination of any planning application within the District.
- 13.1.28 The Non Statutory Cherwell Local Plan 2011 was intended to review and update the Local Plan adopted in 1996. Work on this plan discontinued in December 2004. The Non Statutory Local Plan 2011 is not part of the statutory development plan. However, in December 2004 Cherwell District Council approved it as interim policy.
- 13.1.29 Both the adopted and the non-statutory local plan policies are considered time expired and so out of date. Therefore, any little weight afforded to these adopted policies is reduced.
- 13.1.30 For completeness those policies that are relevant to this planning application contained in the above plans are referenced below:
- C1 Protection of sites of nature conservation value
  - C2 Development affecting protected species
  - C4 Creation of new habitats
  - C5 Protection of ecological value and rural character of specified features of value in the district

#### Cherwell District Emerging Local Plan (2011-2031)

- 13.1.31 The Cherwell District Local Plan 2031 was submitted to the Secretary of State for Communities and Local Government (DCLG) for formal Examination on 31 January 2014. The Examination was commenced and postponed on the same day, 4th July 2014, to allow the Council additional time to put forward proposed modifications to the plan to increase new housing delivery to meet the full, up to date, needs of the district. As yet to be examined, the weight afforded to these emerging policies is reduced.
- 13.1.32 For completeness those policies relevant to this application included in the emerging Local Plan are referred to below:
- Policy ESD 10 Protection and Enhancement of Biodiversity and the Natural Environment
  - Policy ESD 11 Conservation Target Areas
  - Policy ESD 18: Green Infrastructure

## **METHODOLOGY**

### ***Assessment process and criteria***

- 13.1.33 The assessment within this chapter follows the Guidelines for Ecological Impact Assessment in the UK developed by the (now Chartered) Institute of Ecology and Environmental Management (IEEM, 2006), which is recognised as current best

practice for ecological assessment. The Guidelines are considered to be the most appropriate approach to Ecological Impact Assessment (EclA) by both statutory and non-statutory consultees. The objective of the Guidelines is to promote a scientifically rigorous and transparent approach to EclA, as a key component of EIA. The Guidelines comprise advice on best practice in four key areas of EclA:

- Identifying and evaluating ecological features;
- Characterising and quantifying effects and assessing their significance; and
- Minimising adverse effects and maximising benefits through the scheme design process.

### **Terminology – effects and impacts**

13.1.34 The terms 'impact' and 'effect' are often used synonymously and this can lead to confusion. For the purposes of this ecological assessment they are defined as follows:

- Effects: any changes attributable to the scheme that have the potential to have ecological impacts (i.e. factors that can lead to an impact); and
- Impacts: the changes to specific ecological resources or receptors.


### **Ecological study area**

13.1.35 In July 2014 BSG Ecology commenced a suite of ecological surveys of the planning application area hereafter referred to as The Site. This included an extended Phase 1 habitat survey, great crested newt survey, badger survey, dormouse survey, reptile survey, Roman snail survey, bat surveys and a characterisation of the breeding bird community. The information thus gained was used to inform the impact assessment of the planning application.

13.1.36 During the initial stages of the survey effort, The Site boundary had not been finalised, though an indicative ecological study area had been set out that encompassed a wider area than The Site. The surveys listed above were undertaken in order to provide baseline contextual information for this area. The ecological survey area included The Site and two arable fields to the north of The Site and north of Shipton Road. The areas targeted by each survey type are set out within the relevant sections below. The boundaries of The Site and the ecological study area are shown in Appendix A, Figure 1.

### **Desk study**

13.1.37 The following ecological data in relation to The Site and surrounding area were reviewed to inform the baseline assessment and provide an ecological context to assist the assessment:

- Information on statutory and non-statutory designated sites held by the Thames Valley Environmental Records Centre (TVERC) up to 2 km from The Site boundary (requested and received in July 2014);
- Existing records of protected and notable species held by TVERC for The Site and land up to 2 km from The Site boundary (requested and received in July 2014);
- Additional bat records held by Oxfordshire Bat Group for a 5 km x 5 km square centred over The Site;
- 
- Additional bird data held by the Oxford Ornithological Society for within 2 km of The Site (received in August 2014);

- 13.1.38 On-line resources, including data available through the Multi Agency Geographic Information for the Countryside website ([www.magic.gov.uk](http://www.magic.gov.uk)) supplemented the information obtained from TVERC, and was reviewed in order to secure an overview of relevant statutory and non-statutory designations.
- 13.1.39 Further information on the Oxford Meadows Special Area of Conservation (SAC) was also obtained, in order to assess potential impacts on this statutory site as set out in the Oxford Core Strategy Habitats Regulation Assessment (2011).
- 13.1.40 Existing ecological information contained in reports available in the public domain were consulted. This included the Shipton Road Woodstock, Ecological Report (AA Environmental, 2013) for Marlborough School, located within 200 m of the northern edge of The Site.

### **Consultation**

- 13.1.41 A multi-disciplinary scoping report was produced by West Waddy ADP in August 2014 which was sent to West Oxfordshire District Council (WODC) and Cherwell District Council (CDC). This was then sent by these District Councils to relevant statutory consultees including Natural England and Oxfordshire County Council (OCC). With regards to Ecology and Nature Conservation the report identified, in summary, the preliminary results of the ecology surveys at that time, and summarised the approach to the assessment.
- 13.1.42 The responses from consultees were used to inform the scope, methodologies and mitigation techniques adopted.
- 13.1.43 The Scoping Report and the Scoping Opinions from WODC and CDC is included in Appendix 2, chapter 1 of Environmental Statement.
- 13.1.44 The Scoping Report was also sent to the following organisations with their responses included in Appendix 2 to Section 3 of Environmental Statement:
- Woodstock Natural History Society;
  - Oxford Bat Group;
  - Oxford Mammal Group; and
  - Berkshire, Buckinghamshire & Oxfordshire Wildlife Trust (BBOWT)

### **Field surveys**

- 13.1.45 A number of field surveys were carried out across the ecological survey area where accessible. The detailed methods and results are given in this chapter however, in summary, The Site was subject to:
- Extended Phase 1 habitat survey – July 2014;
  - Great crested newt *Triturus cristatus* breeding habitat assessment survey – July 2014;
  - Reptile survey – July to September 2014;
  - Breeding bird characterisation survey – July 2014;
  - Barn Owl *Tyto alba* Survey – July 2014;
  - Badger *Meles meles* survey – July to September 2014;
  - Bat roost assessment of trees and buildings – July and August 2014;
  - Bat activity surveys – July to September 2014;
  - Bat mist nettings survey – October 2014;
  - Dormouse *Muscardinus avellanarius* survey – July to November 2014; and

- Roman Snail *Helix pomatia* survey – July to October 2014

### **Extended Phase 1 habitat survey**

- 13.1.46 A Phase 1 habitat survey was conducted in July 2014 (3, 9, 10 and 14). This survey covered the ecological survey area including The Site, and two arable fields to the west of Shipton Road.
- 13.1.47 The Phase 1 habitat survey was carried out based on current best practice guidelines (JNCC, 2010) and included walking all of the boundaries within the ecological study area. Target notes were made on the main habitat types and the dominant species composition and on any habitats or features with potential to support protected or notable species. The Phase 1 habitat survey has been supplemented by observations of the proposed development area and its surroundings during other survey work conducted in 2014 and is shown in Appendix A, Figure 1.

### **Great crested newt survey**

- 13.1.48 As part of the desk study carried out for The Site, the presence of a known great crested newt population was highlighted in four ponds in the grounds of Marlborough School, Woodstock. The school is located 210 m north of The Site and the position of the four ponds within the school is shown in Appendix A, Figure 1.
- 13.1.49 In order to gain up to date information about the status of these ponds and great crested newt population, a survey was carried out on 7 August 2014. During this survey, the four water bodies were visited and notes made on their suitability to support great crested newt.
- 13.1.50 The ponds were also subject to a netting survey. Two surveyors working under a Natural England great crested newt licence (John Baker; Class Licence No. CLS001199 and Greg Chamberlain) used specialist survey nets within all four water bodies to check for the presence of newt larvae. Though the timing of this survey in August is not within the survey period recommended by best practice survey guidelines (mid-March to mid-June) (English Nature, 2001), it is considered sufficient to establish the presence of the species. This timing of the survey does however enable likely absence to be established.

### **Reptile survey**

- 13.1.51 During the extended Phase 1 habitat survey a sloughed grass snake skin was located within grassland on the field margin at the northern end of the survey area, outside The Site and within the ecological survey area. Given the presence of suitable habitat of mainly semi-improved grassland margins around much of the arable habitat on The Site, a reptile survey and population assessment of the survey area was undertaken in 2014. The methodology was based on current guidelines (Froglife, 1999).
- 13.1.52 Artificial reptile refugia were placed in suitable habitat within the ecological survey area including The Site and two adjacent arable fields north of Shipton Road. The locations of these are shown in Appendix A, Figure 2. The habitats targeted for survey consist of the wider field margins, which support rough grassland along the hedgerows, totalling approximately 2.64 ha of suitable habitat. The refugia were placed at 10 m intervals along the grassland margins, with a total of 426 refugia placed throughout the survey area and The Site. This resulted in a density of over 75 refugia per hectare. This density exceeds the minimum recommended density of 10 refugia per hectare (Froglife, 1999). The dates and weather conditions of the surveys undertaken to date are set out in Table 13.1.

Survey Date	Start time	Weather conditions
11 August 2014	10:00	Temperature: 18°C. Rain: None. Wind: Light. Cloud cover: 2/8.
20 and 21 August 2014 (split over two visits)	9:30 – 9:00	Temperature: 15°C. Rain: None. Wind: Still-Light. Cloud cover: 4/8
27 August 2014	8:15	Temperature: 14°C. Rain: None. Wind: Light. Cloud cover: 5/8
1 September 2014	10:00	Temperature: 15°C. Rain: Dry throughout, then light drizzle at the end of the survey. Wind: Light. Cloud cover: 8/8
10 September 2014	9:00	Temperature: 16°C. Rain: None. Wind: Light. Cloud cover: 2/8.
16 September 2014	8:30	Temperature: 17°C. Rain: None. Wind: Light breeze. Cloud cover: 8/8.
1 October 2014	8.30	Temperature: 17°C. Rain: None. Wind: Light breeze. Cloud cover: 7/8.

Table 13.1: Reptile survey dates and weather conditions

- 13.1.53 On each survey all refugia were checked for the presence of reptiles. In addition, notes were made of any incidental sightings of reptiles during the reptile survey, or during other survey types. For each reptile observed a record was made of its species, sex (whenever possible), life stage, and location of the observation.
- 13.1.54 The population size class for reptiles was estimated based on Froglife guidelines for surveying for reptiles (Froglife, 1999) as follows in Table 1.2 below. The figures in Table 13.2 refer to maximum number of adults seen by observation and/or under refugia (placed at a density of up to 10 refugia per hectare), by one person in one day.

Species	Low population (Score 1)	Good population (Score 2)	Exceptional population (Score 3)
Adder <i>Vipera berus</i>	<5	5-10	>10
Grass snake <i>Natrix natrix</i>	<5	5-10	>10
Common lizard <i>Zootoca vivipara</i>	<5	5-20	>20
Slow worm <i>Anguis fragilis</i>	<5	5-20	>20

Table 13.2: Population class assessment criteria for reptiles

- 13.1.55 The importance of the site for reptiles was evaluated using the scoring system provided in the Froglife guidelines, as follows:
- Supports three or more reptile species;
  - Supports 2 snake species;
  - Supports an exceptional population of one species;
  - Supports an assemblage of species scoring at least 4 (see above Table 13.2); and
  - Does not satisfy 1 to 4 but which is of particular regional importance due to rarity.
- 13.1.56 A further assessment of the results in relation to criteria set out for the designation of Wildlife Sites in Oxfordshire was also carried out. These state that a site supporting

one or more notable reptile or amphibians species (adder *Vipera berus*, natterjack toad *Epidalea calamita* or sand lizard *Lacerta agilis*), or an assemblage of species in sufficient numbers to qualify (full criteria can be viewed at: <http://www.tverc.org/cms/sites/tverc/files/LWS%20criteria%20Nov%2009.pdf>)

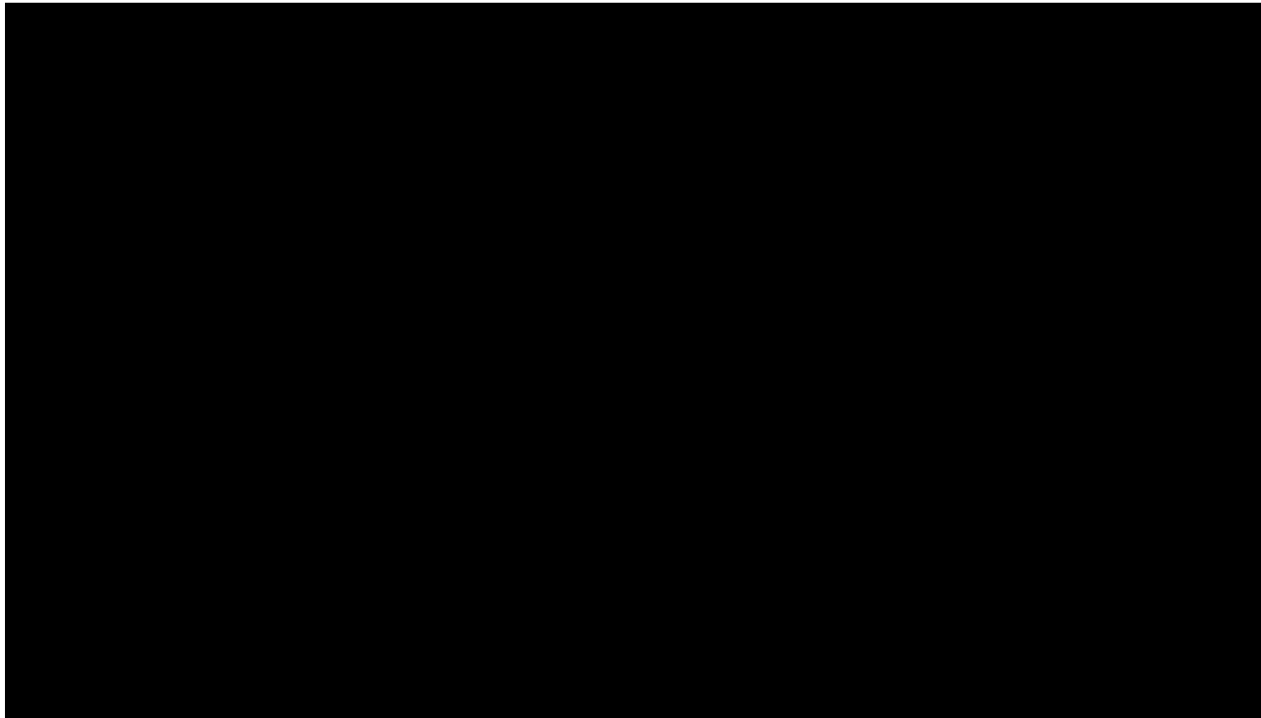
### **Breeding bird characterisation survey**

- 13.1.57 Due to the start time of ecological surveys (July), a full breeding bird survey of the ecological survey area was not undertaken. However a breeding bird characterisation survey of the ecological survey area was carried out on 3 and 9 July 2014. Two survey visits were carried out which involved walking transects within the ecological survey area at a slow pace to enable all birds detected to be identified and located. Frequent stops were made to scan the woodland habitats and to listen for singing and calling birds. Both surveys were started at 6:00 am and completed at 10.30 am.
- 13.1.58 During these surveys, the location and activity of each bird detected (including those seen or heard) was recorded and mapped using standard two-letter British Trust for Ornithology (BTO) species codes combined with activity symbols.
- 13.1.59 The information gained from the two survey visits and that recorded during other survey visits (badger, reptile, dormouse) were used to compile a baseline characterisation of the breeding bird community of The Site.
- 13.1.60 To inform the evaluation of the importance of each bird species recorded, based on regional and national accounts, the following were identified:
- The numbers of potential territories;
  - The abundance of species at the county and national level;
  - The quality of the habitat present; and
  - The geographical range of the birds concerned
- 13.1.61 In addition, the species identified during the survey were checked against the latest review of the status of birds that occur regularly in the UK (Eaton *et al*, 2009), to assess whether they are any species of conservation concern. Birds of high conservation concern are included on the 'red list' with those considered to be of medium conservation concern on the 'amber list'. While red and amber listing does not confer any additional legal or planning policy protection to bird species, it does provide a basis for targeting of conservation measures. The status of other birds at a local level was also considered to highlight any populations of relatively high value as were any SPIs.

### **Barn owl survey**

- 13.1.62 In order to determine whether artificial structures or any of the trees within The Site and ecological survey area have the potential to support nesting or roosting barn owl, a survey was conducted on 17 July 2014. During this survey, the buildings at Perdiswell Farm and the Pest House were inspected for likely nest sites and signs of use by this species. The location of buildings are shown in Appendix A, Figure 1.





### ***Bat Chiroptera surveys***

#### Bat Activity Surveys

- 13.1.65 A series of activity transect surveys were undertaken throughout the ecological survey area in July, August and September 2014. The activity surveys comprised transect and automated surveys taking into account the guidance published by the Bat Conservation Trust in 2012 (Hundt, 2012). These are described in further detail below.

#### Walked Transects

- 13.1.66 Due to the dominance of arable habitats, and the absence of aquatic habitat within the Site and with habitat features for bats limited to hedgerows and woodland plantation, the Site was assessed as supporting a low/medium habitat quality for bats (Hundt, 2012). As such three activity surveys over the season in 2014 were considered sufficient survey effort to inform a reliable baseline for The Site.
- 13.1.67 In 2014, walked transect surveys were conducted in July, August and September comprising two dusk transects and an additional dusk followed by a pre-dawn transect. These surveys were undertaken in suitable weather conditions and in accordance with good practice survey guidance (Hundt, 2012). The transect was designed to pass through each habitat present within the ecological survey area including; The Site and arable field adjacent to Shipton Road. During the surveys, two pairs of surveyors walked a pre-determined transect route, periodically stopping for 3 minute transect stops in which to listen and observe bat activity.
- 13.1.68 Each dusk walked transect began 15 minutes before sunset and continued for approximately 2 to 2.5 hours. The pre-dawn survey commenced 2 hours before sunrise and finished at sunrise.
- 13.1.69 During the surveys, notes were made on the bat species heard and seen, including time, location, activity (e.g. foraging, commuting) and, where possible, direction of flight. Surveyors were equipped with bat detectors (EM3 or AnaBat SD1 and either Pettersson D240x or Batbox duet) to listen to and record bat activity. Calls registered by the bat detectors were recorded for later analysis using specialist computer software (Analook).

- 13.1.70 A plan showing the transect routes walked during the surveys is provided in Appendix A, Figure 3. The starting point of the transect or transect direction was altered each month in order to prevent survey bias; ensuring that all points of the transect were covered during the time of peak bat activity. A summary of surveyors, transect routes and weather conditions are found in Table 13.3 below.

Date	Surveyors	Transect Route	Details
10/07/14	GC, LG	1 > 11	Sunset 21:19 Start: 21:04; 20°C, wind Bf 2-3, cloud 7/8, no rain Finish: 23:33; 14°C, wind Bf 2, cloud 1/8, no rain
14/08/14	GC, HB	11 > 1	Sunset 20:30 Start: 20:15; 14°C, wind Bf 0, cloud 7/8, no rain Finish: 23:33; 12°C, wind Bf 1, cloud 1/8, no rain
11/09/14	GC, TF	1 > 6, 11 > 9	Sunset 19:28 Start: 19:13; 16°C, wind Bf 1, cloud 8/8, no rain Finish: 21:28; 14°C, wind Bf 0, cloud 8/8, no rain
12/09/14	GC, TF	1 > 6, 11 > 9	Sunrise 06:35 Start: 04:35; 14°C, wind Bf 1, cloud 7/8, no rain Finish: 06:35; 14°C, wind Bf 1, cloud 8/8, no rain

GC = Greg Chamberlain; HB = Hannah Bilston; LG = Laura Grant; TF = Tom Flynn

Table 13.3: Details of walked transects conducted in 2014

#### Automated Static Detector Surveys

- 13.1.71 Automated bat activity surveys were undertaken to supplement the walked transect surveys. This involved deployment of three automated bat detectors (Song Meter SM2BAT+ bat detectors) to remotely monitor bat activity throughout the site. Detectors were deployed in July, August and September and left to record for a minimum of five nights in each month. This level of survey effort is higher than the recommended survey effort for sites of low/medium habitat quality (Hundt, 2012).
- 13.1.72 Bat echolocation calls recorded by the SM2BAT+ detectors were converted from WAC (a compressed Waveform file) to ZC (a Zero Crossing file) using Kaledioscope software. The ZC files were analysed using Analook software to confirm the identity of the bats to at least genus level, and where possible to species level, and to calculate the approximate number of passes by each species to estimate relative activity. The static detector S1 was placed within the southern side of hedgerow H3, approximately 4 metres from its junction with hedgerow H2. Static detector S2 was positioned adjacent to the north-western section of hedgerow H4, with static detector S3 located on the western margin of woodland W1. The locations of the static detectors are shown in Appendix A, Figure 3.

Month	Period Recorded / Analysed Per Location		
	S1	S2	S3
July	25 (pm) – 28 (am)	25 (pm) – 30 (am)	17 (pm) – 22 (am)
August	14 (pm) – 19 (pm)	14 (pm) – 21 (am)	14 (pm) – 21 (am)
September	16 (pm) – 21 (am)	16 (pm) – 21 (am)	16 (pm) – 21 (pm)

Table 1.4: Details of static detectors deployed in 2014

#### Roosting bats

##### Tree Roost Assessment

- 13.1.73 In July 2014, a targeted ground level inspection of trees was undertaken to assess the potential for trees within The Site to provide opportunities for roosting bats. During the survey, all trees with potential to be directly affected by the proposed development (via removal) were inspected from the ground, using binoculars and a high power torch as necessary. The following information was recorded for each tree: species; description

of any feature(s) with potential to support roosting bats (such as woodpecker holes, rot holes, splits or cracks, dead limbs, ivy cover and/or flaking bark); and the height and aspect of these features.

13.1.74 The trees were mapped and photographs were taken of suitable features. In addition, any evidence of the use of these features by bats, such as characteristic staining, scratch marks and droppings, was also recorded.

13.1.75 Trees were assessed in accordance with the categories set out below in Table 13.5

Level of potential	Tree Features
No/negligible potential	No cracks, splits, loose bark, hollow in trunk, holes or ivy
Low potential	Light ivy or any of the below features but in an isolated situation without surrounding trees or hedges
Medium potential	Heavy ivy and or presence of downward developing holes in a wooded situation or close to hedges
High potential	Trees next to hedges or in a wooded situation with multiple features (holes, loose bark, splits, hollows, woodpecker holes) and upward developing holes

Table 13.5: Categories of the potential of trees to support roosting bats

*Building Inspection*

13.1.76 A single building, the Pest House, is located within the Site boundary. The Pest House was inspected externally for evidence of roosting bats. The survey was conducted on the 6 August 2014 in accordance with published survey guidance and by experienced and licenced bat worker Hannah Bilston (Hundt, 2012). The location of the building is shown in Appendix A, Figure 1.

13.1.77 The exterior of the building was searched from the ground using a high powered torch, close-focusing binoculars and an endoscope (where necessary) for:

13.1.78 Features which could provide bats with access into roosting spaces or provide roosting spaces (such as gaps under roofing tiles, gaps in ridge tiles, gaps in soffit boxes, gaps under lead flashing, and cracks and crevices in the stonework); and

13.1.79 Evidence of the presence of bats such as bat droppings on windows, windowsills, walls and the ground, or scratch marks or staining from bat's fur around possible roost access/egress points.

13.1.80 The building was assigned a category defining its potential to support roosting bats in accordance with Table 13.6 below.

Level of Bat Potential	Rationale
Negligible	Building with no or very limited roosting opportunities for bats, no evidence of use by bats and where the feature is isolated from potential foraging habitat.
Low	Building with a limited number of roosting opportunities, no evidence of current use by bats and with poor connectivity to foraging habitat.
Medium	Building with some roosting opportunities, with no evidence of current use by bats and with connectivity to moderate – high quality foraging habitat.
High	Building with multiple roosting opportunities for one or more species of bat, and with good connectivity to high quality foraging habitat.
Confirmed Roost	Presence of bats or evidence of recent use by bats.

Table 13.6: Categories Of Bat Potential Of Buildings

### **Dormouse survey**

- 13.1.81 A dormouse survey was carried out by experienced and licenced ecologists in accordance with standard methodology (Bright *et al*, 2006) and the Natural England Standing Advice Species Sheet ([http://www.naturalengland.org.uk/Images/Dormice\\_tcm6-21704.pdf](http://www.naturalengland.org.uk/Images/Dormice_tcm6-21704.pdf)).
- 13.1.82 A total of 249 dormouse nest tubes were placed within suitable habitat including woodland edges, scrub and hedgerows within the ecological survey area (not including football field to the west of Shipton Road), at intervals of approximately 20 m, at a height between 1 m and 2 m. The locations of these nest tubes are shown in Appendix A, Figure 4. The tubes provide artificial nesting sites for dormice to allow them to be checked on subsequent occasions for the presence of dormice, and/or evidence such as their characteristically woven nests.
- 13.1.83 The nest tubes were set out on the 9 and 10 July 2014 and checked by a licenced ecologist (John Baker; Class Licence No. CLS 001199) for dormice and evidence of dormice in July, August, September, October and November. The dates of the surveys together with the survey effort score for each month are given in Table 1.7. The level of survey effort score showed that sufficient survey effort had been undertaken to determine presence or likely absence of this species in compliance with best practice guidance. The survey effort score is calculated using an index of probability of finding dormice in nest tubes in any one month, as set out in the Dormouse Conservation Handbook (Bright *et al*, 2006).
- 13.1.84 The calculations of survey effort are based on using a minimum of 50 nest tubes (spaced approximately 20 m apart) with each month associated with a different index of probability of dormice encounters, which can be added up over the course of the survey. The total score for the survey effort should be higher than 20 to be considered sufficient to reliably detect the presence of dormice. Where a higher number of nest tubes is used, the score can be increased. For instance 100 tubes enable the survey effort score to double, though higher increases than this are not usually considered acceptable. In relation to this survey the total score (considering the individual monthly scores doubled due to the use of more than 100 tubes) for the survey effort to date is 28, which exceeds the minimum required survey effort score.

Survey Date	Survey Effort (Bright <i>et al</i> , 2006)	Survey Effort with 249 tubes
31 July and 1 <sup>st</sup> August 2014	2	4
27 August 2014	5	10
2 October 2014	7	14
27 October 2014	2	4
18 November 2014	2	4

Table 13.7: Dormouse survey dates and survey effort score

### **Roman Snail**

- 13.1.85 During surveys within the ecological survey area, surveyors were instructed to be alert to the potential presence of roman snails. There is no formal survey methodology for this species, however Natural England Guidelines (Natural England (2011). *Roman snails and Development*. Technical Information Note TIN103) recommend that searches are be carried out visually of suitable habitats between early May and late June. However these guidelines also state that translocation can be carried out into September/October, and in conditions when snails are most active (warm, humid weather or after rain). Though they are difficult to locate in dry, hot weather, the presence of dead shells lying on the surface is often a feature of sites occupied by Roman snails.
- 13.1.86 The visits to ecological survey areas on days following rain or on mornings with heavy dew were particularly targeted for this purpose and surveyors were asked to record any sightings of this species, including live individuals or empty shells. Visits made in the September and October period for other surveys and site visits include the following dates: 11, 12, 16, 21 September and 1, 2 and 27 October 2014.

### **Valuing ecological features and resources**

- 13.1.87 The EclA Guidelines (IEEM, 2006) recognise that evaluation is a complex process and that a number of factors need to be considered in attributing value to ecological receptors. An ecological receptor can refer to a species, habitat, designated site or other ecological resource that could be adversely affected by the proposals. When attributing value to an ecological receptor, the following is taken in to consideration:
- Designated sites and features;
  - Biodiversity value;
  - Potential value;
  - Secondary or supporting value;
  - Social value;
  - Economic value; and
  - Legally protected sites and species.
- 13.1.88 The Guidelines confirm that the assigning of value is a matter of professional judgement which should be guided by the importance and relevance of each of the factors listed above so as to allow each ecological resource or receptor to be valued having regard to a Geographic Frame of Reference (set out below). With regard to assessments of biodiversity value, there are various characteristics that can be used to identify ecological resources or features that are likely to be important in terms of biodiversity, and these include:
- Rare or uncommon species in the local, national or international context;
  - Endemic or locally distinct sub-populations of a species;
  - Species on the edge of their distribution;

- Notably large populations of animals or concentrations of animals considered uncommon or threatened in a wider context;
- Species-rich assemblages of plants or animals;
- Ecosystems and their component parts, which provide the habitats required by the above species, populations and/or assemblages;
- Plant communities (and associated animals) considered typical of valued natural/semi-natural vegetation types; and
- Habitat diversity, connectivity and/or synergistic associations

13.1.89 In order to evaluate the importance of ecological features identified in the desk study and field surveys, all ecological resources or features to be assessed are assigned a value in relation to their geographical context. The following hierarchy is used for the purposes of this chapter:

- European - i.e. an ecological receptor of importance at a European level, often contained within designated areas e.g. SPAs, SACs and Ramsar sites;
- National - an ecological receptor of importance in the context of England, often within designated areas e.g. SSSIs;
- Regional - an ecological receptor of importance at a Regional level (i.e. South-east of England). These could be regionally rare habitats or species, or those habitats or species for which the region is most important;
- County - an ecological receptor important at the County level (Oxfordshire);
- District - an ecological receptor important at the District level (West Oxfordshire and Cherwell District Council);
- Parish - an ecological receptor important at the Parish level (Woodstock, Shipton-on-Cherwell and Thrupp);
- Site - an ecological receptor important in the context of The Site; and
- Negligible value – when the ecological receptor has only negligible value
- Identifying ecological receptors for further assessment

13.1.90 Following evaluation, a determination is required of the ecological resources or receptors that should be fully considered in the impact assessment. This allows exclusion of those that are of low or no ecological value from further consideration in the assessment. Effects on such receptors are considered to be insignificant regardless of the nature or magnitude of the effect. This approach accords with the requirements of the EIA Regulations, which require consideration of likely significant effects and do not require consideration in detail of potential effects on every receptor that may be present.

13.1.91 For the purposes of this chapter, the ecological resources that have been taken forward for detailed impact assessment are those assessed in the baseline section of this chapter as being of Parish (i.e. Woodstock) value or higher. This is because effects on features with this value, or higher value, have the potential to have implications in terms of planning policy. Receptors protected under UK or EU legislation are also considered, even if evaluated at below Parish level. The consideration of potential impacts on such receptors and development of mitigation is considered (and required) to ensure legal and policy compliance.

### ***Identification of ecological effects***

13.1.92 Potential effects are considered during both the construction and operational phases of development. In this case, the construction phase is defined as all works and activities that will be carried out as part of the development establishment (e.g. site clearance, demolition, construction works, landscaping and planting). The construction

phase of the proposed scheme is likely to start in 2016 and continue for 15 years. The operational phase is defined as the period post-construction when the development is in use (i.e. the occupation of the development by residents and businesses and associated activities).

- 13.1.93 Consideration is also given to development design evolution aimed at avoiding or reducing ecological impacts that have been discussed or raised with the project team or relevant stakeholders.

**Identification of ecological impacts (including assigning significance)**

- 13.1.94 Once potential ecological effects have been identified, any resulting impacts on ecological resources or receptors (e.g. a reduction or increase in population size) can be assessed. Impacts can be direct or indirect. Direct impacts include loss/damage of habitats through activities such as site clearance and building demolition. Indirect impacts can include the effects of artificial lighting on bats, pollution events and changes in existing levels, and hydrological changes.

- 13.1.95 The nature of each impact is characterised with reference (as appropriate) to the following factors:

- Direction (positive, negative or neutral);
- Magnitude (i.e. the 'size' or 'amount' of an impact which is quantified where possible);
- Extent (area in hectares, linear metres);
- Duration (in time or related to species life-cycles);
- Reversibility (i.e. is the effect permanent or temporary); and
- Timing and frequency (e.g. related to breeding seasons).

**Determining the ecological significance of impacts**

- 13.1.96 The EclA Guideline states that impacts should be determined as having a significant ecological effect when they have an adverse or beneficial impact on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographical area (IEEM, 2006). This constitutes the guiding principle in determining whether an impact is ecologically significant, and if so at what level.
- 13.1.97 An impact is determined to be significant or not, in ecological terms, in relation to the integrity of the defined site or ecosystem(s) and/or the conservation status of habitats or species within a given geographical area, which relates to the level at which it has been valued. If an effect is found not to be significant at the highest geographical level at which the resource or feature has been valued, it may be significant at a lower geographical level. By way of example, limited impacts on woodland of county importance might be assessed as being significant at a district level of importance.
- 13.1.98 The integrity of a protected site is defined in relation to guidance given in relation to the EC Habitats Directive as the coherence of its ecological structure and function across its whole area that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified (IEEM, 2006).
- 13.1.99 Conservation status for habitats is determined by the sum of the influences acting on the habitat and its typical species that may affect its long-term distribution, structure and functions as well as the long-term survival of its typical species within a given geographical area. Conservation status for species is determined by the sum of influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within a given geographical area (IEEM, 2006).
- 13.1.100 The value of any feature that will be significantly affected at a given geographical level is used to determine the implications, in terms of legislation, policy and/or

development control. The Guidance states: if an ecological resource or feature is likely to experience a significant impact, the consequences in terms of development control, policy guidance and legislation will depend on the level at which it is valued. Significant impacts on features of ecological importance should be mitigated (or compensated for) in accordance with guidance derived from policies applied at the scale relevant to the value of the feature or resource. Any significant impacts remaining after mitigation (the residual impacts), together with an assessment of the likelihood of success in the mitigation, are the factors to be considered against legislation, policy and development control in determining the application. The IEEM guidelines also confirm the approach that should be adopted in identifying an appropriate level of mitigation.

- 13.1.101 Priority should be given to the avoidance of impacts at source, whether through re-design of a project or by regulating the timing or location of activities. If it is not possible to avoid significant negative impacts, opportunities should be sought to reduce the impacts, ideally to the point that they are no longer significant. If this is not possible, but the scheme is permitted, compensation may be appropriate. The residual impacts are those significant impacts that remain after implementation of mitigation and compensation measures. These impacts and an assessment of the likely success of any mitigation measures (using the scale set out above) are also assessed having regard to the geographic frame of reference.

### ***Confidence in predictions***

- 13.1.102 Following an assessment of the significance of any residual effects a judgement is made in relation to each resource or receptor, about the degree of confidence in the impact assessment.
- 13.1.103 The available degree of detail, at this stage in the development of the scheme design, can also affect certainty. In this chapter, confidence in prediction is expressed with reference to the scale described below:
- Certain/near-Certain: probability estimated at 95% chance or higher;
  - Probable: probability estimated above 50% but below 95%;
  - Unlikely: probability estimated above 5% but less than 50%; and
  - Extremely Unlikely: probability estimated at less than 5%.

### ***Phases of the scheme***

- 13.1.104 The potential impacts of the development are considered in relation to both construction and post-construction phases.
- 13.1.105 Certain environmental effects will only occur during construction of the development and will cease when construction activities end. These will likely include temporary effects of the scheme and will generally be described as short-term or medium-term effects. Other construction and post-construction effects will be the same (e.g. permanent loss of areas of arable land to the development) and are described as long-term effects.

### ***Outlining the proposed mitigation measures***

- 13.1.106 Mitigation measures were developed to avoid, reduce or compensate for potential significant impacts and are reported in outline in each of the following sections. Mitigation measures were developed using the following framework for the proposed development:
- Impact avoidance through design change;
  - Avoidance of damaging activities;



- Minimisation of potential impact;
- Habitat creation;
- Habitat management / improvement;
- Translocation; and
- Programming of works.

### ***Assessing the residual impacts of the proposals***

13.1.107 All assessments of residual potential impacts are based on, and dependent on, the mitigation measures outlined in each of this report's sections.

## **RESULTS AND EVALUATION OF DESK AND FIELD STUDY**

### ***Baseline conditions***

13.1.108 The following section sets out the ecological baseline for the proposed development site established following desk study and field survey work undertaken in 2014. It presents a summary of the findings as a basis for evaluating the identified ecological resources in order to determine their ecological value which is expressed with reference to the geographic scale.

13.1.109 The ecological receptors that were considered in the baseline studies are discussed in the following order:

- Protected sites - both statutory (e.g. SPA, SSSI, LNR) and non-statutory (e.g. CWS) protected sites;
- Habitats - including a description of the habitats present within the proposed development site; and
- Protected or otherwise notable species - this includes consideration of those species protected under UK or EU legislation (e.g. bats and badgers) and consideration of those species listed as being of conservation importance in accordance with Section 41 of the NERC Act, and/or identified as priorities for nature conservation action in the Oxfordshire BAP.

### ***Protected sites***

13.1.110 The TVERC returned the details of several designated sites within 2 km of The Site. These are shown in Appendix A, Figure 5.

#### Statutory sites

13.1.111 There are no sites designated under international (EU) legislation for their conservation importance within 2 km of The Site. The closest is Oxfordshire Meadows SAC which is located over 5 km to the south. The SAC was selected for its Annex I habitats including lowland meadows with communities that are perhaps unique in the world in reflecting the influence of long-term grazing and hay-cutting on lowland meadows. It was also selected as it is the larger of only two known sites in the UK which support creeping marshwort *Apium repens*, an Annex II species. Due to its status as a SAC it is considered of International value.

13.1.112 There is one national statutory site of nature conservation (i.e. those designated under UK legislation) located within 2 km of The Site. This is Blenheim Park SSSI located at SP 435167, approximately 1 km to the west of The Site. It contains significant examples of ancient oak-dominated pasture woodland, an invertebrate fauna associated with dead and decaying wood and a notable site for pseudo-scorpions. It is also of regional importance for breeding wildfowl including the largest breeding

population of great crested grebes in Oxfordshire and supports 1% of the total British wintering population of gadwall since 1977. Due to its status as a SSSI, this designated site is considered to be of National value.

Non-Statutory Sites

- 13.1.113 There are five non-statutory designated sites within 2 km of The Site. Table 13.8 below provides a brief site description, reason for designation, size (ha), and proximity to The Site boundary. It also indicates the ecological value of the designated sites based on the habitats/species they support in relation to their geographical context.
- 13.1.114 Local Wildlife Sites (LWS) are designated for their nature conservation interest by the relevant local authority. These sites are considered to be of County value.

Site Reference	Designation	Grid reference and approx. distance to Site boundary	Site description/reason for designation	Value
Oxford Water Meadows	Special Area of Conservation	SP492090	Annex I habitats including lowland meadows with communities that are perhaps unique in the world in reflecting the influence of long-term grazing and hay-cutting on lowland meadows	International
Bladon Heath	Local Wildlife Site (LWS)	SP455138 1.6km south	97ha Supports areas of planted coniferous woodland, with remnant acid open ground along the rides with heathland species. Ancient woodland indicator species have also been recorded as has a rich invertebrate fauna.	County – this site has been designated by the local authority as being of county importance.
Bunkers Hill Quarry	LWS	SU 475175 1.99 km north east	62.6ha This site is a limestone quarry which supports extensive open water, wetland, calcareous grassland and open-ground habitats. The bird interest is significant for over-wintering, migrating and breeding birds. The wetland and calcareous grassland habitats support a varied flora. Notable invertebrates and reptiles have also been recorded	County – this site has been designated by the local authority as being of county importance.
Woodstock Water Meadows	LWS	SP 444170 0.79 km north west	4.9ha This site supports a series of wet meadows with areas of woodland, scrub, a network of	County – this site has been designated by the local authority as being of county

			wet ditches, two small ponds, areas of semi-improved grassland, broadleaved plantation woodland and tall herb and areas of lowland fen habitat .	importance.
Glyne and Dorn Valley	Conservation Target Area	1.2 km north west	2,496ha. This site includes parts of the Blenheim Park SSSI and Woodstock Water Meadows LWS. It supports a diverse range of habitats, including: limestone grassland, lowland meadow, fen, swamp and reedbed, parkland, woodland and eutrophic standing water.	National – due to the presence of Blenheim Park SSSI within its boundary.
Lower Cherwell Valley	Conservation Target Area	1.99 km north east	609ha This site features a range of habitats including fen and swamp, reedbed, lowland meadow, wet grassland/floodplain grazing marsh, limestone grassland and eutrophic standing water. It also supports water vole as well as priority species of birds, such as reed bunting, skylark, yellow hammer and grey partridge.	County – Due to its identification as a connective resource between County value sites

Table 13.8: Details of non-statutory sites within 2 km of The Site

- 13.1.115 A further non-statutory designated site for which no information was gained from TVERC other than its location is situated approximately 350 m north-west of The Site beyond Marlborough School, Woodstock. Due to the lack of information, this could not be assigned a value. However as it is a locally designated non-statutory site, it is likely to be of County value.

### Habitats

- 13.1.116 The habitat types recorded during the extended Phase 1 habitat survey are discussed in the relevant sections below. Photographs of the main habitats are shown in Appendix B. Overall The Site comprises three arable fields bordered by species poor

hedgerows with the largest field supporting relatively wide field margins of semi improved grassland. A woodland belt borders the eastern and part of the northern Site boundary. The main dwelling and associated buildings of the Pest House is also within The Site boundary. The north western section of The Site includes an amenity grassland area comprising football fields of Marlborough School, which is bordered by a hedgerow and Shipton Road. The north eastern boundary of The Site includes a narrow strip of a larger arable field. The coverage of each habitat within The Site and ecological survey area is given in Table 13.9 with their location in Appendix A, Figure 1. These sections also provide an evaluation of its ecological value within a geographical context. The habitat's value is given, and in the case in which the intrinsic value is outweighed by the value of another resource within this (such as a protected species), this is also taken into account. The Phase 1 habitat plan is presented in Appendix A, Figure 1. The Target Notes shown on Figure 1, Appendix A refer to:

- 1: Small stand of Japanese knotweed *Fallopia japonica*.
- 2: Grass snake shed skin
- 3: Built environment- Pest Houses and associated gardens and outbuildings

Habitat	Sub section	Area (Ha)	Length (m)
Broad leaved semi-natural woodland	W1	3.0	
<b>Total Area within Site</b>		3.0	
Hedgerow	H1		170
	H2		288
	H3		280
	H4		289
	H5		224
	H6		145
	H7		296
	H8		483
	H9		152
	H10		198
	H15		274
	H16		150
<b>Total length within Site</b>			2949
Dry Ditch	DD N-S		471
Dry Ditch	DD W-E		283
<b>Total Length within Site</b>			754
Semi Improved Grassland	SI1	1.27	
	SI2	0.3	
	SI3	0.51	
<b>Total Area within Site</b>		2.08	
Improved Grassland (Pest House)	I	0.65	
<b>Total Area within Site</b>	I	0.65	
Arable	A	59.8	
<b>Total Area within Site</b>	A	59.8	
Amenity grassland (football field Marlborough School)	A	4.2	
<b>Total Area within Site</b>		4.2	

Table 1.9 Existing Area/Length of each habitat within The Site and \*ecological survey area

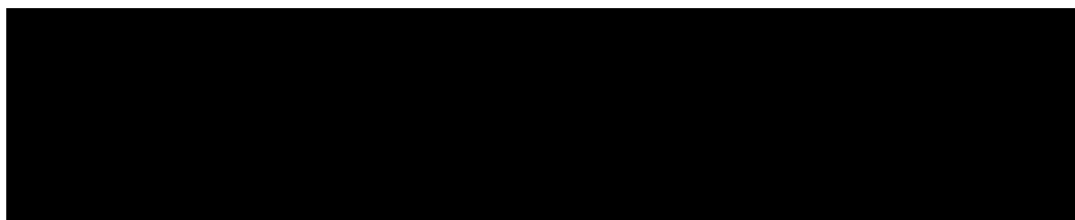
#### Arable land

- 13.1.117 The majority of the The Site (approximately 74.4 ha) comprises cultivated land used for wheat, barley. Further fields to the north of Shipton Road are cultivated for oilseed rape *Brassica napus*.
- 13.1.118 A small stand of Japanese knotweed was recorded within the edge of the arable field adjacent to the western Site boundary (TN1 in Appendix A, Figure 1).
- 13.1.119 The arable habitat is considered to be of negligible intrinsic value due to its low floristic diversity and given the abundance of this habitat type in the wider landscape.
- 13.1.120 However, it is known to support birds of conservation importance (e.g skylark *Alauda arvensis*) and therefore this habitat is considered to be of value at the Site level.

Woodland and lines of trees

13.1.121 A woodland strip (3.0 ha) is present along the eastern and part of the northern site boundary, adjacent to Shipton Road and Upper Campsfield Road (Appendix B, Photographs 1 and 2). This consists of semi-natural broadleaved woodland, with the mature trees consisting mainly of ash *Fraxinus excelsior* and oak *Quercus robur*. The more mature trees support ivy *Hedera helix* in many places. The shrub layer in this woodland is in most places dense, dominated by species such as spindle *Euonymus europaeus*, elder *Sambuca nigra*, hawthorn *Crataegus monogyna*, hazel *Corylus avellana*, and field maple *Acer campestre*. The ground flora is dominated by ivy and ground ivy *Glechoma hederacea*, dog's mercury *Mercurialis perennis*.

13.1.122



13.1.123 Lowland deciduous woodland is a priority habitat under Section 41 of the NERC Act. However, due to the relatively small size of the woodland on The Site and given that this habitat type is a relatively common nationally, though less widespread locally, it is considered to be of Parish value.

Semi-improved grassland - field margins

13.1.124 The south-eastern most field on The Site supports areas of uncultivated field margins, though some also exist in the arable field within the wider survey area to the north of Shipton Road (Appendix B, Photographs 1-4). These margins are generally between 6m and 8m wide and support a rough grassland sward of 2.08 ha.

13.1.125 The species composition varies slightly across the extent of this habitat, but the dominant grass species are cock's-foot *Dactylis glomerata*, red fescue *Festuca rubra*, false-oat grass *Arrhenatherum elatius* and Yorkshire fog *Holcus lanatus*. Other species recorded within this habitat type include common toadflax *Linaria vulgaris*, ribwort plantain *Plantago lanceolata*, greater plantain *Plantago major*, dandelion *Taraxacum sp.*, scarlet pimpernel *Anagallis arvensis*, Alsike clover *Trifolium hybridum*, common bird's-foot-trefoil *Lotus corniculatus*, white clover *Trifolium repens*, creeping thistle *Cardium arvense*, cleavers *Galium aparine*, and common nettle *Urtica dioica*.

13.1.126 This habitat type is not considered as a HPI as grassland margins established as part of an Entry Level Stewardship Scheme are excluded from this type of Priority Habitat ([http://jncc.defra.gov.uk/pdf/UKBAP\\_BAPHabitats-02-ArableFieldMargins.pdf](http://jncc.defra.gov.uk/pdf/UKBAP_BAPHabitats-02-ArableFieldMargins.pdf)). It is relatively un-diverse floristically and widespread nationally and within the County.

13.1.127 The grassland margins do provide suitable habitat for reptiles and amphibian and therefore it is likely to be of no more than Parish value.

Hedgerows

13.1.128 The majority of the field margins on The Site consist of hedgerows (H1-H10, H15 and H16) as shown in Appendix A, Figure 1 and in Appendix B, Photographs 1-7. These are generally species poor though several support scattered trees within them. The hedgerow habitat within The Site (H1-H10, H15 and H16) is 2949 m.

13.1.129 The hedgerow (H4) surrounding the Pest Houses has not been cut regularly and has been allowed to develop into a shelter belt of mature trees including sycamore, common oak, ash, and field maple.

13.1.130 The dominant species within the hedgerows are hawthorn and hazel. Other species forming the hedges or standard trees include ash, wych elm *Ulmus glabra*, sycamore

*Acer pseudoplatanus*, blackthorn *Prunus nigra*, field maple and scots pine *Pinus sylvestris*. The latter forms a line of trees along the short hedgerow (H9), adjacent to the playing fields. The football fields are bordered on the north and the west by hedgerows (H15 and H16) comprising hawthorn and blackthorn with occasional standard trees of oak, field maple and wych elm.

- 13.1.131 The majority of trees within the hedges are relatively young, though some more mature stands were noted in the hedge (H7) on the southern edge of the field in the south-west corner of The Site and adjacent to the Oxford Road.
- 13.1.132 These hedges are associated in places with shallow dry ditches (H2 and H3), which support a similar flora to that described within the grassland margins. However, due to their structure and species composition, these are not considered important under the Hedgerow Regulations (1997).
- 13.1.133 Hedgerows are classified as HPIs for the conservation of biodiversity in England, in accordance with Section 41 of the NERC Act. However the hedges on Site are relatively un-diverse floristically and widespread nationally and within the county. Therefore this habitat is considered to be of no more than Parish value.

#### Plantation woodland

- 13.1.134 A small section of planted woodland is present within the field to the north of Shipton Road. This is within the ecological survey area but off Site (approximately 25 m north across Shipton Road) and the trees are currently young and not well-established. Given its limited size and young age, it is likely that this habitat is of no more than Site value.

#### Buildings and associated gardens

- 13.1.135 The Site boundary includes the dwelling and associated small buildings of the Pest House off Shipton Road. The main section of the dwelling is approximately three storeys high with dormer windows present on the eastern and western aspects and a clay-tiled roof. Single storey extensions approximately 5 m in length are present at the southern and northern ends of the building as are small outbuildings, sheds and greenhouses (Appendix B, Photographs 5, 9, 10, 11 and 12). The intrinsic value of this built up habitat is no more than of Site value.
- 13.1.136 This area also includes a garden with a small pond (1 m x 1.5 m) immediately in front of the house. The pond has few aquatic plants which are non native species and supports several large goldfish *Carassius auratus auratus*. The water quality appeared poor with large amounts of green filamentous algae found on the water surface. The pond is located on a raised area within a paved section of the garden with and is therefore of negligible value.
- 13.1.137 A small area of improved grassland fields (0.65 ha) in which goats are currently grazed is also located to the north of the Pest House. Given its limited size and current management, this area is of Site value only.

#### ***Protected and notable species***

- 13.1.138 The nature conservation value of protected and notable species associated or likely to be associated with The Site is discussed in the following sections. This evaluation has taken in to account both the desk study and field survey data.

#### Great crested newts

- 13.1.139 The TVERC data search returned 33 records of great crested newt, all of which date from 2008 and are located within Marlborough School north of the Site boundary. Of these, 16 records were from a small pond (Pond 1) to the south of the school and the remaining refer to the larger pond to the north of the school (Pond 2).



- 13.1.140 These off Site water bodies, as well as two further smaller ponds (Ponds 3 and 4) within the northern school grounds were visited in July 2014 and surveyed for great crested newt adults and larvae.
- 13.1.141 The locations of these ponds are shown in Appendix A, Figure1. These include:
- Pond 1 – located 25 m north of The Site. This consists of a small (2 m x 1 m) artificial pond with a maximum depth of 60 cm which was heavily overgrown with aquatic plants. Two great crested newt larvae were netted within this pond, with five larvae of smooth newts recorded (see Photograph 14).
  - Pond 2 – located 101 m north of The Site. This pond is dry, as the concrete lining has cracked in recent years. A small covered depression measuring approximately 60 cm x 60 cm and about 40 cm deep was found to hold water. In this standing water heavily covered by duck weed *Lemna minor*, three smooth newt larvae were netted (see Photograph 15).
  - Pond 3 – located 132 m north of The Site. This is a concrete-lined, raised pond supporting a very limited aquatic flora consisting of a single water lily *Nuphar sp.*.
  - Pond 4 – located 178 m north of the site. This is heavily shaded and supports a shallow (less than 5 cm) area of standing water limited to approximately 2 m x 2 m. Netting in these latter two did not produce newts of either species.
- 13.1.142 Within The Site boundary, a further small pond is present in the garden of the Pest House. The pond has few aquatic plants which are non-native species, and supports several large goldfish and has poor water quality (eutrophic). A HSI of the waterbody showed a poor HIS value and was scoped out of further assessment. No other ponds are present within the Site boundary.

#### Evaluation of great crested newt resource

- 13.1.143 The desk study and TVERC data search did not provide any records of gcn breeding within The Site. The phase 1 habitat survey did not record any breeding ponds on The Site with the only water body being located within the gardens of the Pest House, which contained fish.
- 13.1.144 The desk study and the surveys carried out in 2014 have confirmed that a population of great crested newt exist within the ponds at Marlborough School, located north of The Site boundary, although one (Pond 2) has recently dried out.
- 13.1.145 Great crested newt usually use terrestrial habitat within 250 m of their breeding ponds (Cresswell and Whitworth, 2004). Figure 1 in Appendix A, shows the location of the pond 1 and a buffer zone of 250 m, in relation to The Site. A small section of the arable field (0.93 ha) within The Site, falls within the buffer zone. Two further habitat types are present within The Site which lie within the 250 m buffer zone; the amenity grassland of the football field (3.93 ha) and hedgerows of a total length of 615 m comprising sections of hedgerow (H5, H15 and H16). It is considered unlikely that the gcn species occurs in habitats on Site beyond this buffer. The arable field and amenity grassland (football field) provides sub optimal terrestrial habitat, with the hedgerows and field margins (H5, H15 and H16) likely to provide more suitable habitat. It is therefore considered that the sub optimal habitats (arable and amenity grassland) contained within this 250 m buffer zone and within The Site, is of limited value for the species.
- 13.1.146 It is therefore highly unlikely that gcn would disperse from the breeding pond 1 and move south across a road and into the adjacent sub optimal amenity grassland and arable habitat. It is highly likely that the habitat surrounding the breeding ponds provide optimal habitat for the dispersal of gcn. Given that no other records exist for within 2 km of The Site, it is likely that the great crested newt population adjacent to The Site is of County value and the value of terrestrial habitat for gcn within The Site is of Site value.

Amphibians (other)

- 13.1.147 The TVERC data search returned two records of common toad *Bufo bufo*, five of common frog *Rana temporaria*, three of palmate newt *Lissotriton helveticus* and 30 of smooth newt.
- 13.1.148 Common toad is a SPI under Section 41. The records for this species are for Marlborough School and Blenheim Park. It is possible that the species uses suitable habitats (such as hedges, rough grassland and woodland) within The Site, but in the absence of a breeding pond, the numbers are likely to be very low and therefore this resource is likely to be to of no more than Site value.

Reptiles

- 13.1.149 The TVERC data search returned seven records of slow worm *Anguis fragilis*, distributed mainly within Blenheim Park (two records) and Bladon allotments (two records) located beyond Blenheim Park, and in other locations to the north of Marlborough school. One record for the northern Site boundary (2006) adjacent to Shipton Road was also returned.
- 13.1.150 The reptile survey at The Site recorded a peak number of two adult slow worm, (1 male, 1 female on 01 October 2014). Two further survey visits recorded single adults (1 female slow worm 20 August 2014; 1 female slow worm 27 August 2014); and another a very young individual slow worm on 01 September 2014. All of these individuals have been located within the field margins adjacent to hedgerow (H10) in the north of The Site beyond Shipton Road (locations shown in Appendix A, Figure 6). Further to these observations, a shed skin of grass snake *Natrix natrix* was located within the fields off Site to the north (TN2 on Figure 1, Appendix A). Local residents at Perdiswell Farm also reported the presence of a dead slow worm on Shipton Road adjacent to the farm during July 2014. It can therefore be concluded that the results show the presence of a low population of both species within the ecological survey area.
- 13.1.151 Given that no significant barrier to dispersal exists on the northern section of The Site, the presence of reptiles within The Site itself cannot be ruled out despite no reptile being recorded in areas of The Site south of Shipton Road. Both grass snake and slow worm may be present, though the lack of observations so far suggest the number are likely to be very small.

Evaluation of reptile resource

- 13.1.152 The Site supports a low population of two common and widespread species of reptile in the UK; slow worm and grass snake. Both are SPIs as listed in accordance with Section 41 of the NERC Act 2006. However, given the likely small numbers present and the relatively limited suitable habitats on Site (field margins and hedgerow during the active period and hedgerows and to a lesser extent woodland during hibernation), it is considered that the populations within The Site are of value at the Parish level.

Birds

- 13.1.153 The TVERC and the Oxfordshire Ornithological Society (OOS) returned a number of records of birds for within the search area. This included records for species listed under Schedule 1 of the Wildlife and Countryside Act (1981), Birds of Conservation concern Red and Amber list and species of principle importance listed under Section 41 of the NERC Act. A summary of this data is presented in Table 13.10.

## Section 13 Ecology and Nature Conservation (BSG Ecology)

Common name	Species name	Sch. 1	S41	Red list	Amber list
Barn owl	<i>Tyto alba</i>	✓			✓
Bullfinch	<i>Pyrrhula pyrrhula</i>				✓
Corn bunting	<i>Emberiza calandra</i>		✓	✓	
Cuckoo	<i>Cuculus canorus</i>		✓	✓	
Dunnock	<i>Prunella modularis</i>		✓		✓
Golden plover	<i>Pluvialis apricaria</i>				✓
Grey wagtail	<i>Motacilla cinerea</i>				✓
Hawfinch	<i>Coccothraustes coccothraustes</i>		✓	✓	
Hobby	<i>Falco subbuteo</i>	✓			
House sparrow	<i>Passer domesticus</i>		✓	✓	
Kingfisher	<i>Alcedo atthis</i>	✓			✓
Lapwing	<i>Vanellus vanellus</i>		✓	✓	
Lesser spotted woodpecker	<i>Dendrocopos minor</i>		✓	✓	
Linnet	<i>Carduelis cannabina</i>		✓	✓	
Marsh tit	<i>Poecile palustris</i>		✓	✓	
Mistle thrush	<i>Turdus viscivorus</i>				✓
Peregrine falcon	<i>Falco peregrinus</i>	✓			
Reed bunting	<i>Emberiza schoeniclus</i>				✓
Skylark	<i>Alauda arvensis</i>		✓	✓	
Song thrush	<i>Turdus philomelos</i>		✓	✓	
Spotted flycatcher	<i>Muscicapa striata</i>		✓	✓	
Starling	<i>Sturnus vulgaris</i>		✓	✓	
Stock dove	<i>Columba oenas</i>				✓
Swift	<i>Apus apus</i>				✓
Turtle dove	<i>Streptopelia turtur</i>		✓	✓	
Whitethroat	<i>Sylvia communis</i>				✓
Willow tit	<i>Poecile montanus</i>		✓	✓	
Woodcock	<i>Scolopax rusticola</i>				✓
Yellowhammer	<i>Emberiza citronella</i>		✓	✓	
Yellowwagtail	<i>Motacilla flava</i>		✓	✓	

Table 13.10: Summary of bird records and conservation status of each species

- 13.1.154 The breeding bird characterisation survey carried out in July 2014 and further information collected during subsequent visits, revealed the presence of a community consisting of a number of ubiquitous and widespread species concentrated around the woodland and hedgerow habitats.
- 13.1.155 A number of birds of conservation concern were also noted within the woodland, including marsh tit (noted calling on two occasions in August), song thrush, dunnock and bullfinch. The latter two species were also found to be distributed within hedgerow habitats within the ecological survey area. Further species of conservation concern associated with the hedges include yellowhammer and stock dove. Both of these are likely to be breeding on the northern Site boundary (yellowhammer) and using a barn owl nest box located off Site to the north in the fields adjacent to Shipton Road (stock dove). Further signs of yellowhammer breeding within The Site, was recorded along the hedgerow (H4) running north-south from the Pest House. More widely, swifts and house sparrows were observed near the western Site boundary, though mostly off Site, and associated with the residential area. Small numbers of swallows were observed feeding over the north-eastern parts of The Site, though no breeding evidence was observed within The Site. This species may however breed within buildings at Perdiswell Farm. Yellow wagtails were recorded during the bird surveys, with a single individual overflying the eastern area of The Site and a family with fledged young feeding just to the north of Perdiswell farm off Site.
- 13.1.156 No evidence of breeding barn owl was recorded during the visits to Perdiswell Farm or the Pest Houses. This species is however known to breed to the north of Perdiswell Farm in a specially erected nest box.

#### Evaluation of breeding bird assemblage

- 13.1.157 The overall breeding bird assemblage using The Site is considered to be of no more than Site value.
- 13.1.158 Species of conservation concern of note do however include skylark, yellow hammer and yellow wagtail. The former two species are likely to be breeding on Site, while yellow wagtail was noted as breeding outside The Site and to the north of the ecological survey area. The number of territories of skylark on Site was not ascertained with certainty although their habitats are widespread and common at a national and local level. Therefore the skylark resource on Site is considered to be of Parish value.
- 13.1.159 Yellowhammer was observed breeding on site, associated with the central and northern hedgerows (H2, H3, H4, H5 and H6). The habitats used on Site are common and widespread, and are therefore not likely to be of more than Site level value. As yellow wagtail was observed in flight over the site, but breeding only off Site, the likely value of this resource is negligible.
- 13.1.160 Though no barn owl are breeding within the site or its immediate vicinity, the field margins in the eastern field of the site are likely to offer suitable foraging habitat for the species, though this resource is located approximately 1 km from the nearest known nest, which is typically over the normal foraging range for the species. Therefore the barn owl resource on site is of negligible value.

#### Wintering birds

- 13.1.161 The habitats on Site with the highest potential to support wintering birds such as geese or waders, is the arable land. Given the geographical context of The Site (Oxfordshire) the goose species likely to be present in winter are limited to naturalised or feral species such as greylag goose *Anser fabalis* and Canada goose *Branta Canadensis*. The desk study has shown that in terms of wader species, low numbers of golden plover or lapwing, which have been recorded within the data search area as well as in the vicinity of Perdiswell Farm, may occur within the site (one record of a flock of 11 from 2002 described only as 'cereal field east of town' may apply to The

Site itself). The hedges and woodland together with the open arable land may also offer opportunities for wintering thrushes such as redwing *Turdus iliacus* and fieldfare *Turdus pilaris*.

#### Evaluation of wintering bird assemblage

13.1.162 The naturalised and feral species of wintering goose which are likely to occur in winter on Site are of no intrinsic conservation value. The small amount of habitat present on site for species such as lapwing and golden plover, together with the amount of suitable habitat present in the wider area (such as the large open fields within Oxford International Airport) suggest that the resource is of no more than Site value for wintering wader species. The extent of use by wintering thrushes is unknown as no surveys have been carried out to quantify this. However given that the habitats present are common nationally and locally, the resource is not likely to be of more than Site value.

#### **Bats**

13.1.163 Records of bats were requested from the Oxford Bat Group (OBG) and TVERC. Table 1.11 presents a summary of the records, indicating the period in which they were recorded. There are nine bat species within the local area identified via grounded, roosting, hibernating and acoustic records. Notable records include Daubenton's bat *Myotis daubentonii*, brown long-eared bat *Plecotus auritus*, pipistrelle *Pipistrellus* sp., barbastelle *Barbastella barbastellus* and Natterer's bat hibernating within the grounds of Blenheim Palace.

English Name	Scientific Name	0 to 5	6 to 10	11 to 20	>20	Grand Total
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	1*	1*			2
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	1				1
Pipistrelle	<i>Pipistrellus</i> sp.	8	2		1*	11
Brown long-eared bat	<i>Plecotus auritus</i>	3	5	1,1*		10
Daubenton's bat	<i>Myotis daubentonii</i>	2				2
Natterer's bat	<i>Myotis nattereri</i>	7	1			8
Noctule	<i>Nyctalus noctula</i>	*	1*		1*	3
Leisler's bat	<i>Nyctalus leisleri</i>	1				1
Serotine	<i>Eptesicus serotinus</i>				*	1
Barbastelle	<i>Barbastella barbastellus</i>	3			1*	3
An unidentified bat	Chiroptera sp.				1*	1
Grand Total		27	10	2	4	44

Table 13.11: Records returned from OBG (7 August 2014) and TVERC\* (15 July 2014)

#### Walked transects

13.1.164 A minimum of five species were recorded during the walked transects as summarised in Table 1.12 below. Bat activity was not distributed evenly throughout The Site, with activity concentrated within the complex of smaller fields in the west, as indicated on Figure 7 and detailed below:

13.1.165 Common and soprano pipistrelle were recorded throughout The Site, commuting and foraging along both dark and well-lit hedgerows (H1-H8). Individuals were also

observed foraging around street lighting in the north of the Site (H9). The earliest common pipistrelle was observed commuting south along the hedgerow (H9) on Shipton Road ten minutes after sunset. During the pre-dawn transect a common pipistrelle was also observed 20 minutes before sunrise in the south-west section of The Site (H7). The earliest soprano pipistrelle pass was recorded 37 minutes after sunset.

- 13.1.166 A low number of noctule bats were observed foraging and commuting at height within the ecological survey area on each survey. The earliest pass was an individual commuting from north to south three minutes after sunset in August.
- 13.1.167 A low number of Myotis bat passes were recorded throughout the ecological survey area, with individuals foraging and/or commuting along un-lit hedgerows. The earliest pass was recorded 45 minutes after sunset commuting along the hedgerow east of the Pest House (H4).
- 13.1.168 Barbastelle was recorded on four occasions, twice in July and twice in September. The earliest barbastelle pass was recorded 57 minutes after sunset north of Shipton Road (H10). The timing of passes suggests The Site is used by the species for foraging and commuting purposes.

English Name	Scientific Name	Month			Grand Total
		July	Aug	Sept	
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	18	16	18	52
Pipistrelle sp. (50 kHz)	<i>Pipistrellus</i> sp.		5	2	7
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	7	3	16	26
Myotis sp.	Myotis sp.	2	3	3	8
Noctule	<i>Nyctalus noctula</i>	7	6	1	14
Barbastelle	<i>Barbastella barbastellus</i>	2		2	4
Grand Total		36	33	42	111

Table 13.12: Summary of bat activity (passes) recorded during walked transects in 2014

#### Static detectors

- 13.1.169 At least nine bat species have been recorded on static detectors within The Site (see summary in Table 1.13). Activity was not evenly distributed throughout the Site, as identified during walked transects. The detector at S1 (located in the western part of the Site) recorded the highest level of activity ( $n = 6,725$ ; 48.4 B/h) and S3 (located in the eastern part of the Site) recorded the lowest level of activity ( $n = 1,141$ ; 6 B/h). The higher level of activity in the western section of the Site may be attributed to a number of factors including; (i) the fields in the west are smaller and are likely to be more sheltered from winds making it more energetically favourable for bats to forage, (ii) insects are likely to accumulate in sheltered areas therefore offering greater foraging opportunities to bats, (iii) the western section of The Site is close to residential properties which are likely to provide opportunities for roosting bats, particularly crevice dwelling species such as pipistrelles, and (iv) the hedgerows in the western section are better connected to other suitable foraging areas. A description of each species' activity within the Site is detailed below.
- 13.1.170 Common pipistrelle was the most frequently recorded species, accounting for over half of all recorded passes ( $n = 5,957$ ; 51.2 %). Activity was almost 15 times higher at S1 than S3. The earliest pass was recorded 14 minutes after sunset at S1 in August. The earliest passes at S2 and S3 were 15 and 19 minutes after sunset respectively. The latest pass was recorded 30 minutes before sunrise at S1 in September. Late passes were also recorded at S2, with the latest being 33 minutes before sunrise. The timing and frequency of passes suggests that common pipistrelle roost/roosts is/are present within the local area and that the Site is used by foraging and commuting bats.

- 13.1.171 Soprano pipistrelle was the second most frequently recorded species (n = 2,864), accounting for 24.6 % of recorded passes. The earliest pass was recorded 7 minutes after sunset at S1 in September. The pattern of activity suggests that a single bat was foraging in a small circuit within the Site. The earliest passes at S2 and S3 were 15 and 20 minutes after sunset respectively. The latest pass was recorded 22 minutes before sunrise at S2 in August. The timing and frequency of passes suggests that a small soprano pipistrelle roost is present within the local area and that The Site is used by foraging and commuting bats.
- 13.1.172 Passes by *Myotis* sp. were recorded in moderate numbers throughout The Site. The highest activity was recorded at S1 (n = 564) and the lowest at S3 (n = 125). The earliest and latest passes were recorded at S2, being 37 minutes after sunset at 34 minutes before sunrise. The timing and frequency of passes suggests that the Site is used by foraging and/or commuting bats.
- 13.1.173 Noctule has been recorded throughout The Site fairly consistently. Noctule bats are able to be recorded by SM2BAT+ bat detectors at distance up to 100 m, the longest for any bat species in the UK. Relatively few of the recorded calls are characteristic of a bat flying in close proximity to the detector, suggesting that individuals are commuting or foraging at height and/or at some distance from the detector. Noctule passes were recorded before sunset on 16 September at each location, with the earliest pass recorded 6 minutes before sunset. Noctule were recorded within 20 minutes of sunrise in August and September, with the earliest pass being 13 minutes before sunrise. Passes were not recorded within 20 minutes of sunset in July or August suggesting that a transitional roost was situated near the Site in September.
- 13.1.174 Serotine and Leisler's bat were infrequently recorded within The Site, with a total of 94 passes within the monitoring period. No passes were recorded within the typical emergence or re-entry times for the species.
- 13.1.175 Barbastelle activity varied substantially throughout The Site. The highest level of activity was recorded at S1 (n = 255; 1.84 B/h), an intermediate level was recorded at S2 (n = 113; 0.68 B/h) and a very low number at S3 (n = 3; 0.02 B/h). The passes were not evenly distributed throughout the monitoring period, with 95 % (n = 353 / 371) of passes recorded in September and only 5 % (n = 18) in July and August. In total, twenty-four passes were recorded within 60 minutes of sunset, with the earliest pass being 36 minutes after sunset at S1. These passes are within the typical emergence time for the species. There are no suitable trees for roosting in the western section of the Site where the early passes were recorded, and therefore it is concluded that bats have commuted from roosts in the local area, such as mature trees, historic buildings and/or structures within Blenheim Estate where a hibernation roost is known. Individuals establish hibernation roosts in September/October which is a likely cause of the high increase of activity in September within The Site. The low number of passes at S3 suggests that the woodland belt in the eastern section of the Site is rarely used by foraging/commuting barbastelle and that it is not of importance to individuals in the local area. Locations S1 and S2 are however more established foraging and commuting routes, potentially due to the increased connectivity to other areas of suitable foraging and/or roosting habitat to the north and south.
- 13.1.176 Brown long-eared bat passes were infrequently recorded within The Site, with 22 passes recorded throughout the monitoring period. The passes were outside the typical emergence time for the species, with the earliest pass 85 minutes after sunset.
- 13.1.177 Nathusius' pipistrelle was recorded in low numbers throughout The Site in September. The passes were recorded outside of the typical emergence period suggesting foraging/commuting behaviour.

English Name	Scientific Name	Detector Location			Grand Total
		S1	S2	S3	
Nathusius' pipistrelle	<i>Pipistrellus nathusii</i>	5	1	6	12
Pipistrelle sp. (40 kHz)	<i>Pipistrellus</i> sp.		5	1	6
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	4,414	1,242	301	5,957
Pipistrelle sp. (50 kHz)	<i>Pipistrellus</i> sp.	70	150	41	261
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	1,039	1,417	408	2,864
Noctule	<i>Nyctalus noctula</i>	290	171	129	590
Nyctalus sp.	<i>Nyctalus</i> sp.	37	322	82	441
Leisler's bat	<i>Nyctalus leisleri</i>	7	6	15	28
Leisler's/serotine bat	<i>Nyctalus leisleri</i> / <i>Eptesicus serotinus</i>	7	18	3	28
Serotine bat	<i>Eptesicus serotinus</i>	11	17	10	38
Brown long-eared bat/Serotine	<i>Plecotus auritus</i> / <i>Eptesicus serotinus</i>	2	1	2	5
Brown long-eared bat	<i>Plecotus auritus</i>	2	6	14	22
Myotis sp./Brown long-eared bat	<i>Myotis</i> sp. / <i>Plecotus auritus</i>	3	2		5
Myotis sp.	<i>Myotis</i> sp.	564	289	125	978
Barbastelle	<i>Barbastella barbastellus</i>	255	113	3	371
Barbastelle (query)	<i>Barbastella barbastellus</i> (unconfirmed)	4	7	1	12
Barbastelle/Myotis sp.	<i>Barbastella barbastellus</i> / <i>Myotis</i> sp.	15			15
Barbastelle/Serotine	<i>Barbastella barbastellus</i> / <i>Eptesicus serotinus</i>		1		1
Grand Total		6,725	3,768	1,141	11,634
B/h (Bats per hour)		48.4	22.8	6.0	23.5

Table 1.13: Summary of bat activity recorded on static bat detectors 2014

- 13.1.178 Seven species of the genus *Myotis* are considered resident in the UK with on or two species being recorded in the last two years. A single solitary greater mouse eared bat *Myotis myotis* has been hibernating in Sussex and the Alcathe bat *Myotis alcathoe* is a recent discovery and its distribution is unknown. The remaining 5 species have been recorded for Oxford although Bechstein's bat have not been recorded within the County
- 13.1.179 The calls of *Myotis* species have considerable overlap; however Slope analysis (a measure of how vertical or horizontal the call sonogram appears) can be used to aid differentiation between species (although some overlap between species still remains). Each of the static detectors was deployed in uncluttered environments therefore comparison of Slope is likely to be reliable, as bats are unlikely to be adapting their "typical" calls to an uncluttered environment. The 978 *Myotis* calls were re-analysed to interpret their Slope. This analysis identified 93% of calls characteristic of Daubenton's bat and whiskered/Brandt's bat. In addition, 68 (7%) were characteristic of Natterer's bat / Bechstein's bat, having a steep positive slope with no component around zero and the majority of the calls visible at + 1000 to + 500 octaves per second. However, Natterer's bat is very common and widespread in the UK and Oxfordshire.
- 13.1.180 The National Bechstein's Bat Survey (BCT, 2011) did not record Bechstein's bat in Oxfordshire. In the discussion section of the report it is stated that "Oxfordshire was not expected to generate many Bechstein's bat records due to its northerly location. Of the thirty nine 10 km squares within or partially within Oxfordshire, just 20 had suitable woodlands (and of the 12 squares that were surveyed, none supported woodlands that



matched all four of the woodland model criteria). It could therefore be possible that this county does not have enough suitable woodland to support a Bechstein's bat population (as a result of the woodlands themselves and the management of the surrounding landscape)."

- 13.1.181 During this study (BCT, 2011), suitable woodlands were those at least 25 ha in size with suitable (i) canopy cover (at least 75 % cover), (ii) canopy composition (native broadleaved woodland), (iii) understorey cover (well developed with at least 50 % cover) and (iv) understorey composition (native species, especially hazel and hawthorn). It is understood that Bechstein's bat hunting grounds usually lie within 1 km of the roost, rarely at distances up to 2.5 km (Dietz, 2009). Within 2.5 km of The Site are two woodlands which may meet the suitable woodland criteria (BCT, 2010). Bladon Heath situated 2 km south of The Site is 95 ha in extent and includes ancient and semi-natural woodland as well as ancient replanted woodland. Immediately west of The Site are the Blenheim Estates grounds which include approximately 160 ha of woodland along with additional areas of woodpasture and parkland. However, since only 7% of all *Myotis* call are Natterer's bat /Bechstein's bat, and that recent national survey did not record Bechstein in Oxfordshire, it is highly unlikely that Bechstein bat is present within the Site, and all recordings are likely to be of the more commonly distributed Natterer's bat.

### Roosting bats

#### *Buildings*

- 13.1.182 A preliminary bat roost assessment of the Pest House was undertaken to identify the potential for the building to provide opportunities for roosting bats. The building is located in the north-western section of The Site, surrounded by hedgerows (H4), scattered trees and a garden approximately 0.5 hectares in extent. Large arable fields are present east and west of the Pest House. The main section of the stone building is approximately 6 m wide, 17 m long and three storeys high due to an extension into the roof. Dormer windows are present on the eastern and western aspects and the clay roofing tiles appear to have a roofing felt underlay. Single storey extensions of approximately 5 m in length, are present at the southern and northern ends of the building.
- 13.1.183 A limited number of external features with high suitability for roosting bats were present including:
- Lifted clay roofing tiles;
  - Gaps at the eaves and gable ends where mortar is missing; and
  - Crevices in the stonework.
- 13.1.184 Overall the building is assessed as having high potential to support low numbers of non-breeding (transitional or day roosts), crevice-dwelling bat species such as pipistrelles, although no evidence confirming the presence of bats was recorded. The Site will be developed through a number of stages and the detailed design for the future development of the Pest House will be used to inform further bat surveys to assess the building for its potential as a roost for bats.

#### *Trees*

- 13.1.185 Targeted tree surveys were conducted where there was potential for trees to be directly affected by removal in order to accommodate the scheme. All trees on the eastern boundary of The Site and directly east of the Pest House were therefore surveyed (W1). The surveys were conducted in three phases. The first phase included surveys from the ground during the daytime to identify features with potential to support roosting bats such as cavities, rot holes, splits, cracks, loose bark,

woodpecker holes and ivy cover. A total of 23 trees with some degree of potential were identified as summarised in Table 13.14 below.

English Name	Scientific Name	Low	Medium	High	Grand Total
Field maple	<i>Acer campestre</i>	1			1
Pedunculate oak	<i>Quercus robur</i>	12	5		17
Sycamore	<i>Acer pseudoplatanus</i>	2	2	1	5
Grand Total		15	7	1	23

Table: 13.14 Summary of trees within The Site with potential to support roosting bats

- 13.1.186 Outline proposals for The Site indicated that three medium potential trees on the eastern boundary of The Site were likely to be directly affected by the proposals. In order to identify the presence or likely absence of roosting bats within tree numbers 12, 16 and 19, the second phase of survey included use of a Thermal Imaging camera to identify hotspots within them (Appendix A, Figure 7). A single hotspot was identified on the northern aspect of tree 12 on the 14 August 2014. At dawn on 15 August 2014 three hotspots were visible; one on the northern aspect and two on the eastern aspect of tree 12 (Appendix B, Photograph 16). The bats were roosting beneath dense ivy. No other heat spots characteristic of bats were identified in the surveyed trees.
- 13.1.187 Phase three included emergence surveys of trees 12, 16 and 19. A dusk emergence survey of each tree was conducted on 14 August 2014 and a second survey was conducted of tree 12 on 15 August 2014. Three common pipistrelle emerged from tree 12 on the 14 August 2014. Although a single hotspot was visible at dusk on 15 August, the individual did not emerge to forage during the dusk survey period. No other bats emerged or re-entered the surveyed trees.

#### Evaluation of bat resource

- 13.1.188 Different species of bat have different roosting and foraging requirements (Hundt, 2012). As would be expected, the surveys undertaken in 2014 have confirmed that the use of The Site by different species of bats, including their potential to roost within The Site also varies. The legal protection afforded to bats is a reflection of their abundance/rarity and the sensitivity of each species to lighting, disturbance and/or fragmentation. Each species / genus is therefore detailed in Table 1.15 below.
- 13.1.189 The suite of bat surveys undertaken within The Site and ecological survey area has confirmed that The Site is used as a foraging / commuting resource by a minimum of nine species. Activity is highest in the western section of The Site in the smaller arable fields adjacent to the residential properties in eastern Woodstock. Common pipistrelle has been confirmed roosting within tree number 12 in low numbers (a total of three bats). The tree was used on a transitional basis throughout the surveys. It is likely that other trees within the site are also used on a transitional basis by pipistrelle and low numbers of other tree roosting species.

#### *Common and Soprano Pipistrelle*

- 13.1.190 Pipistrelle bats exploit a wide range of foraging habitats including those associated with pasture, woodland, grassland and built-up areas. Both common and soprano pipistrelle are common throughout the UK and in Oxfordshire. They roost in houses on external parts of buildings, cavity walls, trees or bridges (Hundt, 2012).
- 13.1.191 Pipistrelle activity was recorded fairly ubiquitously throughout The Site during walked transects. Activity was lowest on the southern boundary of The Site (H7 and H8) adjacent to Oxford Road where light-spill from adjacent street lights illuminated The Site.
- 13.1.192 The timing of passes throughout the night confirm the presence of common and soprano pipistrelle roosts within the local area and the roost surveys confirmed the presence of a small transitional roost of common pipistrelle within tree number 12.

- 13.1.193 Common pipistrelle is the most common species in the UK (estimated 2.4 million individuals in the UK) and soprano pipistrelle is the second most frequent (estimated 1.3 million individuals) BCT, 2013). This is reflected within The Site; with common pipistrelle accounting for over 50 % of all recorded passes on static detectors (12.03 B/h) and soprano pipistrelle accounting for approximately 25 % of passes (5.78 B/h). It is concluded that common pipistrelle is of Site value with the SPI soprano pipistrelle at Parish value.

*Brown long-eared bats*

- 13.1.194 Brown long-eared bats live and forage in woodland and parkland with old trees. They roost within trees and older buildings with large uncluttered roof spaces. In buildings they typically roost along the ridge beam, at gable ends and around chimney breasts (Hundt, 2012).
- 13.1.195 No long-eared bats were recorded on walked transects, however, there were 22 confirmed long-eared bat passes recorded on static detectors and ten unconfirmed passes. The surveys indicate that The Site is used for foraging purposes by low numbers of bats.
- 13.1.196 Brown long-eared and *Myotis* bats are sensitive to lighting and are likely to be negatively affected (BCT & ILE, 2009) by the illuminated residential areas and roads north, south and west of The Site. This is supported by the increase in long-eared bat passes recorded on static detectors in unlit areas of The Site, with the highest level of activity recorded at S3.
- 13.1.197 No roosts were recorded during the surveys and the timing of recordings were all outside typical emergence/return to roost periods for this species indicating long eared bats are not roosting within or in close proximity to the Site. The Pest House is not considered to be an optimal roost location for the species although the potential presence of a minor roost cannot be discounted.
- 13.1.198 The species is widespread throughout the UK, with an estimated population comprising 155,000 individuals in England (BCT, 2013). The low level of activity within the Site suggests it is of importance at the Site level.

*Myotis species*

- 13.1.199 Up to five *Myotis* bat species may be present within The Site including Daubenton's bat, Whiskered/Brandt's bat, Natterer's bat and Bechstein's bat.
- 13.1.200 *Myotis* passes were recorded on each of the walked transects with a total of eight passes recorded. *Myotis* were located on (i) the hedgerow connecting the Pest House to Oxford Road (H2), (ii) the southern boundary of the playing field north of The Site (H5) and (iii) the north-eastern boundary of The Site adjacent to the woodland plantation (W1).
- 13.1.201 *Myotis* bats were recorded in moderate numbers on static detectors throughout The Site (1.97 B/h), with activity being highest at S1 and lowest at S3. *Myotis* passes were recorded at each location throughout the monitoring period with a low level of activity throughout the Site in July and August (0.77 and 0.44 B/h respectively) and a high level of activity in September (4.38 B/h). The Site appears to be regularly used by foraging and/or commuting bats, with bats in the local area either supplemented by bats moving toward their hibernation areas or changing their foraging behaviour in September.
- 13.1.202 The survey results suggest The Site is likely to be of importance to Daubenton's bat (population of 560,000 in UK), Whiskered/Brandt's bat (64,000 and 30,000 individuals respectively in UK) and Natterer's bat (148,000 individuals in UK) at the Site level.

*Noctule and Leisler's bat*

- 13.1.203 Noctule and Leisler's bats forage over parkland, pasture, water and deciduous woodland. They typically roost in trees and bat boxes, and Leisler's bats may make use of buildings and walls whereas noctules rarely do (Hundt, 2012).
- 13.1.204 Noctule passes were recorded on walked transects (n = 14) and static detectors (n = 590; 1.19 B/h) throughout The Site with activity within the emergence and re-entry times of the species and throughout the night. Leisler's bat was not recorded on walked transects, however, 28 (0.06 B/h) passes were identified on static detectors throughout The Site. Due to the overlapping call parameters 441 passes (0.89 B/h) were identified as *Nyctalus* sp. (either noctule or Leisler's bat).
- 13.1.205 Primarily a tree dweller, noctule is rarely recorded roosting in buildings; therefore there is only very low potential for noctule to roost within the Pest House. The tree surveys did not identify the presence of any noctule roosts within the surveyed trees although noctule move roosts regularly therefore presence of transitional roosts within suitable features cannot be discounted. Any roosts present within The Site of either species are likely to be of District importance.
- 13.1.206 Noctule is relatively widespread in England, with an estimated 50,000 individuals present; and Leisler's bat has a restricted distribution in England, although common within its range, with an estimated 28,000 individuals present (JNCC, 2007). Due to the foraging behaviour of the species (typically foraging and/or commuting at height), the level of activity of noctule and Leisler's bat is of Site importance.

*Serotine*

- 13.1.207 Serotine forage mainly over pasture, parkland and woodland edges, also feeding over gardens and around street lamps (Hundt, 2012). The distribution of serotine is restricted to southern England where it is reasonably widespread, with current estimates suggesting the population in the UK is 15,000 individuals (JNCC, 2007).
- 13.1.208 Serotine was infrequently recorded on static detectors within the Site (n = 38; 0.08 B/h), with no passes recorded during walked transects. The timing of passes suggests The Site is primarily used by foraging and/or commuting bats. No confirmed passes were recorded within the typical emergence times for the species therefore there is a very low likelihood that the species is roosting within the Site or will be affected by the proposals. The Site is therefore of negligible value to the species.

*Barbastelle*

- 13.1.209 Barbastelle typically forage along woodland edges and rides, using hedgerows, streams and rivers for commuting. They roost in trees, occasionally using old timber framed buildings (Hundt, 2012). Current estimates suggest the population in the UK is 5,000 individuals (JNCC, 2007).
- 13.1.210 Barbastelle passes were recorded on four occasions during walked transects, with just one of the passes observed. A high level of barbastelle activity was recorded on static detectors within the site; however, activity was not evenly distributed throughout the site (68.7 % of passes at S1) or during the monitoring period (95 % of passes in September).
- 13.1.211 The timing and location of passes suggests barbastelle were not roosting within The Site during the monitoring period and the eastern woodland belt it is not of importance to individuals in the local area. In the event a barbastelle roost is present it is likely to be of County importance because the species is rare within Oxfordshire.
- 13.1.212 The hedgerows (H2) and (H4) between the Pest House and Oxford Road is a more established foraging and commuting route, potentially due to the increased connectivity to other areas of suitable foraging and/or roosting habitat to the north and south. The Site is likely to be of importance at the District level to this species.

*Nathusius' pipistrelle*

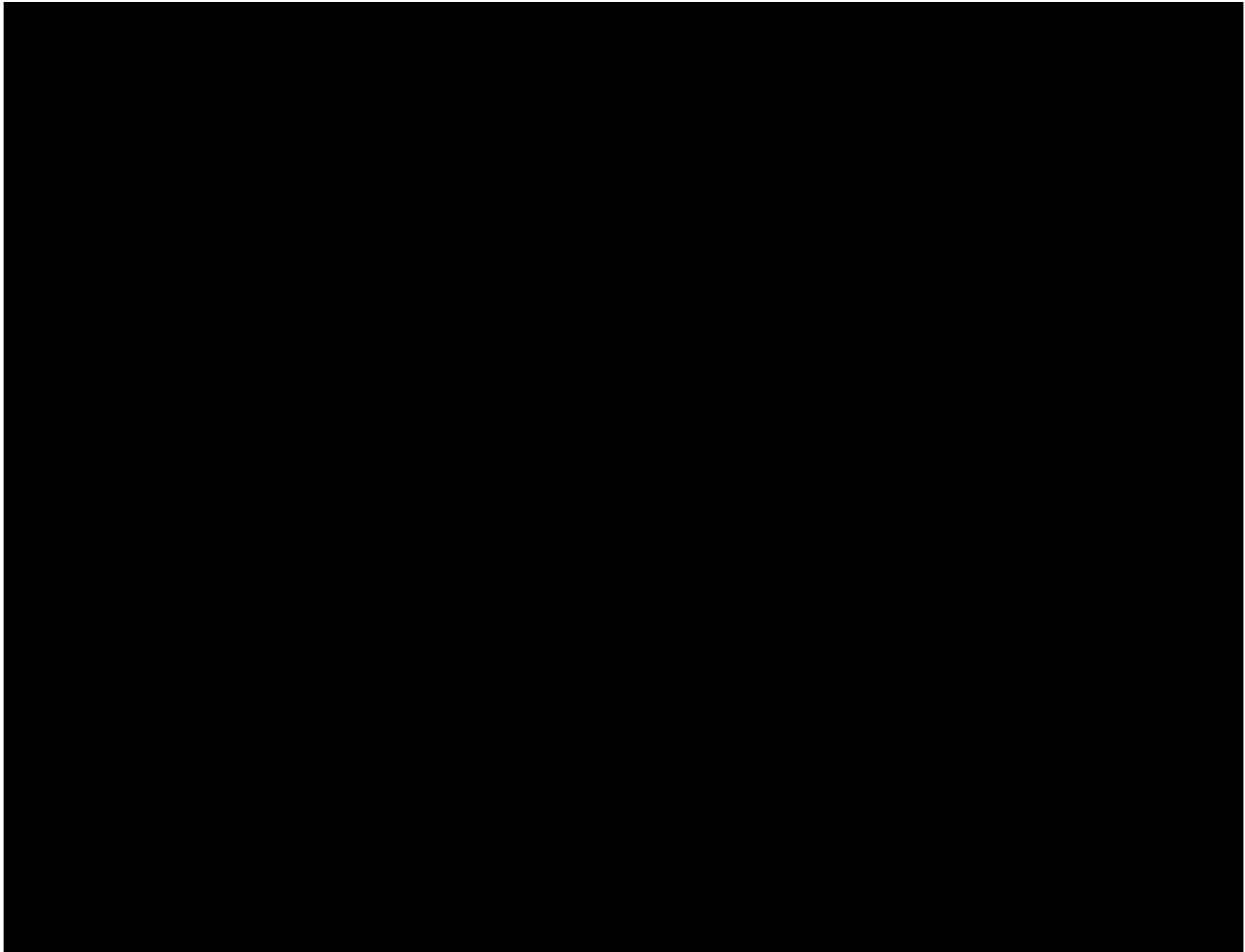
- 13.1.213 *Nathusius' pipistrelle* forages over water and also along woodland edges and rides, roosting in trees, buildings and bat boxes (Hundt, 2012). Populations of resident *Nathusius' pipistrelle* in the UK are estimated as being 16,000 individuals (JNCC, 2007), however, the number of migratory individuals which supplement these bats in September prior to hibernation is currently unknown.
- 13.1.214 All twelve *Nathusius' pipistrelle* passes were recorded on static detectors throughout September. In mainland Europe *Nathusius' pipistrelle* are known to begin migration to hibernation sites in September (Dietz, 2009), corresponding with passes in many sites in southern England. These passes were outside the typical emergence times for the species, indicating foraging and/or commuting behaviour.
- 13.1.215 The Site does not provide optimal foraging opportunities for the species and is therefore of negligible value to the species.

Species	Legal protection	Abundance	Sensitivity	Known Use of Site	Potential Use of Site	Value
Common pipistrelle	1,2	Abundant and widespread locally and nationally	Low	F (abundant), C, R	F, C, R	Site
Soprano pipistrelle	1,2,3	Common and widespread locally and nationally	Low	F (frequent), C	F, C, R	Parish
<i>Nathusius' pipistrelle</i>	1,2	Common locally and widely distributed yet infrequent nationally	Low	F (very rarely), C	F, C	Negligible value
Noctule	1,2,3	Common and widespread locally and nationally	Low	F (rarely), C	F, C, R	Site
Leisler's bat	1,2	Frequent locally and locally common nationally	Low	F (rarely)	F, C	Site
Serotine	1,2	Common locally and in southern England and Wales	Medium	F (very rarely)	F, C	Negligible value
Myotis sp. (Natterer's bat,	1,2	Common and widespread locally and	Medium	F (frequent), C	F, C, R	Parish

Daubenton's bat, Whiskered/Brandt's bat)		nationally				
Myotis sp. (Bechstein's bat)	1,2,3,4	Rare locally and nationally	High	F (rarely), C	F, C, R	County
Brown long-eared bat	1,2,3	Common and widespread locally and nationally	Medium	F (very rarely), C	F, C	Site
Barbastelle	1,2,3,4	Common locally and widely distributed yet rare nationally	High	F (rarely), C	F, C, R	District

Table 13.14 Summary of evaluation of Bat species recorded on Site (F = Foraging; C = Commuting; R = Roosting)

- 13.1.216 There are two primary pieces of legislation in the UK with respect to bats; (1) Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) and (2) Schedule 2 of the Conservation of Habitats and Species Regulations 2010. In addition, some bat species are listed on (3) Section 41 (Natural Environment and Rural Communities Act 2006) and (4) Annex II (Conservation of Habitats and Species Regulations 2010).



**Otter and water vole**

- 13.1.223 The TVERC returned one record of otter *Lutra lutra* and three for water vole *Arvicola amphibious* within the 2 km of The Site. These refer to the River Glyme within or north of Woodstock.
- 13.1.224 No habitat exists on The Site or adjacent to it with the potential to support these species.
- 13.1.225 Evaluation of otter and water vole resource
- 13.1.226 Given the lack of habitat within The Site for these species, it is considered unlikely that these species are supported within The Site. As such these species are not considered further in this EclA.

**Dormice**

- 13.1.227 A record was held by TVERC from 2004 for this species, located to the north of Woodstock, approximately 1 km north-west of The Site.
- 13.1.228 The surveys have recorded two unoccupied nests which show features strongly indicative of having been built by dormouse. This was in nest tube 248 (02 October 2014), located in the hedgerow (H6) on the northern Site boundary, to the west of the woodland and east of the Pest House; and in nest box 11 (19 November 2014), located in the woodland (W1) adjacent to Upper Campsfield Road. (Figure 4 in Appendix A). The hedgerow is considered to be of sub optimal value (low species diversity, with no hazel or honeysuckle) dormouse habitat. Though incomplete, the nest consisted of partly woven grass strands, and showed the start of a roof structure as well as a cup at the base and is considered to be a sign of the presence of the species on The Site.
- 13.1.229 The small gaps in the hedgerows including farm vehicle access routes and footpaths (H2 and H6) and woodland (two small breaks in the canopy on the eastern boundary associated with vehicle access) may limit dormouse dispersal within The Site to some extent, however the nature and size of the gaps are not sufficient to act as significant barriers.
- 13.1.230 The Site boundary is bordered to the north and north-west by hedgerows which have the potential to provide optimal habitat for dormouse. The hedgerows also provide good connectivity with the northern sections of The Site. The dispersal of dormouse (often juveniles) from areas of optimal habitat occurs during autumn months. The time of recording of the nest in tube 248 (2 October and 19 November 2014), combined with its location in a hedgerow of sub optimal value in the northern section of The Site, and woodland to the east of The Site, indicates that the nests may have been constructed by juvenile dormice as part of their dispersal from areas to the north of The Site, and does not form part of a small population of dormouse resident within The Site itself.

Evaluation of dormouse resource

- 13.1.231 Due to the cryptic habits of dormice, they are under-recorded at all levels. The survey methodologies available for this species cannot reveal population sizes in a given site. The assessment of the value of the dormouse resource on The Site is therefore based on professional judgement and known densities taken from published sources of information. The Site supports 0.93 ha of hedgerow, with a total length of 2327 m and 3.0 ha of woodland. The published densities for these habitats are 1.3 adults/hectare and between 2 and 10 adult/hectare respectively, with a significant variation in density for the latter depending on the nature of the woodland (Bright *et al.*, 2006). Optimal dormouse habitat of hedgerows and woodlands would support a Site population between 9 and 38 dormice. However, the majority of the hedgerows and woodland

plantation found within The Site are sub optimal habitat for dormouse, and it is therefore likely to support a significantly smaller population.

- 13.1.232 Given the low number of records of this species in the surrounding area combined with the low number of dormouse recorded in surveys, it is likely that the dormouse population on site is of District level value.

### **Notable species**

- 13.1.233 The TVERC returned other records of Section 41 listed species in the search area, as well as insects and flowering plants regarded as nationally scarce or notably rare. These categories also include species that are statutorily protected. The following sets out an evaluation of the resource value of the non-statutory protected SPIs (i.e. those not already discussed) for which there are records in the local area.

#### Hedgehog

- 13.1.234 TVERC holds five records of hedgehog *Erinaceus europaeus* recorded within the search area. The Site supports suitable habitat for hedgehogs in the form of woodland, hedgerow and grassland habitats. In addition, The Site is adjacent to residential areas which hedgehogs are often associated with. It is therefore reasonable to assume that hedgehogs are occasionally present within The Site. No hedgehogs were noted during site visits, though no formal surveys have been carried out.
- 13.1.235 Given the dominant habitat on site (arable land) the numbers of hedgehog using the site regularly is considered likely to be relatively low. The resource within The Site is therefore considered to be of value at Site level only.

#### Brown hare

- 13.1.236 One record of brown hare *Lepus europaeus* was returned by TVERC from Blenheim Park. The habitats on The Site, with the exception of the woodland, are considered suitable to support the species, though the areas favoured are likely to be the field margins and hedgerow rather than the arable land. None have been observed on The Site to date.
- 13.1.237 The habitats supported by The Site suitable for this species are common and widespread locally and nationally and, given the lack of records on Site, it is likely that the brown hare resource is of Site value.

#### Polecat

- 13.1.238 Three records of polecat *Mustela putorius* were returned by TVERC, all were road casualties along the A44 and near Campsfield Wood, both to the south of The Site. The Site supports habitats suitable for the species, including woodland, hedgerow and rough grassland field margins. No polecats were recorded during The Site visits.
- 13.1.239 The number of polecats on Site cannot easily be determined, however if a mean winter density in lowland farmland of one individual per km<sup>2</sup> (Cresswell *et al.*, 2012) is assumed, The Site (0.69 km<sup>2</sup>) may support approximately one individual. Furthermore as the habitats supported on Site suitable for the species are common and widespread nationally and locally, the polecat resource if present on Site is considered to be of Parish value only.

#### Flora

- 13.1.240 No individual plant species recorded during the extended Phase 1 survey are scheduled as being of nature conservation importance. The habitat present within The Site do not support a high floral diversity and therefore the value of the plant community present within The Site is considered to be of negligible value.



**Invertebrates**

- 13.1.241 The TVERC held records for a number of invertebrates for within 2 km of The Site. This included a notable species of ground beetle *Chlaenius nigricornis*. Records for five species of butterfly (black hairstreak *Satyrrium pruni*, grizzled skipper *Pyrgus malvae*, small heath *Coenonympha pamphilus*, wall *Lasiomata megera* and white admiral *Limenitis camilla*) were held, with the latter four being SPIs. Further records included two of moth species which are also SPIs (cinnabar *Tyria jacobaeae* and shaded broad-bar *Scotopteryx chenopodiata*) and a single record of white-clawed crayfish *Austropotamobius pallipes* (a SPI) for the Glyme in Woodstock.
- 13.1.242 As no suitable aquatic habitat is present, white-clawed crayfish listed in the data search is not considered to occur within The Site and therefore is not considered further.
- 13.1.243 The Site does not support optimum habitats for grizzled skipper or wall butterfly which prefer chalk downland, woodland edges, woodland clearings, large woodland rides, unimproved grassland, hillsides, valleys and occasionally heathland. Small heath occurs mainly in grassland habitats with fine grasses with a short and sparse sward. The grasslands on Site are therefore largely unsuitable for this species given the dense and tall sward structure. Black hairstreak may occur in association with blackthorn within the hedges or woodland margins on Site however blackthorn was not found to form a large proportion of either habitat type on Site. White admiral is a woodland species, which is highly dependent on the larval footplant (honeysuckle *Lonicera periclymenum*) and a suitable woodland structure, including rides which support a range of nectar sources for the adults. The narrow woodland areas of The Site are unlikely to support this species given the dense nature of this habitat and near total lack of glades and rides. Both moth species listed in the data search may occur, though no ragwort (larval foodplant for cinnabar moth) was recorded.
- 13.1.244 One record of roman snail *Helix pomatia* from within Blenheim Park was received from TVERC. This species is protected under parts of the Wildlife and Countryside Act (1981), as such it is an offence to intentionally kill, injure or take (which includes handle) a Roman snail; possess or control a live or dead Roman snail or any part of one; sell, offer for sale or advertise for live or dead Roman snails. The habitats on Site are not thought to be typical of what this species tends to prefer, such as well drained lime-rich soils, either chalk or limestone in relatively undisturbed grassy or scrubby habitats (Natural England, 2011). Furthermore, during Site visits in moist weather, no live individuals were recorded, nor were empty shells found. It is therefore unlikely that they occur on Site.
- 13.1.245 Overall the habitats within The Site likely to hold most interest for insects are the woodland and grassland habitats. The extended Phase 1 survey found the grassland habitats to support a low diversity of plant species, and therefore these are unlikely to be of intrinsic conservation value in terms of invertebrates.
- 13.1.246 The woodland areas on Site were found to support only small amounts of dead wood which is not situated in an open parkland setting. They are therefore unlikely to host the saproxylic invertebrate species listed as designated interest for the Blenheim Park SSSI. Overall the invertebrate resource on Site is considered to be of Site value.

**Evaluation summary**

- 13.1.247 Table 13.15 below summarises the evaluation of the ecological receptors identified during the baseline survey work.

Ecological receptor	Value (based on IEEM geographic frame of reference)
Oxford Water Meadows SAC	International
Blenheim Park SSSI	National
Bladon Heath LWS	County
Bunkers Hill Quarry LWS	County
Woodstock Water Meadows LWS	County
Glyme and Dorn Valley Conservation Target Area.	County
Lower Cherwell Valley Conservation Target Area	County
Arable land	Site
Woodland and lines of trees	Parish
Plantation woodland	Site
Semi-improved grassland	Parish
Hedgerows	Parish
Built environment	Site
Great crested newt terrestrial habitat	Site
Amphibians	Site
Reptiles	Parish
Overall breeding bird community	Site
Skylark	Parish
Yellowhammer	Site
Wintering birds	Site
Badger	Site
Dormouse	District
Polecat	Parish
Bats (general assemblage)	(up to) Parish
Water vole	Negligible
Otter	Negligible
Hedgehog	Site
Common toad	Site
Brown hare	Site
Flora	Negligible
Invertebrates	Site

Table 13.15: Summary of evaluation of identified ecological receptors

- 13.1.248 Of the above receptors only those considered to be of value at Parish level or above value are carried forward into the assessment of potential impacts. Any of the remaining receptors subject to legal or planning policy protection areas, are also discussed further however to ensure that appropriate mitigation is identified to ensure legislative compliance during construction, and development in accordance with planning policy.
- 13.1.249 The ecological receptors to be carried forward for assessment of potential impacts are therefore:
- Oxford Meadows SAC
  - Blenheim Park SSSI
  - All Local Wildlife Sites and Conservation Target Areas
  - Woodland and lines of trees
  - Semi-improved grassland
  - Hedgerows
  - Great crested newt
  - Reptiles

- Breeding birds
- Yellowhammer and skylark
- Badger
- Dormouse
- Polecat
- Bats
- Invertebrates

### **Assessment of alternatives**

- 13.1.250 The do-nothing scenario is the alternative to be considered. In the absence of the proposed development it is anticipated that The Site will continue to function as it does currently and therefore to support the same range of habitat types and species associated with arable farmland, woodland and built environment. The baseline would however vary as a result of any natural changes to do with climate change, habitat succession as well as due to any changes in land management or types of crops grown within the arable fields. Impacts and Mitigation

## **IMPACTS AND MITIGATION**

### **Assessment of Potential Impacts**

- 13.1.251 This section considers the potential impacts on the ecological receptors identified above resulting from the proposed development. Impacts are identified with reference to the scheme design, which includes a number of design features aimed to avoid or minimise negative impacts on ecological receptors as the following section details.
- 13.1.252 Once the assessment of impacts resulting from scheme design (as discussed below) have been considered, mitigation measures aimed to avoid or reduce any identified negative impacts are discussed, followed by consideration of the residual impacts of the development in light of these mitigation measures.

### **Development design mitigation**

- 13.1.253 The development of the planning application area will include the erection of up to 1,500 dwellings including affordable housing and a 150 unit care village with associated publicly accessible ancillary facilities; site for new primary school; up to 3,000 sqm of retail space including 2,325sqm supermarket; up to 7,500 sqm of locally led employment (B1, B2, B8) space; site for a Football Association step 5 football facility with publicly accessible ancillary facilities; public open space; provision of site for new park and ride facility; and associated infrastructure, engineering and ancillary works, with vehicular access provided from Upper Campsfield Road (A4095), Shipton Road and Oxford Road (A44). A coach park for Marlborough School is to be located within the existing arable field to the north of The Site. On Site habitat creation will be integrated into this area including two woodland areas (W8 and W9, and hedgerow H11).
- 13.1.254 A large section of the development will comprise open space in the form of formal and informal semi-natural habitat. The total proposed development Site area is 74.4 ha, of which 18.3ha is proposed to be open space (including a Scheduled Monument and Common Land) with a further 3.52ha of outdoor facilities (football pitch).
- 13.1.255 The masterplan has been designed to allow the retention of certain ecologically valuable habitats, in particular those that support protected species and species of conservation importance. In addition, the scheme design has built-in features that include both compensation for the loss of certain habitat types and enhancement of

habitat for protected and notable species. Measures and features that have been incorporated in to the scheme design for ecological protection of the identified receptors as well as ecological enhancement are summarised below and shown in Appendix A, Figure 9.

### **Habitat retention and protection**

- 13.1.256 The main habitats of conservation value will be retained throughout The Site.
- 13.1.257 The majority of the woodland along the northern and eastern Site boundary (W1) will be retained, although a small loss of habitat will be required (0.18 ha) to allow for the construction and operation of a roundabout on Upper Campsfield Road.
- 13.1.258 All woodland (and rows of trees) are to be retained will be protected throughout the construction by following BS 5837:2012 Trees in Relation to Design, Construction and Demolition - Recommendations.
- 13.1.259 The hedgerows within the centre and running south to north of The Site (H1 and H2) will be retained, although a section measuring 10 m in length of hedgerow will be removed from H2 to accommodate the alignment of road, south of Pest House.
- 13.1.260 The hedgerow (H3) which runs west to east of The Site, will be retained although a section measuring approximately 20 m in length of hedgerow will be removed to allow alignment of road from A44 Oxford Road, to the south of The Site, and a section of approximately 60 m adjacent to the Care Home facility.
- 13.1.261 The mature hedgerow (H4) which surrounds the Pest House, on the northern boundary of The Site will be retained. To allow for the realignment of Shipton Road from the north into The Site, a section of 24 m will be lost from this hedgerow.
- 13.1.262 The hedgerow (H6) on the northern boundary of The Site, adjacent to Shipton Road, will be retained. A section of 24 m will be removed to allow for the realignment of Shipton Road from the north into The Site.
- 13.1.263 The hedgerows to the south of The Site (H7 and H8), adjacent to the A44 road, will be retained. A section measuring 10 m in length will be removed from H7 to allow for the alignment of road from A44 into The Site.
- 13.1.264 The field margin areas of semi improved grassland which are associated with the hedgerows within The Site will be retained. The semi improved grassland margin adjacent to the hedgerow (H6) and the broadleaved semi-natural woodland (W1) which border the north and eastern sections of The Site (SI1) will be retained. A small section of 0.01 ha will be removed to allow for the realignment of Shipton Road into The Site. A section of 0.05 ha of semi improved grassland will be removed to allow for the construction and operation of a roundabout on Upper Campsfield Road.
- 13.1.265 The semi improved grassland field margins (SI3) associated with the hedgerows located within the central section of The Site (H1, H2 and H4) will be retained although an area of 0.03 ha will be removed to allow for the alignment of road within The Site, south of the Pest House.
- 13.1.266 The field margin areas (SI2) associated with Hedgerow (H8) will be retained.
- 13.1.267 A summary of the habitat loss throughout the Site is shown in Table 13.16.

Habitat	Loss	% Loss of existing habitat	Value at Parish - International	Value at Site/Negligible
Arable	59.8 ha	100		Site
Woodland	0.18 ha	6	Parish	
Semi improved grassland - field margins	0.08 ha	3.8	Parish	
Hedgerows	148 m	5	Parish	
Dry Ditches	754	0		Site

*Table 13.16. Proposed habitat loss throughout The Site*

### **Habitat creation**

13.1.268 A Green Network has been incorporated into The Site which will extend throughout The Site. Table 13.17 and Figure 9 provides a summary of the habitat types, HPI status, location and area/length, to be created within The Site.

Section 13 Ecology and Nature Conservation (BSG Ecology)

Habitat	Habitat of Principal Importance	Location	Area / Length of habitat created	% Habitat increase following mitigation
Woodland	Yes	W1	0.89 ha	217
Woodland	Yes	W2	2.52 ha	
Woodland	Yes	W3	1.18 ha	
Woodland	Yes	W4	0.19 ha	
Woodland	Yes	W5	0.20 ha	
Woodland	Yes	W6	0.94 ha	
Woodland	Yes	W7	0.39 ha	
Woodland	Yes	W8	0.13 ha	
Woodland	Yes	W9	0.09 ha	
<b>Total area of planted woodland within The Site and Off Site</b>			<b>6.53 ha</b>	
Hedgerow	Yes	H11	198 m	25
Hedgerow	Yes	H12	55 m	
Hedgerow	Yes	H13	274 m	
Hedgerow	Yes	H14	224 m	
<b>Total length of planted hedgerow within The Site and Off Site</b>			<b>751 m</b>	
Lines of trees/Scattered trees		L1	1305 m	100
Lines of trees/Scattered trees		L2	850 m	
Lines of trees/Scattered trees		L3	635 m	
Lines of trees/Scattered trees		L4	425 m	
Lines of trees/Scattered trees		L5	139 m	
Lines of trees/Scattered trees		L6	186 m	
Lines of trees/Scattered trees		L7	143 m	
Lines of trees/Scattered trees		L8	164 m	
Lines of trees/Scattered trees		L9	357 m	
<b>Total length of planted lines of trees/scattered trees within The Site and Off Site</b>			<b>4204 m</b>	
Conservation/Amenity grassland	Yes	South to central section of Site	6.57 ha	315
Amenity		Grassland within avenue of trees in central section of The Site, Football and training pitch, school grounds	11.11 ha	100
Amenity		Gardens within residential areas	9.86 ha	100
<b>Total area conservation/amenity grassland within The Site</b>			<b>27.54</b>	

Table 13.17. Proposed habitat creation throughout The Site

- 13.1.269 The detailed design of the Green Network will be developed in the next stages of the project. However the planting scheme will;
- 13.1.270 Provide an overall increase in area of habitats of conservation value within The Site including woodland, hedgerow and grassland. The area of conservation/amenity grassland will include a wild flower meadow, which will provide benefits to other

receptors including terrestrial invertebrates and bats. The lines of trees and areas of scattered trees, which will be created through the central eastern section of The Site will contribute to the conservation value of The Site.

- 13.1.271 Provide improved functional ecological corridors throughout The Site for commuting, foraging and dispersal of receptors. The creation of woodland (W2 of 2.52 ha) in the south east of The Site, bordering the A44 Oxford road will link create a network of woodland and hedgerow areas which will increase the connectivity within the Site for badger, dormouse, small mammals, breeding birds, reptiles and invertebrates.
- 13.1.272 Provide improved foraging and commuting routes for bat species throughout The Site, and in particular the north-south, and east-west commuting routes which are of importance for *Barbastelle* and *Myotis* sp. The planting scheme will result in the development of a north south habitat corridor through the creation of additional hedgerows (H12, H13 and H14), and woodland sections (W3, W6, W8 and W9) as shown in Appendix A, Figure 9. The habitat corridor will provide a dark route through The Site which will benefit the light intolerant bat species. Further detail relating to planting design is found in the Landscape Strategy Plan.
- 13.1.273 Two additional woodland areas will be created to the north and south of the coach park (W9 and W8). The areas will be planted up with standard, mature, native trees of local provenance increasing woodland area by 0.18 ha in total (W8 0.13 ha; W9 0.09 ha). This area will form the northern section of dark corridor to allow for the foraging and commuting of bats through The Site. In the southern section of the area, adjacent to Shipton Road, large mature trees will be planted to strengthen the commuting route for bat species.
- 13.1.274 The creation of this area will increase the suitable habitat for reptiles within the area, and will provide suitable areas for translocation of any reptiles located within The Site during construction phase of development.
- 13.1.275 The central reservation of the new road alignment will be planted up with a line of mature standard trees (L8) of 164 m in length.
- 13.1.276 The area will provide additional suitable habitat for foraging, nesting and commuting habitat for dormouse between The Site and suitable habitats to the north of The Site. The hedgerow (H11) will be planted up with species which are beneficial to dormouse including hazel, honeysuckle, and blackthorn. The planting of large mature trees in the southern section of the area will provide an arboreal bridge to strengthen commuting routes between habitats within the north of The Site and habitats off Site.

### ***Off Site Habitat Creation***

- 13.1.277 This Green Network may however enhance the available grassland habitat for yellowhammer through the provision of skylark plots consisting of 4-6 undrilled patches approximately 3m wide, 16-24 m<sup>2</sup>.and 2 per hectare. The plots will be positioned in fields off Site but within Blenheim Estate. The positioning of the undrilled plots have the potential to increase the connectivity of habitat within the larger area to the north of the Site.

### ***Design of a sensitive lighting strategy***

- 13.1.278 The external lighting strategy for the hybrid planning application acknowledges that one of the key principles that will need to be carried forward to the design coding stage will be to retain dark corridors where bats are using lines of trees as flight paths. The corridor with significant bat activity levels is along the west east hedgerow (H3), and along the north south hedgerows (H1, H2 and H4). It is proposed that additional new hedgerows (H11 and H12) and woodland sections (W3, W5, W6, W8 and W9) will form a corridor through The Site, and therefore this corridor will be retained as dark as reasonably possible to minimise alterations in the use of this corridor by bats. Section 7 of this Environmental Statement discusses the lighting impacts of the development,

and a Lighting Masterplan has been produced which addresses the effects of lighting on bats.

- 13.1.279 The remainder of this section assesses the direct and indirect impacts of the development on each ecological receptor during both the construction and post-construction phases.

### **Assessment of impacts**

#### Oxford Meadows SAC

##### *Construction phase impacts*

- 13.1.280 Oxford Meadows SAC is located 5.5 km from The Site, and therefore direct impacts as a result of construction activities on The Site would not occur.
- 13.1.281 This SAC has however been identified as being at risk from changes in levels of air pollution. Increased levels of road traffic can contribute to reduced levels of air quality through the deposition of airborne oxides (West Oxfordshire District Council, 2012).
- 13.1.282 There is therefore the potential for a short-term, negative, indirect effect to the SAC's integrity due to increased air pollution originating from construction traffic at The Site (see Chapter 8 Air Quality). The magnitude of the effect is dependent on the volume of traffic travelling to and from The Site and the routes used. Most airborne pollutants which arise from road traffic will be deposited within 200 m of site. At the construction phase however, the magnitude of this effect is likely to be localised, very low and not significant. This assessment is given with a near-certain confidence level.

##### *Operational phase impacts*

- 13.1.283 The commercial and residential development of The Site is likely to lead to an increase in road traffic within the local area. Increased levels of road traffic can contribute to reduced levels of air quality through the deposition of airborne oxides, particularly nitrous oxides. The deposition of airborne oxides upon habitats in excess of their recognised critical load, are likely to have a significant effect upon those habitats. A number of habitats (including some found in Oxford Meadows SAC) are dependent upon low nitrogen levels.
- 13.1.284 Due to the number of sites of international importance within or close to West Oxfordshire, a Habitat Regulations Assessment (HRA) of the potential significant impacts that any land use plan, including Local Plan, may have upon these sites, was undertaken by West Oxfordshire District Council in 2011 (West Oxfordshire District Council, 2012). The HRA found:
- The nitrogen deposition at Oxford Meadows SAC is predicted to fall significantly by 2020 to 13.86 kg/N/ha/yr well below the critical threshold of 20kg/N/ha/yr.
  - The total road traffic contribution is predicted to fall from 2.52 kg/N/ha/yr to 0.8 kg/N/ha/yr contributing just 5.8% of total nitrogen deposition in 2020.
- 13.1.285 To support the Proposed Submission Draft Cherwell Local Plan HRA (August 2012), an air quality assessment and traffic modelling was undertaken to determine the potential impact of 16,750 house in Cherwell, "in combination" with development in the rest of Central Oxfordshire up to 2031. The findings of the assessment state that the scale of growth will "not lead to any likely significant effects on the qualifying features of Oxford Meadows SAC.
- 13.1.286 The level of traffic associated with the operational development, passing in the vicinity of Oxford Meadows is likely to be relatively low, and therefore the magnitude of the effect is likely to be low.



- 13.1.287 For these reasons it is considered that there will be no significant impacts on Oxford Meadows SAC, associated with the operational phase of the development as a result of potential reduction in air quality as a result of increased road traffic levels derived from commercial and residential development of The Site. This assessment is given with a probable confidence level.
- 13.1.288 A further potential negative long-term impact may arise from increased recreational pressure. Impacts may include increased trampling from walkers and nutrient enrichment from dog fouling. However, the distances involved (over 5 km) mean that direct access to this SAC from The Site would not occur, necessitating a specific trip by vehicle. Consequently the numbers of visitors choosing this SAC in particular as an area to visit is considered to be low, resulting in a very low magnitude effect. This assessment is given with a near-certain confidence level.

#### Blenheim Park SSSI

##### *Construction phase impacts*

- 13.1.289 Blenheim Park SSSI is adjacent to The Site to the south, across the A44 Oxford Road. As this SSSI is outside The Site boundary, no direct impacts are envisaged due to construction activities. However, any pollution events during the construction may have an indirect negative impact on this designated site. These could include a local increase in dust and air contaminants during construction. This can cause the physical effects of stomata damage and blockage resulting in drought stress as well as chemical effects of dust either directly on the plant surface or within the soil (resulting in a change in the soil chemistry). The magnitude, extent and reversibility of the impact would depend on the amount and nature of the pollution generated. However, appropriate working measures will be implemented by contractors during the construction phase and as a result these indirect impacts will not occur. Due to the temporary nature of the construction there is unlikely to be a long term duration to any impact. It is considered unlikely that these impacts will occur.

##### *Operational phase impacts*

- 13.1.290 Direct impacts as a result of activities on The Site is very unlikely after the construction phase. This assessment is given with near-certain confidence.
- 13.1.291 Indirect negative impacts on the habitats within the SSSI may result from increased recreational visitor pressure as a result of the development. Impacts may include increased trampling from walkers and nutrient enrichment from dog fouling. The magnitude and extent of the impact would vary significantly with the amount of increased visitor pressure, though the duration of this effect would likely be ongoing. As the scheme design includes the provision of 23 ha of open space this is likely to ameliorate any significant increase in visitors to the SSSI, that is, local residents are likely to choose to walk their dogs within the open space associated with the development.
- 13.1.292 Some additional visitors from the residents of the proposed dwellings may occur however. This site is already subject to high visitor numbers and the facilities present are likely to ensure that visitor pressure does not negatively affect the conservation status of the SSSI. Furthermore the areas of Blenheim Park covered by this designation are located further west, resulting in a walk of over 1.5 km to reach it. For these reasons it is considered that there will be no significant impacts on the SSSI associated with the post-construction phase of the development as a result of increased visitor pressures. This assessment is given with a probable confidence level.
- 13.1.293 A further potential impact as a result of the proposed development is increased deposition of dusts and pollutants arising from the traffic associated with the dwellings and commercial developments on part of the SSSI interest, namely the epiphytic

lichens. This would likely be a long-lasting, negative impact though the magnitude would depend on the levels and nature of the traffic generated. Considering the distance between public roads likely to receive higher levels of traffic as a result of the development and the SSSI itself however, it is likely that the impact will be of very low level magnitude. This assessment is given with near-certain confidence.

#### Local Wildlife Sites and Conservation Target Areas (all)

##### *Construction phase impacts*

13.1.294 There are three LWSs and two CTAs within 2 km of The Site. The closest designated site for which information was received is Woodstock Water Meadows, located approximately 800 m to the north-west of The Site, though the site known as 'Disused railway line at Woodstock' is closer (350 m). These sites and those at a further distance are separated from The Site by Woodstock itself and/or the A44 Oxford Road and areas of Blenheim Park not designated as protected sites. For this reason, no direct impacts are envisaged during the construction phase. This assessment is given with a near-certain level of confidence.

##### *Operational phase impacts*

13.1.295 Any direct effects post-construction are unlikely to occur out due to the distance of The Site to these designated sites. Indirect effects due to additional visitor pressure are similarly likely to be reduced by the provision of open space and recreational facilities within The Site.

13.1.296 No indirect or direct post-construction phase impacts on the LWSs or CTAs located within 2 km of The Site are therefore likely to result from the development. This assessment is given with a near-certain level of confidence.

#### Woodland habitat

##### *Construction phase impacts*

13.1.297 The woodland habitat within The Site is considered to be of value at the District level. The majority of the woodland and line of trees will be retained and protected (in accordance with British Standards BS5837:2012 Trees in Relation to Design, Construction and Demolition – Recommendations) within the scheme with only a minor loss localised in the eastern belt adjacent to Shipton Road. This will involve the felling of a small area of woodland (0.18 ha, 6% of total) in order to allow for space for the construction of a roundabout on Upper Campsfield Road.

13.1.298 Appropriate working measures will also be implemented by contractors during the construction phase to ensure that pollution incidents including dust, noise and contamination of ground water and air, will not arise.

13.1.299 This is therefore a negative permanent impact of relatively low magnitude, given the extent of the loss considered against the amount of retained habitat and the low intrinsic value of the resource. The impact is considered to be significant at a Parish level only. This assessment is given with a near certain level of confidence.

##### *Operational phase impacts*

13.1.300 The development includes the creation of a Green Network which will enhance the connectivity of the woodland and lines of trees, to the retained hedgerows and off Site habitats, and will increase the area of woodland present within The Site overall (217% increase). The Green Network proposes an increase in woodland in the following areas of The Site:

- Northern boundary: woodland (W7) area 0.39 ha, and woodland (W1) 0.89 ha;

- Southern boundary: woodland (W2) area 2.52 ha, woodland (W3) 1.18 ha, woodland (W4) 0.19 ha;
  - Central section: Woodland (W3) 1.18 ha, woodland (W5) 0.20 ha and woodland (W6) 0.94 ha; and
  - Areas adjacent to Coach Park: woodland (W8) 0.13 ha and woodland (W9) 0.09 ha
- 13.1.301 The Green Network will provide an increase in the woodland connectivity through the planting of lines of trees and areas of scattered trees throughout The Site. It is proposed that the planting will take place throughout The Site (L1-L9) contributing a total of 4204 m trees.
- 13.1.302 The creation of new woodlands and lines of trees and areas of scattered trees, will increase the overall area of the habitat and will improve the connectivity of woodland areas throughout the Site and with woodlands to the north and south of the Site. These developments will have a long-term positive impact on the value of the woodland at a Parish level. This will therefore result in a positive permanent impact of high magnitude. This assessment is given with a probable level of confidence.
- 13.1.303 The potential exists for a permanent negative impact resulting from unsympathetic lighting within the scheme on woodland habitats. The extent and magnitude of this impact would depend on the eventual layout and nature of lighting. However, the lighting scheme will be designed to minimise indirect post-construction impacts on the woodland habitats. This will be based on the advice of an ecologist. For this reason it is unlikely that any significant impacts through increased illumination of the woodland will result from the development. This assessment is given with a near-certain level of confidence.

#### Semi-improved grassland – field margins

##### *Construction phase impacts*

- 13.1.304 The current scheme would result in an area of approximately 0.08 ha of semi improved grassland habitat to be lost, with 2.0 ha retained.
- 13.1.305 This is a permanent negative, low level of magnitude impact on this habitat. Therefore it is likely that the impact of this loss is significant at a Site level. This assessment is given with a near certain level of confidence.
- 13.1.306 Appropriate working measures will also be implemented by contractors during the construction phase to ensure that pollution incidents including dust, noise and contamination of ground water and air, will not arise.

##### *Operational phase impacts*

- 13.1.307 The current scheme includes the creation of a Green Network which will increase the overall amount of grassland habitat including 6.57 ha of conservation species-rich lawn/wild flower meadow, which will be created within the southern and central section of The Site. Additional areas of amenity grassland (11.11 ha) will also be created mainly within the areas of avenue of trees and areas of scattered trees located within the central to eastern sections of The Site. A further 9.86 ha of amenity grassland will be created in the gardens of the residential sections of the scheme. Although the grassland habitats to be created are not the same type of habitat as semi improved grassland, there is the potential for a permanent positive impact on grassland habitats at a Parish level. This assessment is given with a near certain level of confidence.

Hedgerows*Construction phase impacts*

- 13.1.308 The current scheme would result in the loss of 148 m of hedgerows (H2 10 m, H3 80 m, H4 24 m, H6 24 m, H7 10 m). This has been identified as a permanent negative impact of the habitat, though of low magnitude as this loss represents a very small proportion of the total amount of this habitat present within The Site or wider area.
- 13.1.309 This clearance would however result in loss of connectivity along the hedge running north to south through The Site (H2) as well as the section of hedge running east to west (H3).
- 13.1.310 The main hedgerow running north to south of The Site similarly has existing gaps, one near the Pest Houses (H2) and another at the southern end of the hedgerow (H1). The northern part of hedgerow (H4) (36 m) will be removed to allow for the realignment of Shipton Road from the north.
- 13.1.311 The loss of short sections of hedgerow could impact upon receptors (including bats, badgers, dormouse, and small mammals) which rely upon these features as corridor for movement.
- 13.1.312 The retained hedgerows will be protected throughout the construction phase of the development in accordance with *BS5837:2012 Trees in Relation to Design, Construction and Demolition – Recommendations* with regard to the Root Protection Areas of the hedgerows.
- 13.1.313 Appropriate working measures will also be implemented by contractors during the construction phase to ensure that pollution incidents including dust, noise and contamination of ground water and air, will not arise.
- 13.1.314 The resulting negative impact is however considered to be of significance at a Site level only. This assessment is given with a near certain level of confidence.

*Operational phase impacts*

- 13.1.315 The development includes the creation of a Green Network which will increase the overall amount of hedgerows within The Site. It is proposed to create four additional hedgerows within The Site (H12-H14). The creation of additional lengths of hedgerow will benefit flora and fauna associated with hedgerow and woodland habitats. The created hedgerows will provide functional ecological corridors of movement within The Site and to the wider landscape and by offering important foraging and sheltering resource. The strengthening of the existing hedgerow network through additional planting using species of local provenance will also increase the biodiversity value of the hedgerow network. The development of the hedgerow system within the Site will also provide increased connectivity with hedgerows to the north of the Site, particularly with the creation of hedgerow 11.
- 13.1.316 These proposals will result in a potential long-term positive impact of high magnitude on the value of this habitat at a Site level. This assessment is given with a probable level of confidence.

Great crested newt*Construction phase and operational phase impacts*

- 13.1.317 The area of The Site identified as having the potential to support this species in its terrestrial phase (north-western area close to The Site boundary comprising a hedgerow and narrow field margins) has been identified as the site for the construction of the Primary School. The area of arable habitat found within the 250 m buffer from pond 1 is 0.9 ha. The loss of the arable land is likely to result in a long-term negative

impact of very low magnitude at a Site level only. This assessment is given with a probable level of confidence.

- 13.1.318 In the absence of mitigation, any works on suitable areas of habitat (such as field margins in this area) would also lead to an offence under UK and European legislation. This is a negative permanent impact with a potentially high magnitude as it would result in prosecutions.
- 13.1.319 A hedgerow (H14) will be planted to the south of existing hedgerow (H5) as part of the Green Network. The habitat creation is likely to result in a positive permanent impact on these species of medium magnitude with the significance of the positive impact on these species at Parish level. This assessment is given with a probable level of confidence.

### Reptiles

#### *Construction phase impacts*

- 13.1.320 The development will result in the loss of a small amount of reptile habitat in the form of grassland field margins (total loss 0.08 ha, 3% of total area) and hedgerow (total loss 148 m, 5% of total length). This is therefore a permanent negative impact though of very low magnitude when considered in relation to the current available habitat for the species and the very low numbers recorded. This negative impact is considered to be of negligible magnitude at a Site level. This assessment is given with a probable level of confidence.
- 13.1.321 It should be noted however that in the absence of mitigation, these impacts would also lead to an offence under UK legislation should any individuals be injured or killed as a result of the works. This is a negative permanent impact with a potentially high magnitude as it would result in prosecutions.

#### *Operational phase impacts*

- 13.1.322 The development scheme includes the creation of a Green Network which will increase the overall amount of open natural habitats available for reptiles. Habitat creation will include; an increase in hedgerow habitat of 751 m, woodland habitat of 6.54 ha, lines of trees and scattered trees of 4204 m, and grassland of conservation/amenity grassland/wild flower meadow of 6.57 ha and amenity grassland of 20.95 ha. The creation of additional grasslands will increase the connectivity of this habitat with those found to the north and south outside the boundary of the Site. The habitat creation within the arable field north of Shipton Lane will provide additional suitable habitat for reptiles.
- 13.1.323 The habitat creation is likely to result in a positive permanent impact on these species of medium magnitude with the significance of the positive impact on these species at Parish level. This assessment is given with a probable level of confidence.

### Breeding Bird Assemblage

#### *Construction phase impacts*

- 13.1.324 In the absence of mitigation there is potential for certain activities including initial ground works (building and vegetation removal) to result in direct negative impacts on breeding birds through the damage and destruction of nests, particularly if this work is carried out during the period when most species are nesting (i.e. March to August inclusive).
- 13.1.325 The majority of suitable nesting habitats (hedgerow and woodland) are being retained *in-situ*. Therefore the clearance of arable habitat will only affect ground nesting bird species e.g. skylark and those species nesting in sections of hedgerow and woodland

which will be removed. It is therefore unlikely that adult birds would be killed or injured as they would be alert and mobile.

- 13.1.326 The use of heavy machinery during the construction phase, close to suitable nesting habitat could cause disturbance to birds during both the nesting season and over-wintering flocks, which may be foraging in the area. This effect has the potential to result in a reduction of suitable nesting habitat within the area.
- 13.1.327 The use of artificial light, particularly after-dark lighting, may cause disturbance to roosting birds present on The Site. Although the bird species recorded on The Site are diurnal, raised artificial light levels may have an effect upon the activity cycles, development and other behaviour of bird species (Longcore and Rich, 2006).
- 13.1.328 The clearance of habitats on The Site will not take place in the breeding season (March-August inclusive), to avoid damage or destruction of active nests and young which is prohibited under UK law. This applies to all habitats within The Site including those species which nest in open arable fields (e.g. skylark) as well as those which nest in dense scrub and hedgerows. Where clearance is required within the breeding season, the area subject to clearance will be checked, at the most, 24 hours prior to proposed clearance to ensure that no nesting birds are present. If present, the clearance will be delayed until the young are fledged and the nest is no longer in use.
- 13.1.329 As part of the in-design mitigation of the scheme, bird boxes will be incorporated into new buildings and trees within The Site.
- 13.1.330 The amount of habitats with the highest likely number of nesting birds to be removed is relatively small (i.e. small area of woodland and hedgerows), and together with the incorporation of in-design mitigation including timing of works, the adoption of sensitive working measures in the proximity of important foraging, nesting and roosting features (trees, scrub and hedgerows) and the provision of additional suitable nesting opportunities, it is considered that it is expected that this impacts would be short term negative impact of low magnitude at Site level. This assessment is given with a near-certain level of confidence.

*Operational phase impacts*

- 13.1.331 The development scheme includes the creation of a Green Network which will increase the overall amount of natural habitats available for nesting birds which favour scrub or trees and woodland and provide improved connectivity with those habitats to the north and south of the Site. This is likely to result in a direct positive permanent impact of the breeding bird assemblage. The magnitude of this effect would increase as the habitats created establish and would depend on the nature of the gardens and the final planting scheme but is likely to be high.
- 13.1.332 The provision of species-specific bird boxes for a range of species known to occur within The Site (including swift and swallow) and local area will provide a long term positive impact at a Parish level. This assessment is given with a probable level of confidence.

Skylark and Yellowhammer

- 13.1.333 The current development scheme will result in the loss of arable land and therefore loss of habitat for skylark. This is a negative, permanent impact on this resource. However given that this species remains a widespread species at a local, regional and national level and the abundance and availability of arable habitat within the county and district, this impact is considered to be of low magnitude and of significance at the Parish level only. This assessment is given with a probable level of confidence.
- 13.1.334 For the species yellowhammer, the loss of small sections of hedgerow and arable land may have a negative permanent impact. Some level of displacement may also occur, due to an increased presence of residential dwellings and other developments and as a result of disturbance to retained hedgerows. Given the low number of pairs thought

to be breeding within The Site however, this impact is likely to be of low magnitude and is likely to be of significance at a Site level. This assessment is given with a probable level of confidence.

- 13.1.335 As with all nesting birds, in the absence of mitigation, these impacts may also lead to an offence under UK legislation should any active nests, adults or young be killed or injured.

#### *Operational phase impacts*

- 13.1.336 The development of the scheme is unlikely to result in further negative impacts. The Green Network planned for The Site is unlikely to be able to provide suitable habitats for skylark.
- 13.1.337 This Green Network may however enhance the available grassland habitat for yellowhammer through the provision of skylark plots consisting of 4-6 undrilled patches approximately 3m wide, 16-24 m<sup>2</sup>.and 2 per hectare. The plots will be positioned in fields off Site but within Blenheim Estate. The positioning of the undrilled plots have the potential to increase the connectivity of habitat within the larger area to the north of the Site. This would be a long term, positive permanent impact, of medium magnitude at Site level.

### Bats

#### *Construction phase impacts*

- 13.1.338 The majority of effects on bats are likely to be direct effects occurring during the construction phase of works. Activities and effects identified that may lead to impacts on bats (in the absence of mitigation) are likely to include the following:
- 13.1.339 Land take (i.e. site clearance and construction); Hedgerows within the site are currently used by foraging and commuting bats. As identified above, 93 m of hedgerows will be lost. This will reduce the foraging resource available to local bat species and may influence how bats use the local landscape due to severance of commuting routes.
- 13.1.340 Lighting during construction; Pipistrelle species were observed foraging around street lights north of the Site boundary, however, installation of temporary lighting within the Site during the construction phase may act as a barrier to movement for light sensitive bat species, resulting in effective temporary habitat loss.
- 13.1.341 Loss of roosts (direct / noise and vibration); A single tree roost has been identified within the Site. Tree roosts are inherently transitional, due to (i) the short-lived suitability of a feature (due to tree health / degree of rot / moisture within feature etc) and (ii) due to how bats use the landscape, with an individual likely to make use of several roosts within the local landscape in a year. In the absence of mitigation it is possible that tree removal will result in the killing or injuring of a bat if present during felling, and/or the destruction of a site used by bats to rest at some time of the year. Noise and/or vibration in the vicinity of a roost may also cause individuals to abandon the roost, therefore indirectly destroying it.
- 13.1.342 In the absence of mitigation, the construction phase of the current development scheme will result in a negative, permanent impact on bat species within the Site. The value of each bat species is varied, as detailed in Table 13.14. With mitigation the overall, the impact is considered to be of low magnitude and of significance at the Parish level only. This assessment is given with a probable level of confidence.

#### *Operational phase impacts*

- 13.1.343 Urbanization of rural areas is known to reduce species diversity and abundance relative to 'natural' habitats. However, some generalist species such as pipistrelle

appear to have adapted well. Pipistrelle passes accounted for 78 % of bat activity within the site and it is anticipated that the proposed development will have a neutral impact on these species. Relative to intensively farmed land, urbanisation has the potential to enhance habitats by increasing floral diversity and therefore invertebrate diversity. There are numerous factors which may however reduce the species diversity and abundance within the Site as detailed below:

- 13.1.344 Lighting within the scheme; There are many potential sources of illumination within the scheme post construction including (i) street lighting, (ii) residential lighting in gardens, (iii) use of flood lighting within the football / sports facility and (iv) security lighting within the Care Village and/or Employment area. As a result, direct effects on bats could include a reduction in foraging resources available at the site level which could reduce the fitness of bats due to having to travel further to forage. Increased use of lighting could also reduce the suitability of The Site for roosting bats or species which are light averse such as long-eared bats and Myotis species.
- 13.1.345 The UK population had over 9 million pet cats in 2003 and this number is estimated to rise at an average of 13 percent per year. Cats are reported to kill at least 250,000 bats per year in the UK (Altringham, 2011). Cats were observed foraging within the site in low numbers and the increase in residential properties within The Site is likely to increase the number of cats foraging within The Site and local area.
- 13.1.346 Roads within the development may influence bats by collision mortality, pollution, barrier effects and habitat loss. The magnitude of the impacts are difficult to assess being as there is little published guidance on the influence of roads. The risk of killing or injury will be lessened being as the roads are predominantly small and speed will be limited to 20 mph in sections.
- 13.1.347 The Green Network planned for the scheme includes provision of newly planted woodland and hedgerows (Appendix A, Figure 9). The hedgerows (H1,H2 and H4) which run north south in the central section of The Site, will be retained. Mature native standard trees will be planted either side of the hedgerows forming a 25 m zone of closed canopy which will reduce the negative impact of artificial light. The hedgerow (H3) which runs west to east and joins with hedgerow (H2) will also be partially retained, with gaps created for access for local centre and spine road. The impact of these gaps will be reduced through design and enhanced with additional planting of standard mature trees along road junctions.
- 13.1.348 The increase in available habitat will provide a positive, permanent impact of medium magnitude on the bat species of significance resource at the Parish level. This assessment is given with a probable level of confidence.



### Dormouse

#### *Construction phase impacts*

- 13.1.357 The current development scheme includes the creation of one gap over approximately 10 m of hedgerow south of the Pest Houses (H2); a loss of 24m of hedgerow from H4; a gap in the hedge running east to west from the western site boundary (H3); a further gap in the hedge along the A44 Oxford Road (H7); the loss of a section of the line of trees running along the eastern side of the Pest House grounds (21 m) and approximately 0.2 ha of woodland. During the construction phase, in the absence of mitigation and a European Protected Species Derogation Licence, the removal of these habitats would be an offence under UK and European legislation. This would be direct, permanent negative impact of potentially high magnitude.
- 13.1.358 The loss of the dormouse habitat supported by the small sections of hedgerow, a section of line of trees and woodland would constitute a permanent negative effect. However, given the very small amount of habitat removed in relation to retained on

Site habitats and habitats within the wider area, this is likely to be a permanent, medium magnitude, negative impact on the species at a Parish level.

- 13.1.359 An indirect impact of this habitat loss would be a loss of connectivity from the woodland and hedgerow (H6) along the northern boundary and the habitats around the southern part of The Site, including the southern part of the woodland on the eastern site boundary (W1) and southern hedgerows (H7 and H8). It should be noted however that the southern end of the woodland belt is currently not linked to the hedgerow along the southern boundary by suitable dormouse habitat. Due to the resulting isolation of these habitats and the dormouse population supported by them, in the absence of mitigation this would result in a medium magnitude, negative permanent impact on the dormouse population at a Parish level.

*Operational phase impacts*

- 13.1.360 Once construction has been completed, the only additional negative impact envisaged on the dormouse population is likely to be due to additional predation risk from cats associated with the dwellings. Currently, some presence of these pets on Site has been noted, but this is likely to increase post-development. This is a negative, long-term impact on this resource, whose magnitude would depend on the number of cats kept by the homeowners. Dormice are principally arboreal mammals and predation rates by cats are likely to be low, especially in habitats such as tall hedges and woodland.
- 13.1.361 The Green Network planned for the scheme includes provision of newly planted woodland (W7) which will connect with existing woodland (W1) forming an area of 4.28 ha. The Green Network will also provide additional woodland areas (W2-W6) and hedgerows (H11-H14). The road design layout within The Site will result in a loss of connectivity within woodlands (W1) and (W7) and hedgerows (H2, H3, H6 and H7). To mitigate for partial severance of connectivity, standard mature trees will be planted at these points to provide an arboreal bridge. In addition, within the arable field in the north of The Site, an additional hedgerow (H11) will be planted to increase available optimal habitat and provide additional commuting routes between The Site and areas to the north. The increase in available habitat will provide a positive, permanent impact of medium magnitude on the dormouse resource on Site at a Parish level. This assessment is given with a probable level of confidence.

Polecat

*Construction phase impacts*

- 13.1.362 Based on desk study and the presence of suitable habitat, polecats are considered likely to occur within The Site. As the number of polecats present is hard to ascertain published information was used to estimate that The Site may support approximately one individual. As the development scheme may result in the loss of only small areas of suitable habitats within The Site, a permanent negative impact of very low magnitude is expected on this resource, which will be of significance at the Site level only. This assessment is given with a probable level of confidence.

*Operational phase impacts*

- 13.1.363 The Green Network and retained hedgerows and woodland are likely to continue to support this species' prey items (rabbits) albeit at a lower density, and therefore continued usage of the woodland and hedgerows may well continue, though a comparison in levels of use and occurrence of the species is not possible at this stage. Additional pressures due to recreational use of open spaces are unlikely to result as the species will continue to use areas affected by human disturbance (Cresswell *et al.*, 2012).

- 13.1.364 Collisions with vehicles may result from the additional road proposed to enter The Site at the eastern side. Mortality on roads has been shown to be a significant cause of mortality for this species on highways with high night time traffic levels (Cresswell *et al.*, 2012). The magnitude of this negative impact would depend on the final road layout and traffic levels. Overall the impact is likely to be of Site level significance in the absence of mitigation. This assessment is given with a probable level of confidence.

#### Invertebrates

##### *Construction phase impacts*

- 13.1.365 The area highlighted as being of highest importance for invertebrates on Site consists of the woodland belt to the east and north. These are largely to be retained, though a small amount of loss is proposed on the eastern Site boundary (W1). The resulting habitat loss and fragmentation would have a permanent negative impact on the invertebrate community dependent on the standard trees and woodland habitats. The magnitude and significance of this effect is likely to be of no more than Parish level given the low extent of habitat loss. This assessment is given with a probable level of confidence.

##### *Operational phase impacts*

- 13.1.366 No further negative impacts following the construction phase on the invertebrate community is likely to occur given that no further habitat loss is proposed. The potential exists for permanent positive effects on this resource through sympathetic management of retained woodland and open spaces within the Green Network. The magnitude and significance of this effect is likely to be of Parish level. This assessment is given with a probable level of confidence.

#### **Proposed mitigation**

##### Designated Sites

- 13.1.367 The adherence to appropriate Pollution Prevention Guidelines (Environment Agency, 2001-2011) during the construction phase, in addition to the mitigation strategies outlined in Chapter 8 (Air Quality) and Chapter 6 (Hydrology) of this Environmental Statement will prevent negative indirect construction impacts on the local statutory and non-statutory designated sites.
- 13.1.368 The provision of open spaces of amenity grassland through the central sections within The Site are likely to reduce possible post construction impacts resulting from an increase in visitor pressure to these sites.

##### Woodland

- 13.1.369 The majority of the woodland within The Site will be retained in the scheme. Additional planting will be carried out along the A44 Oxford Road and eastern boundary within the Green Network to form additional woodland (see Appendix A, Figure 9). This newly planted area will be connected to the southern section of retained woodland and will provide an overall increase of 6.54 ha, more than replacing the lost woodland section. New planting will be of native trees of local provenance.
- 13.1.370 Areas of lines of woodland trees and scattered trees will be planted throughout the central and eastern section of The Site (L1-L4, 3215 m in length), increasing the connectivity of woodland and hedgerow habitats throughout The Site, and to similar habitats to the north and south located outside of the Site..

- 13.1.371 All retained woodland and other trees will be protected from potential impacts of construction through adherence to BS 5837:2012 *Trees in Relation to Design, Construction and Demolition – Recommendations*.
- 13.1.372 The internal access roads will be constructed using a no dig or low dig technology (where appropriate) to ensure there are no impacts on the Root Protection Areas of the trees along the edge of the woodland.
- 13.1.373 The lighting strategy will by design reduce and minimise upward lighting, light spill and light trespass (Light Impact Assessment, GIA Equation 2014). Accessories will be used to reduce light spillage and light trespass. The type of light will also be carefully considered. Lighting curfews will also be adopted meaning that after certain hours (as agreed with the local planning authority) control of obtrusive light is more stringent. This system will reduce impacts on woodland habitat.
- 13.1.374 By incorporating the above mitigation measures within the scheme, the proposed development will result in a long-term, positive impact of medium magnitude at a Parish level on woodland habitat. This assessment is given with a probable level of confidence.

#### Hedgerows

- 13.1.375 The majority of the on Site hedgerows will be retained, but a loss of small sections as a result of the creation of gaps will occur, resulting in a loss of 148 m (5%). To mitigate for this loss, a hedgerow planting scheme is included in the Green Network within the development providing an additional 751 m of hedgerow habitat within The Site. A new hedgerow will be planted within the Site (H11), in land under the same land holding to enhance the connective value of the hedge along the eastern side of the Shipton Road. This will include a mix of native species as well as standard trees and measure 188 m. Some planting aimed at enhancing the hedgerow on the eastern side of Shipton Road north of the Pest House is also proposed (H4), in the form of the additional hedgerow (H12) combined with the planting up of standard trees. Further planting of a native hedgerow along the north-western Site boundary (H13) adjacent to off Site existing dwelling and associated gardens. This will measure 274 m and will ultimately increase habitat linkages between the northern and eastern site boundaries.
- 13.1.376 The hedges within the Green Network (both retained and newly planted) will be managed in such a way as to encourage their use by a range of taxa. The main aim of this management will be to obtain a variety of hedgerow types, and sizes. These should be kept continuous and dense with a dense ground flora and associated margin.
- 13.1.377 To maintain the ecological functionality of the hedgerows, the over management of these structures will be avoided. During the construction and operational phases the hedgerows will be managed to maximise their biodiversity value by trimming only in the winter and once wildlife has had the opportunity to utilise fruit and mast (seed/ nuts). Hedgerows will be trimmed at most once every two to three years, where appropriate; and undertaken on rotation so as to allow some uncut hedgerows to remain in any one year.
- 13.1.378 Similar lighting strategies to those employed adjacent to woodland edges are likely to be beneficial to a range of taxa which may use the hedgerows.
- 13.1.379 By incorporating the above mitigation measures within the scheme, the proposed development will result in a long-term, positive impact of medium magnitude on hedgerow habitat significant at a Parish level. This assessment is given with a probable level of confidence.

#### Great crested newt

- 13.1.380 The habitats suitable to support the species on Site are limited to sub-optimal terrestrial habitat. The known breeding ponds are located off site and the majority of

terrestrial habitat within 250 m of these ponds will be retained. As part of the scheme, the terrestrial habitat enhancement will be provided by incorporating suitable habitats (rough grassland and hedgerows) within the areas closest to the ponds off Site to the north. This area currently includes open green space and school grounds. The inclusion of area left as rough grassland and the planting of a new hedgerow (H14) adjacent to existing hedgerow (H5) on the northern boundary would enhance the area's value for great crested newt.

- 13.1.381 In order to avoid contravention of the legislation protecting this species, works affecting suitable habitats (grassland margin and hedgerow) within 250 m of the pond 1 will be avoided. Where any such works become necessary, suitable mitigation will be implemented, which would likely include as a minimum a method statement prepared by suitably qualified ecologists or a European Protected Species Derogation Licence.
- 13.1.382 By incorporating the above mitigation measures within the scheme, the proposed development will result in a long-term, positive impact of medium magnitude of great crested newt terrestrial habitat at a Parish level. This assessment is given with a probable level of confidence.

#### Reptiles

- 13.1.383 The existing habitats which have the potential to support slow worm and grass snake will be retained within The Site. To ensure the protection of reptiles during construction and to ensure the long-term management of reptile habitat a mitigation strategy should be prepared and be approved by the Local Planning Authority. This will likely include the approach to the removal of suitable habitat in terms of timing and methodology. Broadly, this should be undertaken in the active season for reptiles (March to October depending on ambient temperature and ground conditions) and should involve a supervised vegetation removal in stages, followed by a supervised destructive search.
- 13.1.384 The scheme has been designed to allow for the retention of reptile habitat within the proposed development Site. The Green Network also includes extensive suitable habitat, such as hedgerow margins and conservation species-rich lawns, and log piles which will enhance the site's suitability for reptiles. Although some of the habitats are located within the public open space and reptiles may be impacted by disturbance, a significant amount of the created habitats will be undisturbed by human interference.
- 13.1.385 By incorporating the above mitigation measures within the scheme, the proposed development will result in a long-term, positive impact of low magnitude at a Parish level. This assessment is given with a probable level of confidence.

#### Breeding bird community

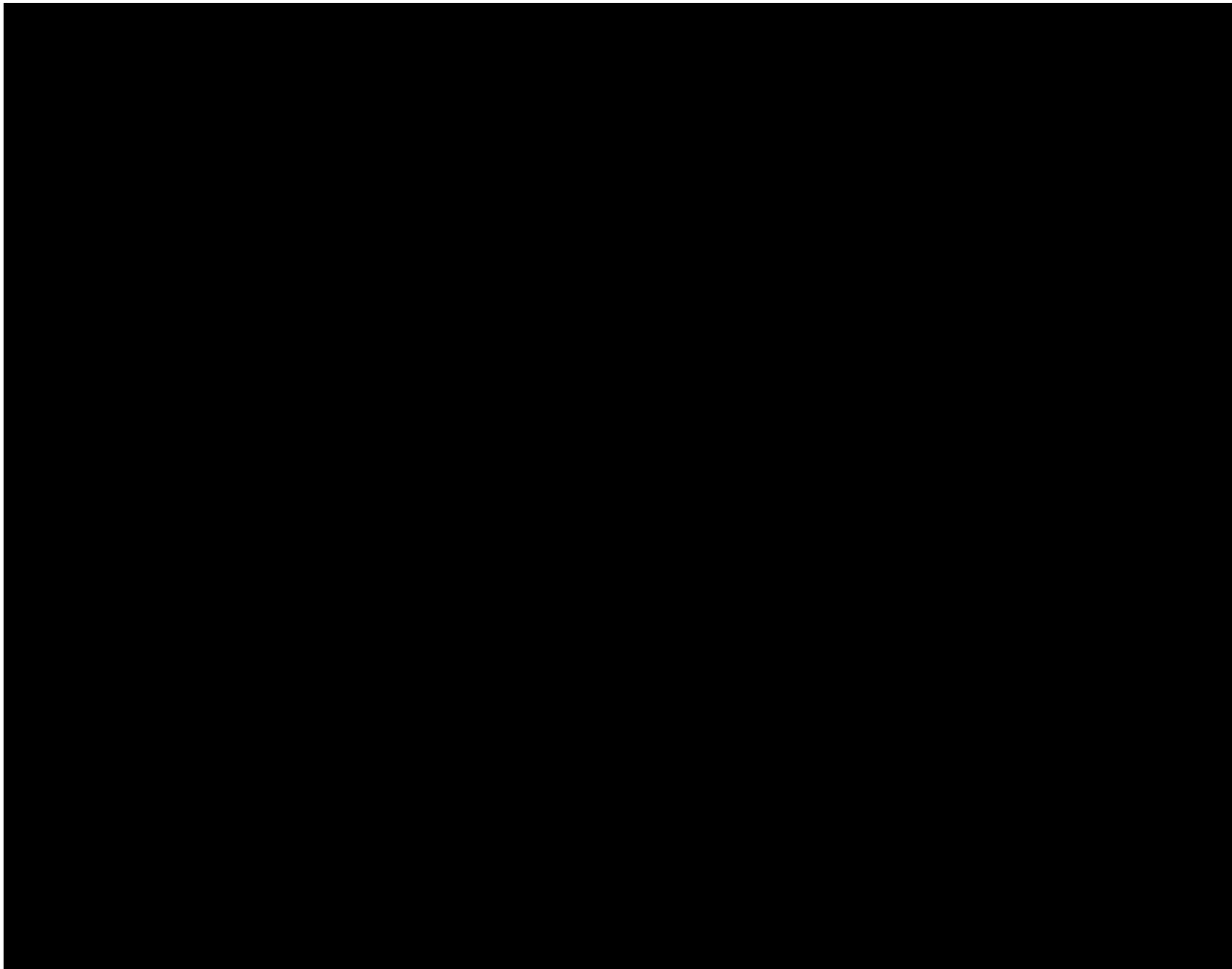
- 13.1.386 The potential exists for enhancement within the scheme to benefit the diversity and number of individuals making up the general breeding bird community within The Site. The additional woodland and hedgerow planting and management outlined above will benefit species using this kind of habitat (such as dunnock).
- 13.1.387 An increase in the number of domestic cats is likely. The use of thorny species (Hawthorn and blackthorn) in the planting design for hedgerows and woodland sections will help to provide a barrier to cat predation.
- 13.1.388 Bird boxes will also be installed in retained woodland and where possible will be designed in to the fabric of buildings. A number of species-specific designs should be employed in order to enhance the value of The Site to species of conservation concern known to be present locally. For instance, bird boxes in woodland should be targeted at enhancing this habitat's value for marsh tit. This species prefers enclosed nest boxes with a small entrance hole (25 mm) placed relatively low to the ground (1m) (<http://www.bto.org/about-birds/nbw/nesting-birds/marsh-tit>). A number of designs of nest boxes aimed at swifts, house sparrow and starling will be incorporated

within the design of buildings. These are likely to result in an expansion of the existing populations of this species off Site to the west.

- 13.1.389 By incorporating the above mitigation measures within the scheme, the proposed development will result in a long-term, positive impact of low magnitude at a Parish level. This assessment is given with a probable level of confidence.

Yellowhammer and skylark

- 13.1.390 The additional hedgerow planting and hedgerow management will likely benefit the yellowhammer population present on Site. This will likely result in a permanent positive impact.
- 13.1.391 With regard to skylark, it is unlikely that suitable measures can be provided within the scheme to adequately mitigate for the loss of this resource as the species requires open ground to breed.
- 13.1.392 It is therefore recommended that provisions for this species be implemented with the Blenheim estate's wider land holding. These should include providing skylark plots within arable land elsewhere in the vicinity so as to provide open areas for skylark to forage in even once the main crop has become dense in latter part of the growing season.. This is likely to increase the numbers of skylark present in arable farmland areas off Site as well as increasing the reproductive success of these populations, mitigating for the loss of the resource on Site.
- 13.1.393 By incorporating the above mitigation measures within the scheme, the proposed development will result in no significant impact/neutral at a Parish level. This assessment is given with a probable level of confidence.



Dormouse

- 13.1.402 Given the proposed removal of dormouse habitat, a European Protected Species Derogation Licence will need to be obtained, following the completion of an appropriate method statement. This will likely include a staged clearance of the affected habitats starting in winter by cutting these to 20 cm from ground level followed by a supervised removal of the remaining root stock in May of the following year.
- 13.1.403 The proposed mitigation would also need to be detailed. Currently the planting scheme for the Green Network includes:
- 13.1.404 The creation of 4 new hedgerows on Site (H11, H12, H13, and H14) supporting a mixture of native species as well as standard trees and will measure in total 751 m; and
- 13.1.405 The creation of an additional 6.54 ha of broadleaved woodland throughout The Site.
- 13.1.406 In terms of habitats, this new planting scheme will more than replace the habitats lost as a result of the clearance works.
- 13.1.407 A habitat management plan covering the existing and newly planted woodland and scrub habitats will also be prepared and would include selective thinning in parts of the woodland which support a mature canopy but little understorey.
- 13.1.408 In order to reduce the magnitude of the impact of fragmentation as a result of habitat loss as described above, it will also be necessary to include provisions for dormice at road crossing points. The planting scheme already increases the connectivity between the southern end of the woodland belt and the hedgerows on the southern side of The Site. Further planting along the north-western Site boundary (H13) will increase connectivity between northern and western off Site habitats.
- 13.1.409 In order to reinstate the connectivity from north to south and west to east through The Site, it is recommended that arboreal bridges are created at the points where new road alignments will require the removal of sections of hedgerows. To create arboreal bridges large mature standard trees will be planted in the following areas:
- Within the southern boundary of woodland W8,
  - Within the northern and southern boundary of woodland W6;
  - Within the northern and southern section of woodland W5;
  - Within the northern boundary of woodland W3;
  - Within the western boundary of woodland W7; and
  - Within woodland W1 at the intersection of roundabout along Upper Campsfield Road.
- 13.1.410 The introduction of traffic calming measures for the access road in the east of The Site will also increase the connectivity through woodland (W1) to the woodlands to the south including (W2, W3, W4 and W5).
- 13.1.411 The realignment of Shipton Road into The Site is likely to result in a reduced level of traffic use of the section east west section of Shipton Road. The reduction in traffic level has the potential to increase the connectivity between habitats in the northern sections of The Site and suitable habitats off Site to the north.
- 13.1.412 By incorporating the above mitigation measures within the scheme, the proposed development will result in a long-term, positive impact of low magnitude at a District level. This assessment is given with a probable level of confidence.

Polecat

- 13.1.413 The risk of increased mortality of polecat as a result of collisions with traffic will be reduced by the same traffic calming provision detailed for badgers. The increased

available habitat which may support the polecat's main prey species (rabbits) may result in higher numbers of this species being present within The Site.

- 13.1.414 By incorporating the above mitigation measures within the scheme, the proposed development will result in no significant impact/neutral at a Parish level. This assessment is given with a probable level of confidence.

#### Invertebrates

- 13.1.415 The planting scheme within the Green Network will be designed to retain and enhance on Site habitats. The addition of habitats including woodland, hedgerow, and grassland is likely to be beneficial to species dependent on this habitat type.
- 13.1.416 By incorporating the above mitigation measures within the scheme, the proposed development will result in a long-term, positive impact of low magnitude at a Site level. This assessment is given with a probable level of confidence.

#### Bats

- 13.1.417 The design scheme has been sensitively designed to minimise removal of (i) roosts or potential roosts and (ii) hedgerows / tree-lines used by foraging and/or commuting bats. There will be hedgerows, green networks, common land and scheduled monument open space retained / created within the development. By maintaining / creating these features the potential impacts of the scheme are lessened by minimising severance of commuting routes.
- 13.1.418 The presence/absence of roosting bats will be identified prior to tree removal. A mitigation strategy will be prepared and approved by the Local Planning Authority, if required, detailing appropriate techniques to minimise the killing or injury of bats present such as appropriate timing of works and/or implementing soft felling techniques.
- 13.1.419 It is essential that the lighting strategy is sensitively designed to (i) prevent illumination of known roosts or potential roosts and (ii) minimise illumination of wildlife corridors and/or hedgerows. It is recognised that insensitive use of lighting within the scheme is likely to have a negative impact at the parish level on roosting bats, bats entering/leaving roosts or bats using the site for foraging or commuting activity. The design scheme will therefore keep lighting to a minimum. The preference would be to use no lighting or only low-level lighting.
- 13.1.420 However, it is recognised that brighter lighting will be required (e.g. at the roundabout on the eastern boundary and sports facility in the north of the Site), therefore low or high pressure sodium lights, light emitting diode light sources, will be used instead of mercury and metal halides. Luminaires and/or other directional light accessories will also be used to ensure that light spillage, particularly onto hedgerows / tree-lines, is avoided (Light Impact Assessment GIA Equation, 2014)
- 13.1.421 Nectar-rich plant species that are attractive to night-flying insects will be planted in the area of Scheduled Monument, adjacent to north-south bat corridor, as part of the scheme within the Green Network to enhance foraging opportunities for bats. Further advice is given in "A guide for bat-friendly gardening and living" (Bat Conservation Trust, 2009) and Plants for wildlife-friendly gardens (Natural England, 2007). Planting schemes should aim to provide connectivity for bats within the Site and local landscape. Suitable features would be lines of trees and tall hedgerows and 25 m north-south bat corridor through the central section of the Site. These should not be directly lit.
- 13.1.422 Bat bricks or bat tubes (above those required for mitigation and compensation of the known roosts) could be incorporated into the fabric of any new buildings and/or additional bat boxes could be secured to suitable retained trees. These would provide further roosting opportunities within the Site for bats and positioned to ensure they are not affected by light spillage. Bat access tiles could be also be incorporated within



buildings. These should always be used in conjunction with traditional roof linings such as bitumen roofing felt rather than breathable roof membranes (BRM). BRMs can be hazardous to bats which can become entangled in their fibres.

- 13.1.423 Additional bat boxes will be erected on retained trees within the Village and in woodland in the wider Site. Suitable boxes would include Schwegler boxes (Types 1FF, 2F and/or 2FN). These boxes will be suitable for a range of species recorded within the Site. Alternatively bat boxes could be made by users of the Site according to designs available from the Bat Conservation Trust ([http://www.bats.org.uk/pages/bat\\_boxes.html#Making\\_your\\_own](http://www.bats.org.uk/pages/bat_boxes.html#Making_your_own)).
- 13.1.424 The bat boxes will be installed in positions where they are out of reach of people from the ground (so as to limit interference) and high enough to deter cats and other predators. Boxes should not be placed too high as this makes maintenance more difficult and can leave the boxes exposed to weather, particularly strong winds. In practice, placing them between 3 m and 4.5 m from the ground is optimal. Boxes should also be placed in a range of locations at slightly different heights and facing in slightly different directions to give a choice of roost Site options (Mitchell-Jones, 2004). The direction of the boxes will be selected to avoid facing them into the prevailing weather and will preferably be positioned facing in a southerly direction where they will receive a good degree of sunlight. Typically three boxes are installed on a single tree at different orientations (i.e. south-west through south to south-east).
- 13.1.425 By incorporating the above mitigation measures within the scheme, the proposed development will result in a neutral impact on bat species with low magnitude of significance at the site level only. This assessment is given with a probable level of confidence.

### ***Residual impacts***

- 13.1.426 Residual ecological impacts are those remaining once the appropriate mitigation measures (including design mitigation) have been taken into account. The residual impacts of the development on the ecological receptors identified during the baseline studies are summarised in Table 13.18 in Appendix D.
- 13.1.427 The proposed development has sought to minimise impacts on biodiversity through mitigation (including development design mitigation) and compensation. In addition, measures such as woodland creation, native species planting, and the provision of new bird nesting and bat roosting opportunities, the site is likely to be of enhanced ecological value in the long term. It is therefore considered that main objectives of the planning policy relevant to this scheme have been met.

### ***Cumulative effects***

- 13.1.428 The only project to be considered as part of the assessment of cumulative effects is located to north of The Site and along Shipton Road, and to the north east of Marlborough School. The development (Application 13/0982/P/FP) includes the erection of 58 residential dwellings, new access for vehicles, pedestrians and cyclist, formal open space, car parking and landscaping improvements.
- 13.1.429 Given the distance of this development to The Site; the lack of ecological connectivity (either directly or indirectly) between the sites; and the avoidance of significant impacts through scheme design and on-site mitigation/compensation, it is considered that there will be no cumulative ecological impacts as a result of this development project and Woodstock South East.

## **CONCLUSIONS**

- 13.1.430 The nature of the development at Woodstock East will result in changes to the ecological conditions and types of habitat within the planning application area. The

current Site conditions are characterised by a range of ecological receptors, both species and habitats, which are found throughout southern England.

- 13.1.431 The Site has several statutory and non-statutory sites nearby and the adoption of appropriate working methods during construction phase, in conjunction with national and local government policies i.e. regarding vehicular emissions, will result in no significant impact during the operational phase, upon these sites.
- 13.1.432 The main habitats within The Site include arable, semi-improved grassland along field margins, broadleaved semi-natural woodland, and hedgerows. The adoption of appropriate working methods during the construction and the provision of large areas of green infrastructure post development will reduce the direct and indirect on these habitats during the construction and operational phases.
- 13.1.433 Through design, most habitats will be retained and developed through the Green Network including;
- 13.1.434 6.54 ha of newly created woodland composed of a native species mix, an increase of 217% of woodland cover;
- 4204 m of scattered and individual trees.
  - additional tree line and hedge planting of 751 m in length.
  - Creation conservation species-rich lawns (6.57 ha);
  - Creation of amenity grassland (11.11 ha); and
  - Creation of amenity grassland (gardens) (9.84 ha)
- 13.1.435 Through the adoption of design mitigation including Green Network and Lighting Design Strategy, no negative residual impact will remain.
- 13.1.436 The retention and creation of new and additional habitats will have a probable near certain long term impact at Parish level for the following ecological receptors:
- Woodlands (broad leaved semi natural and plantations):
  - Grasslands (Semi-improved, conservation rich species grasslands)
  - Hedgerows
  - Great crested newt terrestrial habitat
  - Reptiles
  - Breeding bird community
  - Sky lark and yellow hammer (off Site)
  - Dormouse
  - Terrestrial invertebrates
- 13.1.437 The retention and creation of new and additional habitats will have no significant impact at any geographical level for bats and badgers.
- 13.1.438 Overall the project is likely to lead to significant positive impacts upon the Ecology and Nature Conservation and will provide net gain in biodiversity for The Site.

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## APPENDICES

- Appendix A Figures

- Figure 1: Phase 1 Habitat Plan
  - Figure 2: Reptile Mat Locations
  - Figure 3: Static Detector Surveys and Walked Transect Routes
  - Figure 4: Dormice Tubes, nest boxes and survey results
  - Figure 5: Designated sites within 2km radius
  - Figure 6: Reptile survey results
  - Figure 7: Walked transect results and location of thermal image assessment of bat tree roosts
  - Figure 8: Badger sett locations (CONFIDENTIAL)
  - Figure 9: Mitigation Proposals Plan
- Appendix B Photographs
  - Appendix C Confidential Badger Survey Results (CONFIDENTIAL)
  - Appendix D: Table 13.18: The residual impacts of the development on the ecological receptors identified during the baseline studies

## 14 VIEWING THE ENVIRONMENTAL STATEMENT

Hard copies of the Environmental Statement may be inspected at:

- West Oxfordshire District Council Offices at Elmfield, New Yatt Road, Witney, Oxfordshire, OX28 1PB
- Cherwell District Council Offices at Bodicote House, Bodicote, Banbury, Oxfordshire, OX15 4AA

CD copies are available from West Waddy ADP for £5. Contact: Stephen Pickles, Senior Planner, West Waddy ADP, 60 East St Helen St, Abingdon, OX14 5EB tel: 01235 523139  
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